Diabetes Freedom

Advanced System

Reverse Inflammation Now

Docteur Richard Kane

Contents

Chapter 1

What is inflammation?

"Inflammation" is a very common word. In fact, it is so common that many health challenges involve inflammation in some way.. Almost everyone has heard the word inflammation. But what does it mean?

Inflammation is a natural way that the body defends itself. It is the way the bodys immune system and white blood cells try to protect the body from invasion by foreign particles, bacteria and viruses. It's a way to remove harmful stimuli and to start the healing process.

When something harmful or bothersome affects any part of the body, the body tries to get rid of it. This is when inflammation begins. At this stage, inflammation is helpful as it provides a tool to heal and repair a wound or sickness.

Some inflammation is called "acute," meaning that it started suddenly. "Chronic" inflammation is an ongoing inflammation, something that lasts over a longer period of time. You could have chronic (ongoing) inflammation if an acute inflammation is not treated, or if you have a problem with your immune system.

It is only when inflammation lasts for longer than necessary that it becomes a bad thing. In these cases, it can cause more harm than good in the body.

Inflammatory response to common injuries

To better understand the role of inflammation, thinking about falling and hitting your knee hard against a rock, or germs getting into a wound, or splinter piercing your finger. Your body's reaction to these injuriesis to produce inflammation.

Basically, what happens is that when a person goes through some kind of physical trauma, such as a cut on your knee, inflammation floods that part of your body site with white blood cells and nutrients to deal with the germs and repair the damaged tissues. the inflammation also creates a protective wall to safeguard the site of the injury. This only meant to last for a short time. Once your body has healed the cut, or other problem, you don’t need inflammation any more. So the inflammation goes away, to promote healing.

Let's look at the different stages of inflammation.

Stages of Inflammation

Irritation

In its first stage, inflammation is often referred to as irritation. This is when the immediate healing process starts. The first phase of healing is inflammation, the body's natural response to injury. Once you have some kind of a wound, a process called "hemostasis" begins. This is when blood vessels tighten up and seal themselves off so part of the blood, the platelets, can make a blood clot and stop the bleeding.

After hemostasis occurs, the blood vessels in the area open up again, permitting white blood cells, nutrients, enzymes, antibodies and other substances to come into the injured part of the body and help the wound to heal, and to prevent infection. This is when a person would begin to feel the physical effects of inflammation, which are swelling, pain, heat and you may see redness. You might find it harder to bend your joints, such as a knee or an elbow, due to inflammation.

Pus, Suppuration

Then, based on the nature of the injury, inflammation may be followed by suppuration, or a discharge of pus. Pus is the thick, yellowish-white liquid you may have seen coming out of a wound. Pus is mainly a mix of dead immune cells, cellular debris, bacteria and fluid that has flowed out of blood vessels.

The formation of pus, is called suppuration. It occurs when invading bacteria is hard to destroy. Suppuration is a natural way that the body fights infection. The body makes pus in an attempt to protect the wound from different bacteria.

Many cases of pus formation can be treated at home, but larger or stronger cases may need a professional's expertise, such a doctor, to remove build-up.

In some cases, a doctor may need to cut into the wound to clean it and drain off the fluid, including the pus. Some abscesses, like boils, may burst all by themselves, while others need medical help. The cavity of the abscess then collapses

Maturation

The next stage is called the granulation stage. This is when the body makes new cells that become new tissue. It occurs as the wound is healing. Also known as maturation, or remodeling, this is the final stage of wound healing. It occurs after the wound has closed up and may take as long as two years to heal completely.

During this phase, the skin tissues get reconditioned to improve their strength and flexibility, and non-functional cells get replaced by functional ones. Over time, the amount of cellular activity drops and the number of blood vessels in the injured area decreases.
While it may seem that the wound healing process finishes when the maturation process starts, it is crucial to stick to the treatment plan. If you forget to take care of the wound, there is a risk

that infection or other problems can develop, and the injury may get worse instead of healing. Remember, the wounded part of the body is not at its full strength yet.

This means that even after maturation, a wounded area is still much weaker than it should be.

- Injuries, infections and wounds would never heal properly without inflammation
- Make sure you take care of the inflammation until your body is fully healed

Acute inflammation

Often, acute inflammation is helpful because t is the body's way of trying to heal itself after an injury. Acute inflammation sets in rapidly and can become severe fairly quickly. Have you ever twisted your ankle? Did it swell up? Was it tender when you touched it, and maybe hot or red? Those things are all symptoms of inflammation. The symptoms may only be there for a couple of days, but sometimes they can continue longer, even for a couple of weeks.

Acute inflammation is a short-lived, much needed activity in the body. As the body does its normal immune activities, the body also targets the wounded area, sending various molecules and immune cells that destroy the intruding agent and the cells they have affected. This creates a defensive wall around the injured part of the body. It can happen in any part of the body ranging from blood vessels to bones.

However, acute inflammation is only meant to be a short burst of powerful destruction. After the trauma fades, the number of inflammatory molecules and cells should decrease so that healing can begin.

Acute inflammation only happens right away after a physical injury happens, an infection begins, or even an immune response happens.

When the skin is scratched but not broken, a pale red line may form at the site of the scratch. Soon, this area will start to look red as the underlying blood vessels swell and the capillaries fill up with blood. The area becomes swollen as more fluid collects in the interstitial spaces, or the spaces outside the blood cells.

Even though acute inflammation is considered to be helpful, it can cause unpleasant sensations, like the discomfort of a sore throat or the irritation of an insect bite. The soreness of inflammation is temporary. It will get better and disappear as the inflammatory response does its job and helps to heal the body.

As we mentioned earlier, when we have inflammation we often feel some pain, redness, and a joint may not bend as easily as it usally does. You might also be able to see some swelling where the wound is, and you might feel some extra heat there too.

But why does inflammation make us feel pain? Pain happens when the body releases chemicals that stimulate the nerve endings near the wound or infection. This causes that part of the body to become more sensitive and we feel pain or discomfort, especially if we touch that area. The redness is due to blood rushing into the capillaries around the wound. The swelling occurs as a result of fluids building up in the area.

Examples of loss of mobility or function can include an inflamed elbow that does not bend properly, an inflamed shoulder joint that makes it hard to lift your arm as high as usual, or or not being able to smell things, like your supper, when you have a cold. Another example is when you have bronchitis and it becomes really difficult to breathe. That's a result of inflammation too.

These symptoms will only occur at the same time if the wound is right on or under the skin. When inflammation happens deep inside the body, we may only be able to see or feel a few of the symptoms. In this case, it is especially important to get help from a licensed physician, since you may need special tests to find out exactly where the inflammation is, how severe it is, and to treat it properly.

- Acute inflammation happens just after the wound occurs, or you get an infection, or have an immune system response
- It can happen anywhere in the body, but we only see it if it is on or just below the skin
- Redness or swelling are symptoms of inflammation
- We cannot see inflammation that happens deeper inside the body
- If you are having problems such as too much pain, or your body doesn't work as well as you need it to, you may need medical help

Chronic inflammation

Chronic inflammation, on the other hand, means long-term inflammation. Chronic inflammation can last for several months or even years. Typically, this type of inflammation occurs when the immune system fails to get rid of whatever caused the acute inflammation.

Chronic inflammation may also happen if you have an auto immune system response to a self-antigen. When this happens, the immune system attacks normal, healthy tissue, by mistake, treating healthy cells as if they are harmful. Or, you may get chronic inflammation if you have a lot of exposure or contact with things that irritate the body, such as chemicals. You might breathe in air that has irritating particles in it. Asbestos in some building materials has caused a lot of problems, so it is not used anymore. You can get strong chemicals on your hands, or other parts of your body, if you are using certain cleaners.

Chronic inflammation can happen anywhere in the body, and research has found out that chronic inflammation is a common cause for a number of chronic, or ongoing, diseases. For instance, too much immune cell activity and too many defensive molecules roaming around in

the body can hurt the lining of the blood vessels. This is what happens if someone gets hardening and narrowing of the arteries, called atherosclerosis. Chronic inflammation can weaken the cells in the pancreas, which is what happens in Type 2 diabetes. Chronic inflammation also affects the joints, which is called arthritis.

- Chronic inflammation does not go away quickly. It can last a long time, even years
- Chronic inflammation can cause serious problems, such as arthritis, diabetes and more
- Chronic inflammation can be a result of things that irritate us, such as breathing in too much sawdust in a workshop, or getting chemicals on our skin.
- Always use masks, gloves, or protective clothing when it will protect you from things that could cause irritation.

Comparing the two kinds of inflammation

The two types of inflammation can be compared based on their causes, the types of cells involved in the healing process, and how long the inflammation lasts. For instance, acute inflammation is brought on by injury or harmful bacteria but chronic inflammation is triggered by pathogens that cause long-lasting inflammation.

Acute inflammation starts as soon as the injury or damage occurs and only last for a short time. Chronic inflammation can last anywhere from a couple of months to many years.

Many different kinds of cells can take part in inflammation. In acute inflammation, the major cells involved are the types that cause inflammation to happen. These cells go back to resting mode once the body heals and your body no longer needs the inflammation..

On the other hand, chronic inflammation is caused by cells that work gradually and nonstop for longer periods of time. They are constantly engaged in trying to regulate inflammation and may have to work twice as hard i when inflammation becomes widespread in the body.

In both cases, the cells release substances which act as inflammatory mediators. Some cause blood vessels in the tissues that have narrowed to expand, letting more blood to reach the injury. As a result, the injured area looks red and feels hot.

More defense cells are brought to the site of the wound to help speed up the healing process. Plus, inflammatory mediators have another function to perform. They increase the ability of the narrow vessels to allow liquids to pass through so that more defense cells can enter the affected tissues. The defense cells also carry more fluid into the inflamed tissue, which is why it swells up. When the fluid is transported out of the tissue, the swelling goes down.

Likewise, the outcomes for the two types of inflammation also vary because as acute inflammation gets better the body heals itself. If the body does not heal, such as when an

infection gets more severe instead of healing, it turns into chronic inflammation. The outcome for chronic inflammation is more severe as it leads to the destruction of the injured or infected tissue, the thickening and scarring of connective tissue, and the eventual death of cells or tissues.

However, inflammation does not necessarily mean that there is an infection. On the contrary, an infection can cause inflammation.

And there are cases when inflammation could be mistaken for infection. However, it is important to note that inflammation and infection are not the same. Infection can bring about inflammation as it is caused by substances like a fungus, a virus or bacteria. To say it in another way, inflammation is how the body responds to an infection.

Summary

While acute inflammation is seen as a good sign in process of healing the body, chronic inflammation needs proper medical treatment for the body to heal or to manage the symptoms, such as in arthritis. The symptoms of chronic inflammation should not be ignored as they can turn into serious or painful health conditions.

- When you first see swelling, redness, or pus, it shows that you have inflammation near your skin.
- This is part of the body's natural healing process.
- Keep the area clean, and perhaps put a bandage on it.
- If the inflammation keeps getting worse or just doesn't go away, or if your pain increases, it may be time to get medical help.
- Acute inflammation can turn into chronic inflammation if the body does not heal.
- Chronic inflammation is probably not something you can fix yourself. You may not even be sure of exactly where the problem is located in your body if it is not close to the skin. Get medical help to identify and treat chronic inflammation.

Chapter 2

What causes inflammation?

There are many causes of Inflammation. The most common ones are bacteria, viruses, toxins, external injuries, eating a poor diet, and responses by your immune system, such as an allergy. Some causes may even be to the result of poor hygiene practices. We'll talk about that in another chapter.

Dietary habits

There are a number of eating behaviors that can be linked to short-term inflammation flare-ups as well as chronic inflammation. These behaviors include eating foods that can cause inflammation in some people, eating too much, being very overweight, and drinking too much alcohol.

Bad food choices

The link between eating the wrong foods and inflammation has been well studied. A number of foods are known to make inflammation worse. Including sugary foods and trans fats.

Sugars and high fructose foods

Some foods put a lot of sugar into a blood, and it enters the blood very quickly. All this sugar in the blood causes the body to release a lot of insulin, whichleads to high insulin levels. This is followed by a big drop in the amount of glucose in the blood. This sharp increase in blood sugar level followed by a big drop when the insulin starts to work encourages a low grade, long-term chronic inflammation in the body. This is called Type 2 diabetes.

Since the body is designed to handle small amounts of sugar at any given time, a big increase in the amount of sugar in the blood is not whatthe body is designed to handle. This makes the body work hard. If this continues to happen, over time the body will not not able to keep up with the big rises and falls in blood sugar, and the strain of producing and using the extra insulin. This is when the body starts producing inflammation.

One of the biggest problems is avoiding high fructose corn syrup. Food companies have discovered that people like food to taste sweet so they add high fructose corn syrup to all kinds of foods—even meats, like ham, bacon, and salami—to make them taste sweeter.

- Don’t just grab whatever food is handy. Think about whether it has a lot of sugar, and choose foods that are lower in sugar and carbohydrates
- If the food is in a package, it has to have a list of ingredients. Look for fructose, sugar, and high fructose corn syrup. If any of them are listed in the ingredients, don't eat that food, or only have it on special occasions like birthday and Christmas celebrations.

Artificial trans fats

Very small amounts of trans fats are normal in meat and some dairy products. This does not cause a problem. But, unfortunately, trans fats have been added to many food products that would not normally contain trans fats, and it has caused a problem. Many of these trans fats are called "partially hydrogenated oils." Trans fats increase the likelihood of your body producing inflammation. How can you tell if a product has trans fats in it? Read the label!

Some vegetable and seed oils can also cause inflammation.

A rancid oil is an oil that has become oxidized. Oxidization occurs when the oil is exposed to heat or light. this alters its chemical make-up and creates harmful free radicals.

The food oils that are most likely to become oxidized include vegetable oils such as soy, corn, canola, and grapeseed. Also, a study found that some brands of vegetable oil that are labelled as olive oil do not actually contain olive oil, or they only contain small amounts. The rest is a variety of other oils that are likely to be oxidized. You can tell if you have real olive oil by putting the bottle of oil in your fridge. If it stays liquid, it is not 100% olive oil.

Food oils contain omega fatty acids. The body needs specific kinds of omega acids, and it needs a lot of more some kinds of omega acids than other kinds. Researchers have found out that non-olive oils are more likely to be unbalanced, to not have the correct ratio of omega 3 to omega 6 fatty acids. This can result in your body having too much omega 6 fatty acid and not enough omega 3 fatty acid. How does the body react to this? It creates inflammation.

- Choose real olive oil instead of cheap substitutes.
- How can you tell if it is real olive oil? Put it in the fridge! Real olive will not stay as liquid as it is at room temperature, it will start to get thicker and be harder to pour.

Overeating

Every time a person eats, even if it is just one tiny tomato or a single kernel of popcorn, the body has to go through several processes to digest the food, and then metabolize it or store it as fat. Metabolism is essential for us to live. It enables our bodies to turn the food we eat into sugar or fat and use them for energy to nourish the cells. In addition, the process of metabolism also gets rid of toxic by-products by eliminating them from the body. Toxic by-products could be chemical residues on fruits and vegetables, or products fed to animals to make them grow faster, grow fatter or leaner, or to help protect them from infections they don't even have. These products include extra doses of hormones, food the animal would not normally eat, and antibiotics when the animal does not need them.

Eating is necessary to stay alive, and many food and recipes taste really good! And when food tastes really good, we usually want to eat more of it. Unfortunately, many people are not taught how to eat correctly, or they eat for the wrong reasons. Eating more than you need to

for good health, or overeating, is harmful to the body. As long as the body gets the right amount of the right nutrients , it will not be likely to create inflammation or other health concerns that are caused by overeating.So, basically, eating what the body needs and no more will gives the body all the benefits and health that comes from good nutrition, but eating the wrong foods and eating too much can cause inflammation.

This is why nutrition-based eating is really important. It helps the body to get all the nutrients it needs and to get the without needing to overeat. So if you eat French fries at every meal, and you rarely eat fruits and vegetables, or if you eat every couple of hours, or eat a lot of sugary foods, well, your body isn't getting the nutrition it needs in the amounts it needs.

- There are lots of good, tasty foods in the world! Choose the foods that you like and that your body needs to be healthy.
- If you feel lonely or upset, eat some chopped up raw vegetables, like carrot sticks, celery, or radishes. Try squeezing some lime or lemon juice on slices of cucumber. Don't eat sugary foods. Or better yet, don't eat at all until a regular meal time.
- Most restaurants serve much bigger meals than people need. Eat half of it and take the other half home for another meals. It's good for your body, and its great for your budget!
- If you are not hungry, don't eat. If you are eating, ask yourself, "Am I still hungry?" If you're not hungry, stop eating! You will be healthy, and your body will be grateful.
- Don't develop bad eating habits. When you go to a movie, do you really need to eat hot dogs and popcorn, and have big, sugar-filled drinks? No. Get a bottle of water instead. You won't be hungry, you won't be thirsty, and you will be healthy!

Food Sensitivities

This is an important subject because eating something that triggers a bad reaction can cause big problems for you. In other words, anything that stresses the body is going to affect its ability to fight off invading infections, diseases, viruses and bacteria. And inflammation is the way your body fights back against all those things.

The most well-known foods that cause inflammation include nuts (especially peanuts), dairy products, honey, foods that contain gluten (such as grains), foods that contain yeasts (such as breads and beer), citrus foods (including limes, lemons and oranges), and foods that are part of the nightshade family, including tomatoes.

How can you tell if you are sensitive to a food? After you eat it, it may be hard to digest and you'll have a stomach ache. You may get cramps or diarrhea. Or, just after eating the food, you

may get a more severe reaction like raised red spots on your body, called hives, or even swelling around your mouth. If this happens, go to a doctor right away. It can be serious.

- If your body is sensitive to a food, figure out what it is. Since we often eat several foods at the same time, you may need testing by an allergy specialist to identify which food or foods are the problem.
- Remember which foods cause problems, and don't eat them!
- If you have a severe reaction, such as hives, swelling around your mouth or difficulty breathing, get a special bracelet that has a list of the foods you can't eat engraved on it. If you eat something by accident, usually when it is an ingredient in a recipe, doctors can quickly tell what is wrong by checking your bracelet.

Gingivitis

Gingivitis is an infection in your mouth, in the gums. It can be very painful to have, and just a painful to treat. You don't want to have gingivitis!.

This is because chronic inflammation in the gums also elevates the total level of inflammation in the whole body. Even a tiny increase make it more likely that you will have other problems, and even serous health problems. Gingivitis has been shown to contribute to inflammation in other parts of the body, especially in the area of cardiovascular disease.

Although gingivitis is very common, it is also easy to identify, and it is easy to treat if you start right away.. Don't let gingivitis lead to inflammation in other parts of your body.

- If it hurts to brush your teeth, you could have gingivitis. Your dentist can tell quickly, and if you start treating it right away taking antibiotic tablets may fix it.
- If your gums bleed when you brush your teeth, you could have gingivitis. Ask your dentist.
- Brush your teeth twice a day, for two minutes each time, and make sure to clean all your teeth, both sides, and gently brush your gums too.

Stress

Chronic inflammation is an integral component of chronic diseases, and chronic stress leads to many of these conditions.

When the body responds to chronic stress, levels of stress hormones also remain high, never returning to their normal level. This creates havoc in the body, as the body's tissues and cells get accustomed to the high levels of hormones and lose their sensitivity to them.

When the hormones levels of hormones is out of whack and the cells become desensitized to it, chronic inflammation takes over and goes crazy.

- Learn to identify what causes stress in your life and avoid stress when you can.
- There are easy ways to manage stress. Learn guided relaxation techniques, meditation, or how to reframe situations so you don't have to feel stress.

Disturbed Sleep Patterns

Sleep is a cornerstone of good health. It is the time when the body repairs itself and stores memories.

However, people who sleep poorly or do not get enough sleep have higher levels of inflammation. This happens because acute sleep deprivation causes an increased production of inflammatory hormones. It also changes their functions in the blood vessels.

Not getting enough sleep is like never taking out the trash. Both will eventually make a mess of things, the former in the body and the latter at home. People who do not sleep well are unable to get rid of many toxins rom their bodies, repair damaged tissues, or get rid of bothersome free radicals.

However, both too much and too little sleep can be linked to inflammation in the body. Getting less sleep than 7-8 hours of sleep per night has been proven to cause higher levels of inflammatory markers like C-reactive protein and interleukin-6. Both those inflammatory markers have been linked to chronic diseases such as heart disease, hypertension and Type 2 diabetes. (1)

- Plan to get 7-8 hours of sleep each night.
- Make sure you have a quiet, comfortable place. Partly opening a window and letting some fresh air in the room, or playing some very soft, calming music might help you sleep
- Use the relaxation techniques for managing stress to shut off your thoughts so it is easier to go to sleep.

Obesity

There is also a well-established link between being very overweight and having higher than normal levels of inflammation. One theory is that fat cells create their own environment and release their own hormones, and this can lead to inflammation in the body. This makes it even more important to reduce your weight to a healthy level, and to improve your health. Just as obesity triggers more inflammation, inflammation also makes it harder to lose weight.

- Eat healthy, non-sugary foods, and eat healthy amounts for your height, activity level, and age.

- ❖ There are many programs that will help you to lose weight, including group programs where you will be encouraged by the co-ordinator and the other group members. You don't have to do it alone!
- ❖ Look for information on intermittent fasting. This is a safe, easy, cheap and effective way to lose weight and keep it off.

Family History

Although it may seem unfair, another risk factor for inflammation is in your genes. Some people just get inflammation more easily than others. Just as eczema, rheumatoid arthritis, heart disease, and allergies have common genetic links, so does inflammation.

- ❖ Learn about your family's medical history on both your father's and mother's sides. If inflammation is a characteristic in your family, ask your doctor for suggestions on how you can avoid inflammation yourself.
- ❖ Identify any medicines or substances that your body does not react well to, such as aspirin, codeine, sulfa drugs, or latex gloves. Get a bracelet or pendant engraved with the list of things that cause problems for you and wear it.

Environmental toxins

According to the World Health Organization, there are environmental risk factors, such as things in the water, air and soil, as well as being exposed to chemicals, that can all contribute to more than 100 diseases. (2) Environmental toxins are especially common in cities because of vehicle exhaust, factory by-products in the air, soil and water, and even some geographical conditions that stop pollution from escaping higher into the atmosphere.

When we are exposed to all these things, and they enter our bodies, our bodies can be affected by them. That can increase the likelihood of producing inflammation. The things we get exposed to include chemicals for lawns, plants and foods, household cleaning chemicals, air fresheners, air pollutants, and more.

Common examples of these toxins include:

- Outdoor air pollutants, including as ozone, dust, smoke, soot, carbon monoxide from cars and sulfur dioxide from coal.
- Indoor air pollutants, including cigarette smoke, formaldehyde from household products, lead, mold, benzene and radon.
- Synthetic chemicals that are found in some consumer products, such as BPA and phthalates in some kinds of plastics
- Chemicals found in toiletries, such as toothpaste, deodorant, and cosmetics
- Heavy metals in drinking water, such as cadmium, aluminum, and lead

- Food products treated with pesticides, such as blueberries, apples, peaches, pears and strawberries
- Seafood that contains high levels of mercury, such as salmon, swordfish, tuna and mackerel

Summary

Although the foods we choose to eat can cause inflammation, there are other factors that can cause or aggravate inflammation too. Think about your lifestyle choices, learn about your family's medical history, and be aware of chemicals in the home or polluted areas in your community.

- ❖ Wear a small mask over your nose and mouth to minimize the effects of dust, pollen and air pollution. You could even decorate your mask and turn it into a fashob statement!
- ❖ Identify foods that trigger inflammation or even stronger responses in your body. Learn how to avoid them, and how to handle a reaction.
- ❖ If you have a severe reaction to anything, buy a special bracelet or pendant engraved with the names of the problem foods, medicines, substances or chemicals. And wear it!
- ❖ Schedule your sleeping time. You deserve a good night's sleep. Don't let anything else interfere with it.

Chapter 3

How Does Inflammation Become Chronic?

Inflammation is a medical keyword and has been linked to several chronic diseases. In fact, nearly everyone today seems to be living in a state of chronic inflammation.

As we discussed earlier, an ineffective immune system is a basic cause of chronic inflammation, as it sends misdirected signals to other parts of body. This tells the body that it still needs to make inflammation even after a full recovery from the original injury or problem.

When the process of creating inflammation is not turned off by the body, inflammation can have strong effects on the cells and even spread throughout the body. This keeps going on until it becomes a full-blown disease or medical problem, such as hardening of the arteries, diabetes, or a widespread inflammation.

The process is gradual but persistent. Sometimes it takes years before you are really aware of any symptoms. The inflammation can spread and get very strong before you find out about it,

even though the inflammation is there all the time. In this case, the defensive white blood cells do have nowhere to go and nothing to do. So, instead, they start targeting the internal organs or other necessary cells and tissues. All of this creates a lot of wear and tear, and even damage, in the body.

On other occasions, there may be a real threat, such as bacteria that starts causing problems, but the body may not detect it right away and the inflammatory response may start too late. As a result, the inflammation may persist for longer than it should have, and cause more damage to the body.

This type of persistent inflammation has been linked to some serious conditions, including heart disease. Other health issues include osteoarthritis and autoimmune diseases such as allergies, asthma, rheumatoid arthritis, inflammatory bowel disease and Crohn's disease, among many others.

- Pay attention to your body. If an area seems hot, red, swollen, or just uncomfortable for a while, or if it is hard to do movements that you used to do easily, get checked by a doctor.
- If you have a wound, even just a small scrape, wash it off right away. Get rid of the bacteria—don't let it spread throughout your body.

The case of osteoarthritis, or joint inflammation

Let's take a look at a common medical condition called osteoarthritis. This condition starts off as arthritis, or an inflammation of one or more of the joints in the body. You probably know someone who has arthritis in their hands, knees, or a shoulder. Over time, wear and tear come make the cartilage in the joints start to break down.

Once the cartilage gets worn or damaged, it also tends to become stiffer and lose much of its elasticity. This makes the joint more rigid, and it doesn't work as easily as it used to. It may also hurt. Then the cartilage is even more vulnerable to damage. Joint cartilage that is not flexible anymore fails to perform its primary function as a "shock absorber," and the person may feel frequent episodes of pain or discomfort.

As the cartilage deteriorates, the tendons and ligaments in the area stretch and the bones start to rub against one another. The disease progresses gradually with age, with most individuals over 60 suffering from osteoarthritis to somedegree.

The inflammation in the joint continues over time. Sometimes it gets worse quickly, or it may not change for a long time. Osteoarthritis can start happening in your joints and you may not even know it. Since it happens inside the joints, there may not be any signs you can see on the outside. You may just feel pain and not know why. However, when you go to your doctor, an x-ray may show the damage that is happening inside your joints.

On the other hand, osteoarthritis may worsen rapidly, yet X-rays may still appear normal. Internally, however, the cartilage may have been completely destroyed before the person feels the first signs of a flare-up.

- Osteoarthritis is arthritis that happens inside your joints.
- You may not be able to see any of the usual symptoms of inflammation, such as redness or swelling, since it is inside the body.
- The inflammation and damage to your joints may happen quickly or slowly.
- Make sure you are a healthy weight so you do not put extra stress on your joints.
- See your doctor to find out what is causing the problem and how to handle it.

The case of multiple sclerosis- nerve tissue inflammation

Another medical condition you should know about is multiple sclerosis (MS) and low-grade inflammation. Like many other conditions, this is an immune system disease. In multiple sclerosis, the body's immune system attacks healthy nerve tissue. The symptoms of MS are a result of multiple attacks of inflammation on the central nervous system.

When inflammation develops in the central nervous system, it eventually affects the nerve fibers in the brain. These nerve fibers have a myelin sheath that protects them and also makes it easy for your body to send information through the nerves.

When the immune system makes a mistake and causes inflammatory in the brain and spinal cord, the protective myelin sheath is attacked. This makes it harder for your brain to send signals and information to other parts of the body through the nerves. As the inflammation grows, it becomes harder for the person to do normal, everyday things like walking, lifting up a baby, or walking.

Multiple sclerosis can be a little different to some other condition that can exist for quite a while before a person is really aware of any symptoms. Instead, in multiple sclerosis, the person becomes aware of the symptoms very quickly, usually within a few hours to a few days. (3) A person with MS may go through periods where they feel a little better, and then have a relapse where they feel worse. These relapses reach their peak within a couple of days and then the MS will get better for a short amount of time.

In its initial stages, MS patients may experience recurring attacks every 12 to 18 months. These attacks may get better over time. However, they often become more chronic and the improvements do not last as long, or improve as much, as they used to. In the later stages of multiple sclerosis, the attacks turn into a pattern of steady deterioration and not just bad spell that flare up from time to time. .

And even though the symptoms appear suddenly, the inflammation has been at work in the body for some time.

- Multiple sclerosis is a serious condition that does not go away.
- It is caused by inflammation.
- Sometimes it gets better, sometimes it goes away for a while, then it comes back.
- If it starts to be difficult to do normal, everyday tasks due to pain or stiffness, see your doctor, and follow the recommended treatment carefully and consistently.

Blood vessel inflammation

Autoimmune diseases are recognized as the second major trigger for chronic inflammation. This causes a problem when the immune system attacks and damages blood vessels. In this condition, the blood vessels become inflamed and they also become weakened. They can stretch and can either increase in size or become so narrow that they close entirely.

Inflammation-related vasculitis can be triggered by other diseases of the immune system that the person may have had for a long time. In some more extreme cases, parts of the blood vessels that have become weakened may stretch and bulge causing an aneurysm.

When blood vessel walls have weakened enough there is a possibility that they will break, or rupture, and the blood will leak out. Or, in cases when the blood vessels become too narrow it can cause a partial or complete blockage. This means either the blood flows more slowly, or in a complete blockage the blood doesn’t pass through the blood vessels at all.

Low-grade inflammation has also been linked to habitual and environmental factors such as pollution and poor diet. This has made inflammation of interest to nutritionists.

- The immune system can attack the body by mistake, damaging the blood vessels.
- This causes inflammation in the blood vessels.
- Over time, the blood vessels become weakened. They can stretch, shrink or leak blood.
- There are multiple causes including things in the environment and eating a poor diet.

Diagnosing the condition

In many cases, there are no symptoms of chronic, low-grade inflammation. . This makes it hard for a person to realize that they have inflammation, but doctors may test the C-reactive protein level or CRP. The CRP level increases when there is inflammation in the body. The biggest danger of this type of inflammation is that its although it is "silent"—the person doesn't even know they have inflammation inside their body— it is very destructive, and has the power to create great health challenges.

As far as acute inflammation is concerned, we can see the classic symptoms such as redness, heat and swelling if the inflammation is on the outside of the body or close to it. We can also

feel pain if the inflammation is in our joints or muscles. But when cellular stress and malfunction rises to higher levels, it can change the short-lived acute inflammation into chronic inflammation.

This trigger, rather than helping our health, contributes to disease and age- related health problems instead.

There are no tests a doctor can use to identify chronic inflammation. The only techniques doctors can use to make a diagnosis of chronic inflammation is the result of eliminating other possible causes or the results of a few tests.. In most cases, chronic inflammation is only identified and treated after the person has had it for quite a while, because it is a hard condition to diagnose due to the lack of early symptoms.

- There is no special test to diagnose chronic inflammation
- Chronic inflammation is a symptom of conditions such as heart disease
- Your doctor may need to do a C-reactive protein test to identify inflammation deeper in the body

Summary

If you experience generic symptoms like difficulty losing weight around the belly, or if you are struggling with sugar and carbohydrate cravings, unpleasant digestive issues, or if you have persistent low energy levels, you may have some chronic inflammation going on inside your body. If this happens, you might want to consider seeing your doctor and getting tested for CRP level, or having you fasting blood insulin levels tests. CRP is a general blood marker for inflammation, and very high fasting blood insulin levels may also point towards chronic inflammation in the body.

- Redness, swelling, and stiffness shows the presence of inflammation at or near the skin
- Deeper inside the body, we can't see redness or swelling, but we may feel discomfort, pain, or our joints may not work properly
- Very high blood insulin levels may also indicate the presence of inflammation
- Consult your doctor if you keep having low energy levels, or if you crave sugar and carbohydrates

Chapter 4

How Can You Tell If You Have Hidden Chronic Inflammation?

While it is fairly easy to detect if someone has acute inflammation, chronic inflammation is another ball game altogether. Low-grade chronic inflammation generates a wide range of symptoms, and many of them are very general symptoms that are not unique to inflammation. This makes it harder to pinpoint a diagnosis of inflammation.

Given that the immune system works in overdrive when there is chronic inflammation, it is not surprising that chronic inflammation constantly releases a flood of damaging chemicals into the body, and that those chemicals eventually make the cells weaker and sick.

It is perhaps easier to detect the conditions associated with chronic inflammation, such as obesity and heart disease, than to pinpoint many of the symptoms of chronic inflammation.

The only thing that is well established is that when people have inflammation, they experience pain. Earlier warning signs such as swelling of the joints and swelling of the tissues might not be painful enough for you to pay attention to it at first, but when it hurts enough the pain will make people pay attention and start looking for a cause and a treatment.

People may also feel distress, discomfort, stiffness, and even agony, depending on how severe the condition is. The type of pain experienced can vary from a consistent and steady ache to a throbbing, pulsating pain or even a stabbing or pinching pain.

The pain is mostly caused by the swelling tissues or blood vessels pushing against sensitive nerve endings which then sends pain signals to the brain. Such a severe inflammation can cause other general reactions in the body, such as a general feeling of being sick, tired or injured, exhaustion, and even fever.

These symptoms are a sign that the body's immune defense system is very active and needs a lot of energy to perform its regular, everyday activities.

Because the body's immune system has so many things to defend against, chronic inflammation becomes associated with many things, which range from simple inconveniences like hay fever to the most life-threatening conditions such as cancer.

However, most of the time, chronic inflammation is not undetected, and many of its symptoms are attributed to other conditions.

- It can be hard to tell what is wrong inside the body, but if you feel pain, don't ignore it
- See a doctor if you continue to feel sick, tired, exhausted, or have a fever

- **Edema**

Edema occurs when there is a greater than usual amount of watery fluid in the tissues of the body. It results in swelling, often in the feet and legs. This causes puffiness, aching limbs, stiff joints and can also lead to weight gain.

The condition can be an underlying symptom of inflammation that affects either a small area or the entire body. Anything from a twisted ankle to a bee sting to a skin infection can trigger edema. Some medications also cause edema.

Edema in a small area that is caused by an infection or an inflammation, such as from a mosquito bite, may not cause any symptoms at all. But larger reaction, such as the body's response to a bee sting, may cause edema on the entire arm.

Usually, episodes of edema may go unnoticed even though they point to the presence of lingering inflammation in the body.

- ❖ Edema is a build-up of watery fluid in the body
- ❖ It shows as swelling, often in the ankles, feet and legs.
- ❖ Edema can be caused by medications.
- ❖ It often goes away by itself
- ❖ If it lasts, you may need to see a doctor for medication to treat the edema.

- **Digestive symptoms**

Digestive discomfort, such as bloating, burping, heartburn and gas could easily be caused by inflammation in the stomach lining. Because these symptoms are so common, they are usually ignored by most people, or they are thought to be caused by something else instead of inflammation..

However, if these common symptoms continue, and if you do not know why, it could indicate a low-grade, chronic inflammation at work in the body. .

Several things may cause the inner lining of the stomach to become inflamed, irritated or even to wear away over time. Sometimes the inflammation is short lived, such as in instances of acute gastritis. Or it could be ongoing as in cases of chronic gastritis. In these cases, chronic inflammation is not only distressing but it can also interfere with the digestive processes. It can even make the body momre likely to develop other digestive and general health issues.

As these symptoms can occur with a variety of health issues, be sure to talk with your doctor to see if your symptoms stem from chronic inflammation.

- **Headaches**

Headaches are very common and could be linked to many health issues, including chronic inflammation. Among the many different types of headaches, secondary headaches such as traction headaches and inflammatory headaches could both be warning signs for a more serious condition.

For instance, a traction headache occurs when the parts of the head that are sensitive to pain are stretched or pulled. Perhaps you've been starting a computer screen for too long and the eyestrain has given you a traction headache.

An inflammatory headache is triggered by complications with the sinuses, neck, spine, teeth and ears. Having an inflection in a tooth can give you a headache.

In either case, if you keep having chronic or secondary headaches it is important to consult your doctor, who may need to run tests or even send you to a specialist to determine the cause of the headaches. The headaches could be a symptom of hidden inflammation.

- Headaches can be a sign of inflammation in the body.
- If you keep having headaches, see a doctor.

- **Fever**

When you keep having a fever without any obvious cause, the fever may also be a sign of chronic inflammation.

A person who suffers from chronic inflammation could have on-and-off effects of a fever. This is because a fever is already a response to infectious agents such as viruses and bacteria. So is inflammation. When you keep getting a fever, it could be because the body is trying to make itself a place that the bacteria or viruses don't want to stay in. This is because bacteria and viruses are temperature sensitive and don't like high temperatures.

When fever is paired with ongoing inflammation in the body, the result could be ongoing episodes of fever.

- Fever is a way the body tries to get rid of bacteria and viruses.
- If you keep getting fevers and you don't know why, check with your doctor in case you have inflammation that needs to be treated.

- **Loss of appetite**

If you don't feel hungry sometimes, that is ok. But over time it can lead to unwanted weight loss and your body will not receive the nutrients it needs to be healthy. In some cases, the loss of appetite could be due to a condition called anorexia, and in other cases it could be a side effect of medications. But once the obvious reasons have been ruled out, the loss of appetite might also be traced to the presence of chronic inflammation in the body.

Take the example of inflammatory diseases such as inflammatory bowel disease, Crohn's disease or ulcerative colitis. Ongoing, low grade inflammation can cause a loss of appetite in these conditions as the other symptoms of these conditions are often distressing. Patients may experience pain, nausea, bloating and diarrhea, all of which can cause people to feel that they don't want to eat.

- If you don't feel hungry for a short time, that's ok. But if it continues, you could have chronic inflammation.
- See your doctor.

- **Gum disease**

Gum diseases in your mouth, including gingivitis and periodontitis, are inflammatory conditions that cause the gums to become inflamed and bleed, especially when you brush your teeth.

How often it happens, and how severe it is shows the strength of the inflammatory response. The process of inflammation has a significant impact on a person's oral health. When gingivitis becomes more severe it is called periodontitis, and the signs of chronic inflammation become easier to see than many other symptoms. Because gum disease is located in the mouth, it is easier for you to see the inflammation in your swollen gums and the blood on your toothbrush. This kind of inflammation can be pinpointed easily and used as a model for other inflammatory diseases.

- If it hurts when you brush your teeth, look and see if there is any swelling around your teeth or on other parts of your gums.
- If you see blood after brushing your teeth, you may have inflammation in your gums.
- See your dentist. You may need to use a special rinse, take medications, and use a softer toothbrush.

- **Allergies**

Allergies can give you constantly watery eyes and a stuffy nose. If these symptoms continue for long periods of time it could mean that the person has chronic inflammation.

Dark circles and puffy bags under the eyes is one symptom The condition could be hereditary, something that is common in your family, or it could be due to fatigue. It could also be a sign of internal inflammation.

The swelling around the eyes means there is a buildup of fluids (called edema) which surrounds the skin tissue. We talked about edema a little earlier.

If you have an inflammation in your eyes due to allergies it can cause ongoing eye irritation.

A stuffy nose, called nasal congestion, can be caused by allergies, a cold or by a flu. If a person does not have allergies, a cold or a flu but still has a stuffy nose or a runny nose it could be a symptom of chronic inflammation.

- If you have swelling under your eyes, it is a kind of edema. It may go away quickly.
- If it lasts, see a doctor to find out if it is a symptom of inflammation elsewhere in the body.
- If you get a runny nose or a stuffy nose and you don’t have a cold, a flu or allergies, it could be a sign of inflammation. Check with your doctor.

- **Feeling tired**

Unexplained fatigue may be a result of chronic inflammation. Inflamed cells are sick cells and they are unable to produce the energy needed for you to feel healthy and energetic..

If you keep feeling tired for no reason, it might be a sign of a hidden health problem. These problems could include chronic fatigue syndrome, anemia or cancer, but when these possibilities have been ruled out, people need to revisit the possibility of chronic inflammation.

As a silent symptom that we cannot always see, chronic inflammation could be at work throughout the entire body for long stretches of time. This results in low levels of energy and having high blood markers of inflammation. These can include certain proteins called C-reactive protein and various other inflammation boosting compounds called cytokines.

Together, the two are linked to symptoms such as feeling tired when you haven't worked very hard or done very much physical activity, feeling overtired following physical exertion, and poor physical performance.

- ❖ Everyone feels tired some times, but it shouldn't last for very long.
- ❖ If you keep feeling tired and there is no reason for it, you may have a hidden inflammation.
- ❖ Your doctor can test the level of C-reactive protein in your body to see if you have inflammation.

- **Muscle spasms**

Muscle spasms, or twitching muscles can be linked to a wide range of physical or mental conditions including fatigue, anxiety, and neurological diseases. If you work out at the gym, you might be training too hard or too long, and that can cause muscle spasms. Another cause is lack of sleep.But if these are ruled out, then it is possibile that there is an underlying chronic inflammation.

- **Sepsis**

Finally, a very rare but dangerous complication of inflammation is called sepsis. Sepsis occurs when bacteria multiply rapidly in a certain part of the body. From there, the bacteria suddenly enter the bloodstream in large quantities. This can happen if the body does not succeed in fighting an inflammation locally. Another possibility is when the bacteria are very aggressive or if the immune system is not working properly.

Summary

Keeping these symptoms in mind, it is important to remember that almost every illness can include inflammation. Therefore, it is necessary to pay attention to the different clues the body gives and get help to reduce or eliminate excess inflammation in the body.

- Inflammation happens as part of many medical conditions
- It can last a short time (acute inflammation) or a long time (chronic inflammation)
- Sometimes you can see the redness and swelling of inflammation if it is near the skin
- If the inflammation is deeper inside the body, it cannot be seen and a doctor will need to do tests to find it.
- Don't wait too long to see a doctor. If inflammation builds up rapidly and turns into sepsis it can cause major health problems.

Chapter 5

Chronic Inflammation and the Medical Profession

Although an acute inflammation is helpful to the body, chronic inflammation is not. Chronic inflammation was never discussed in detail before the last century. Now, there has been a lot of research on the subject and its connection to chronic diseases is well documented.

Many medical conditions end with the suffix "it is," such as appendicitis. The "itis" means there is inflammation, such as an inflamed appendix. Inflammation can occur all over the body. These inflammations can include but are not limited to conditions like arthritis, bronchitis, dermatitis and gingivitis.

The concern here is that by the time these conditions get diagnosed, chronic inflammation is already well established in the body. At this point, the individual cannot just be treated for inflammation. Instead, the treatment focuses on the cure for the medical condition that did or could have resulted from chronic inflammation.

- When a word ends with "itis" it means that inflammation is part of that condition, such as arthritis, appendicitis, or bursitis.
- The condition may involve treating more than inflammation.

Chronic Inflammation: A Medical Myth or Real Problem?

Some people wonder if chronic inflammation may just be a scientific myth. They fail to understand how stubbing one's toe can lead to major health issues like asthma and cancer. They think that the cause is too minor when compared to the consequences.

However, over the years, there have been several studies and researchers have proven the existence of chronic inflammation. The research shows that when the body's natural inflammatory response is disturbed or continues over a long period of time it can lead to chronic inflammation. This inflammation may lead to several other medical conditions.

Dr. Pawel Paszek led a study conducted at the University of Manchester in which the issues associated with inflammation were analysed.(4) The study was published in a medical journal called Nature Communications and it was seen in the study that the body does respond to cytokines in different ways. This disturbed cytokine stimulation results in Inflammatory Bowel Disease (IBD), as mentioned in the study. IBD includes two serious diseases namely Crohn's disease and ulcerative colitis.

One of the professors involved in the study, Dean Jackson, observed that the human immune system is very sophisticated and that the methods of communication between different cells must be exquisitely controlled. In different inflammatory conditions, this fine communication gets lost and the system runs amok, like a snowball rolling down a hill.(5)

Scientists have also observed that fat cells release the cytokines that are begin the inflammation. Studies focusing on obesity have also shown clear signs that chronic inflammation is a real and important factor in having excess body fat.

In a clinical research study of obesity by Kimberly Gudzune, who is a physician at Johns Hopkins, it is stated that a link between obesity and inflammatory markers was observed. Yet we do not know the cause. There is, however, some speculation that obese individuals have a higher risk for cancer, heart disease, and diabetes. (6)

Supporting the same view, the medical community acknowledges that there is indeed a clear association between lifestyle and obesity, highlighting the connection between physical inactivity causing individuals to become obese. Obesity is also linked to low grade chronic inflammation caused by lifestyle factors like eating a diet with too many fats, simple carbs and too much alcohol consumption.(7)

A study was conducted at the University of Texas in which Dr. Bharat Aggarwal, who is a Professor of Cancer Medicine at the university, observed the role of chronic inflammation. (8) Published in 2014, the study observes that inflammation produces both reactive oxygen and reactive nitrogen species. Together, the two can cause oxidative damage and trigger other chronic diseases in the body. At the same time, inflammation also gathers leukocytes that release inflammatory cytokines and factors that cause excess blood vessel growth to the site of tissue damage. The study further said that a certain amount of cytokines is beneficial for the body, but when there are too many cytokines there are serious consequences.

- Chronic inflammation has only been studied during the last hundred years.
- It has been proven to exist as a real medical problem in the body.
- Lifestyle choices can affect the likelihood of having chronic inflammation.
- To reduce the risk of chronic inflammation, don't eat too many carbohydrates and get enough physical activity.
- It's easy to be active—just walk up the stairs instead of taking the elevator or walk to the store instead of driving.

Other Reasons Why Doctors find it Hard to Diagnose Chronic Inflammation

. Chronic inflammation starts as an acute inflammation, which is a minor and hard to track health issue, but it can turn your life upside down.

As mentioned earlier, numerous studies have been published which suggest that chronic inflammation is a part of many health issues. These studies help us to understand why chronic inflammatory is a severe health issue.

As mentioned earlier, doctors often find it hard to diagnose chronic inflammation. This is mainly because there are still no absolutely accurate ways of testing for chronic inflammation. And chronic inflammation often occurs deep inside the body where it cannot be seen. It is not the kind of disease that can be diagnosed by just looking at the person.

Recently, tests have been introduced to measure the markers of inflammation in the body. These blood tests help to measure the amount of inflammatory chemicals in the body and show the possibility that chronic inflammation is part of a certain medical problem.

Another reason why chronic inflammation is hard to detect is because of the detection by eicosanoids. Eicosanoids are hormones which can indicate the presence and quantity of inflammation. The thing about these hormones is that they are not present in the blood, which means no blood test can be used to check for them.

Secondly, they only exist in the body for a very short time as their function is momentary. Eicosanoids help to spread messages from one cell to another, and after they do that they cease to exist.

The only way to check for the presence of eicosanoids is to check the amount of fatty acids in the body since the triglycerides produce eicosanoids. If they find high levels of eicosanoids in the body it can give indicate that there is a chronic or hidden inflammation in the body.

However, the procedure for checking the ratio between the two is quite expensive, which is why most doctors do not recommend it. Furthermore, every medical facility is not ability to do this test, which makes it even harder for a doctor to diagnose chronic inflammation.

- Because we usually cannot see chronic inflammation doctors rely on tests to diagnose it
- A kind of fatty acid called eicosanoids is used to help determine inflammation hidden in the body
- The eicosanoid test is expensive and every medical facility is not able to do it

Difficulty Diagnosing Chronic Inflammation through Symptoms

The early symptoms of chronic inflammation do not suggest anything that anything severe is happening in the body.. The earliest symptoms are a slight fever, swelling, and redness around cuts and injuries. Most of these symptoms can be easily ignored.

These symptoms are common in health problems, and this is why the development stage of chronic inflammation is hard to detect. These symptoms spread slowly and lead to a metabolic breakdown.

Dr. Andrew Miller states that one of the symptoms of chronic inflammation is depression. (9) Dr. Miller serves as a Professor of Behavioural Sciences at the Emory School of Medicine. He says that patients with heart disease who are depressed have higher markers of inflammation than other patients who are not depressed.

Dr. Miller has researched treating inflammation. He has found that when the chronic inflammation is treated it also lowers the patients' levels of depression. “Interestingly enough, studies have shown that exercise and omega-3 fatty acids, which reduce inflammation, can treat depression as well.” However, it could be misleading to diagnose inflammation just because a person has depression. There could be other reasons for depression, and inflammation is the last thing most doctors would check for in case of depression.

Another symptom of chronic inflammation is tiredness. If a person keeps feeling tired at all times, it is likely that they suffer from inflammation. According to research conducted by Mary Harrington, who is a researcher at Smith College, this kind of tiredness has serious health effects. .(10) In research related to neuro science, she showed how ongoing tiredness is related to chronic inflammation.

It is very hard for doctors to diagnose chronic inflammation by judging the level of fatigue a person feels. The reason for an individual’s fatigue and constant tiredness could also be caused because they are over working or not getting enough sleep. It could also be because of a many other reasons, which will all need to be evaluated before a doctor diagnoses inflammation. By this time this happens, the situation could have worsened.

Another symptom associated with inflammation is feeling hungry all the time. This can be a factor in obesity, and it includes the urge to eat carbohydrates and sugary foods. However, it is almost impossible for a doctor to diagnose chronic inflammation based on this apparent symptom.

Instead, a doctor may think that obesity or an irresistible urge to eat is because of other reasons like unhealthy lifestyle choices or emotional issues. Since so many other factors could be the reason why someone is obese, chronic inflammation is often not considered.

A person suffering from chronic inflammation is bound to feel sluggish and not energetic.. Also, a person who suffers from chronic inflammation may not have the mental concentration abilities needed for daily tasks. Along with that, there is also little sense of wellbeing associated with inflammation.

The effects of chronic inflammation start showing up early in the morning as the person feels groggy or light headed after waking up. These symptoms are not enough for a doctor to diagnose inflammation though.

A doctor may think of these symptoms as precursors of depression or just mental tiredness. It would take a lot of research and testing to get to the conclusion that these symptoms are due to the presence of chronic inflammation.

- Early symptoms of chronic inflammation are not severe
- Symptoms include feeling groggy or light headed after waking up
- People with heart disease who feel depressed may have inflammation
- Inflammation is also a factor in obesity

Diagnosis of Chronic Inflammatory Disease

Inflammatory Bowel Disease is associated with chronic inflammation and there is practically no way to detect it. Since it is not detected, it cannot be diagnosed, and it cannot be further treated. Right now, there is no test for diagnosing Inflammatory Bowel Disease, so the only way to diagnose it is to rule out all the other possibilities. By the time all the other possibilities are ruled out, the inflammation in the body has increased and the inflammation has gone to more harmful stages.

Headache is also a symptom of inflammation, but there are so many causes of headaches that a doctor would not even go to a condition as serious as chronic inflammation. Often, even the patient tends to ignore the headaches and just takes a pain killer like Aspirin or Tylenol for the problem. The threatening part is that this seemingly mild symptom, the headache, can lead to greater health risks and even death.

Times Magazine called chronic inflammation a “silent killer” because it is so hard to diagnose due to its not-so-apparent symptoms. There are so many choices that people make in their daily lives that can encourage inflammation to grow.

These choices include working in stressful conditions, drinking too much alcohol, and eating high-carb and sugary diets. All these choices are very common and they are something that patients to pay attention to. Even when patients do feel signs of inflammation, they tend to ignore them because they are not severe.

A high blood sugar level is another symptom of chronic inflammation. However, it cannot be used to diagnose chronic inflammation. Increased blood sugar results from the increment of sugar containing foods in the blood. Whenever someone eats something, the carbohydrates in the food are broken down into glucose.

This glucose level stays concentrated in the blood until it is acted upon by insulin, which is a hormone produced by some of the cells in the pancreas. When the amount of insulin in the blood is low, the blood sugar levels are high.

Many doctors who find high levels of glucose in the blood would likely relate it to a decreased level of insulin and the condition called diabetes. They would not associate high levels of blood sugar with inflammation. As such, to diagnose inflammation, doctors would first rule out any other disease that involves increased levels of glucose.

Therefore, it becomes quite hard to diagnose chronic inflammation due to the lack of any clear symptoms and effective testing methods. Because of this, undiagnosed inflammation can lead to other medical problems like asthma, cancer, diabetes, and more.

- Inflammatory bowel Disease involves inflammation, but there is no test for it
- Inflammation can cause headaches
- Inflammation and high levels of blood sugar can exist at the same time
- Be careful about what foods you choose to eat and don’t put excess sugar and carbohydrates in your body
- Inflammation is usually diagnosed after all other potential causes have been ruled out

Summary

The diagnosis of inflammation is only made once the inflammation has progressed to high levels and is part of more harmful diseases. Before that, diagnosing inflammation is not an easy task. By the time the doctors are done with checking for all other possible causes of the symptoms, the inflammation has worsened, bringing the body to the verge of greater harm.

It is only after more research has been done on the subject that doctors will be able to diagnose inflammation and analyse the wellness of an individual.

Chapter 6

Why Hidden Inflammation Can be Deadly

While inflammation does occur as the body's reaction to an infection or injury, most of these infections are neither treated nor cured due to people constantly eating unhealthy foods and not getting enough physical activity.

In these cases, the inflammation becomes chronic and can prove to be deadly for the individual. According to the World Health Organization, this time period is the first and only period in history in which the number of deaths caused by chronic diseases is higher than any other cause of death.

Hidden Inflammation can be very serious for the body as it contributes to diseases like diabetes, cancer, autoimmune diseases and heart diseases. Once an inflammation becomes chronic, it starts hurting the body instead of protecting it from wounds and infections.

With more attention being given to this topic, the amount of research on the issue has increased significantly. Researchers are conducting studies every second month to expose more deadly effects of hidden inflammation.

As Dr. Paul Ridker, who is serving as a cardiologist at Brigham Hospital and is also a researcher in the field said, "Now the whole field of inflammation research is about to explode". There are many diseases that are caused as a result of hidden inflammation.

- This is the first time in history when more people die of disease than other causes like malnutrition or war
- There is more research into inflammation than ever before

Heart Diseases

The coronary arteries are responsible for the blood flow in the body. They act like little streets that blood can flow through. Many heart doctors believe that heat attacks are caused by the buildup of fat deposits on the walls of these arteries. As the fat keeps building up, it leads to the blockage of the important arteries.

Cholesterol was also thought to play a major role in this happening since the fat is rich in cholesterol. However, almost half the number of heart attacks are in no way related to high levels of cholesterol in the blood. Also, medication that is used to prevent heart attack does nothing to change the amount of cholesterol in the body. One of the best examples of this is Aspirin, which many people over age 50 take at bedtime to prevent heart attacks and

strokes.So the question is, if a high level of cholesterol is not the cause of heart attacks, what is? There must be another factor.

The first connection between inflammation and heart disease was found in 1848. Rudolf Richow, a European doctor, claimed that there was surely a relationship between inflammation and heart disease. He based his statement on the observation of the cardiac tissue of those people who had lost their lives as a result of any kind of heart disease.

Back at that time, there were not many advancements in technology and medicine so it was not possible to measure the effects of inflammation on the body. On the other hand, even at that time, there was a concept of cholesterol and how to measure it. So the connection between cholesterol and heart disease was easily established.

Later, in 1970s, the issue of a connection between inflammation and heart disease resurfaced. Russell Ross, a faculty member at the University of Washington, brought up the subject again and tried to prove this relationship. However, there were still no methods of detecting the effects of inflammation on heart disease. As a result, the possibility of high cholesterol levels leading to heart problems was still widely accepted. Even the pharmaceutical industry focused all their attention on treating heart problems with medicines meant to lower levels of cholesterol in the blood

- Doctors have been interested in the link between heart problems and inflammation since the 1800s
- We still do not have the technology needed to measure inflammation in the cardiac system.

Diabetes

More recent research has tried to show how levels of insulin, inflammation and body fat form an interconnected web that leads to Type 2 diabetes. Cytokines are a kind of protein that are associated with inflammation and are involved in of inflammation. It has been found that triglycerides or certain kinds of fatty acids also have immune properties. Cells with immune properties help inflammation by releasing cytokines

Thus, there is a direct relationship between a high concentration of cytokines and fatty acids in the body. Cytokines and the body's reaction to insulin are related. As the body makes more cytokines, the body cells also have a lower reatction to insulin. As the effect of insulin is decreased, the body tries to produce more insulin to work properly.. What makes this harmful is the fact that increased levels of insulin bring about the production and release of more cytokines in the body. It's a cycle that just goes on and on, and eventually the cells in the pancreas that make insulin get exhausted.

The Joselin Diabetes Centre in Boston conducted a study on the relationship between cytokines and insulin.. Steve Shoelson was one of the senior investigators in the study, and his

experiments involved tests on mice. The changes made in the genetic makeup of the mice meant that their cells experienced a rapid increase in inflammation.

As a result, the researchers observed that the mice were unable to use their body's insulin efficiently. Therefore, they got diabetes. Judging from that experiment, it can be said that inflammation has the same effect in a human body. Shoelson said that, "We can reproduce the whole syndrome just by inciting inflammation".

- Cytokines, insulin and inflammation are all involved in diabetes
- Researchers have found that they can create diabetes by creating inflammation.

Cancer

Doctors and researchers have also wondered about the possibility of a relationship between cancer and inflammation.

White blood cells are the body's defence agents against foreign particles. When the cells cause inflammation, they also create free radicals in the body. Chaos is created when the radical start harming the healthy body cells along with the effected cells.

Inflammation is thought to bring about the onset of cancer in many ways. Firstly, due to the attack of free radicals on the body's cells, there is a chance of genetic changes in the cells. When the whole internal makeup of the cell changes, it may start dividing into new cells at an alarming rate and possibly forming a tumour.

Also, inflammation also helps in the process of metastasis. Metastasis happens when cancerous cells spread from one part of the body to another. This happens when the cancerous tumour forms in one point and gradually starts spreading to other parts of the body.

Also, inflammation helps the cancerous tumours to stay protected, protecting the cancer cells instead of protecting the body. The inflammatory chemicals form a shield or barrier that hides the cancerous tumours from the macrophages or other defence agents of the body. In this way, even if the body tried to respond to the tumour, it could not get past the barrier created by the inflammatory chemicals In other words, the inflammation works against the body instead of helping it.

This theory is further proved by the studies that show that Aspirin helps to prevent the formation of cancerous tumours. This is because Aspirin is effective in stopping the effect of COX 2, which is an enzyme that helps to reduce inflammation and the amount of chemicals the inflammation produces in the body.

The first time there was a claim made about the relationship between inflammation and cancer was in 1860. Rudolf Richow was a notable pathologist at that time, and his research was the

basis that many of today's researchers have built on. Richow had a theory that the production of cancerous tumours mostly occurs at the areas in the body where there is inflammation.

Present researchers are trying to build upon his studies and find out if cancer cell changes work hand-in-hand with inflammation to create rapid cell division of the cancer cells.

- Since 1860, researchers have been investigating the link between cancer and inflammation
- Aspirin helps to prevent cancerous tumours

Decreased Bone Health

Hidden inflammation is also one of the leading causes of decreased bone health and excess tiredness in the body. The concept was made clearer by Dr. Crandall's account of his personal bone health and its relationship with inflammation. Dr. Crandall is serving as the chief of the Palm Beach Cardiovascular Clinic in the field of transplants.

Dr. Crandall himself went through heart problems and pain in his joints, which was due to inflammation in his body. Inflammation caused the coronary arteries to become inflamed. Two things happen as a result of this. Firstly, the arteries shrink in width and this narrowing can result in a heart attack. Secondly, the inflammation results in joint pains all over the body.

Coupled with the joint pains is excessive fatigue, aching in the body for no apparent reason, rashes and even headaches.

- Hidden inflammation can decrease the health of bones
- It can also lead of being very tired
- It can narrow the arteries, and cause a heart attack
- Keeping the inflammation in your body under control will help you to be healthier.

Lung Diseases

Research has shown that inflammation may also affect lung diseases like pulmonary fibrosis, chronic obstructive pulmonary disease (COPD) and asthma, which has become one of the leading causes of death in the world. The research conducted by Dr. Gailen Marshall at the University of Texas suggested that lung diseases could possibly be a result of inflammation.

The lungs have a structure called the interstitium, which is a web of blood vessels spread through the two lungs. The job of these blood vessels is to ensure gas is exchanged between the lungs and the blood. When there is inflammation, the blood vessels become narrowed.

A lower amount of gas being exchanged through constricted blood vessels is a complication that leads to many lung diseases. With the thickening of the interstitium, it is possible that the

blood flow will be obstructed. This means that there is no efficient gas exchange between the lungs and the blood vessels, resulting in diseases like asthma.

As research continues, the pharmaceutical industry is also studying the problem with regards to inflammation. A drug has been tested by Millennium Pharmaceuticals which is aimed at curing lung diseases and is even effective against lung cancer. The drug does this by reducing the inflammation in the body. Now that it has been approved by the Food and Drug Administration, the drug is soon to become available in the market and will be called Velcade.

- Inflammation in the lungs may stop gas being exchanged between the lungs and the blood
- This can cause health problems like asthma
- A new drug called Velcade has been approved to reduce inflammation

Summary

Knowing about the diseases caused by inflammation can be helpful for people who suffer from the effects of inflammation and it can be important for healthy people to understand too. Controlling inflammation is an easy way of preventing some of the diseases mentioned above by just being careful about inflammatory markers in the body. However, until further research is conducted in the field, it is hard to say whether inflammation is the sole cause of all these diseases or is just a contributing factor.

- Inflammation can affect the whole body
- It can affect many health conditions and diseases including arthritis, asthma, cancer, and heat attacks
- Be alert for the signs of excess inflammation in the body and see a doctor to check it out
- Aspirin and other drugs can help to control or eliminate inflammation.
- If you get hurt, wash the wound carefully and bandage it to keep it clean. If it is a big or deep wound you may need to use an antibiotic ointment or get professional help.

Chapter 7

How Inflammation Affects your Mind

You have already read that inflammation can create havoc on the body in earlier chapters. But its adverse effects do not stop there. In fact, inflammation is one of those silent killers that slowly creeps into all aspects of daily life and performance including affecting the mind.

Inflammation can cause the mind to suffer from damage. There are many problems related to the brain which are a direct result of inflammation in the body. For instance, a lot of research has proved that inflammation is one of the major triggers of anxiety, depression and even memory deprivation issues.

The primary reason why inflammation affects the mind is that it causes an imbalance in hormone production. When the hormones responsible for regulating mood, sleep, behaviors, and emotions go out of whack, the effect can instantly be felt in the brain. This results in various behaviors that are not normal for that person.

Inflammation also affects the neurotransmitters in the brain, which are responsible for sending messages from one part of the body or brain to another part of the body or the central nervous system. Therefore, any type inflammation that occurs in the brain cells can result in a greater chance of the person having a neurological disorder.

With inflammation at work in the body, the normal performance of the neurotransmitters or message conveyors is not as good as usual. This can lead to mental confusion and even severe conditions like Alzheimer's or multiple sclerosis. Individuals with high levels of inflammation may also suffer from the conditions mentioned below.

- Inflammation can affect the brain
- It causes neurotransmitters to not work as well as usual
- Inflammation can lead to an imbalance in hormone production
- Inflammation can lead to Alzheimer's Disease, multiple, sclerosis, and other serious conditions.

Depression

Occasionally, we all feel sad or down. After all, life has its highs and lows. However, when a person start to have a stronger feeling that being sad or down, there may be a good reason to be concerned.

A lot of people use the term "depression" for such symptoms. But when it is used clinically, the term depression is much more than simply feeling sad. In fact, depression is a condition that pretty much sucks the life out of people; it can make life absolutely overwhelming or

unbearable. Just trying to live a normal, everyday life becomes extremely difficult. Simply trying to get through the day seems like an endless challenge.

So let us be really clear about this: sadness is not always with the same as depression. Depression is much more severe and long lasting. For instance, there are a lot of people who may be sad but they are not actually depressed. People who are diagnosed with depression may feel empty, apathetic, bored, restless or even aggressive, but they may not feel down or sad.

As you may have guessed, this type of depression can be traced directly or indirectly to inflammation in the body. While some symptoms may be more noticeable, like mood swings or not sleeping well, other symptoms may not be easy to recognize. It may take the expertise of a professional to diagnose depression.

Depression happen due to the absence of serotonin, which is the “happy hormone” of the body. Inflammation prevents the release of serotonin, thus causing the person to feel depressed. At the same time, inflammation also causes levels of dopamine in the brain to rise.

This also causes an unstable level of dopamine in the blood, which increases the levels of depression in the individual. While typically small surges of dopamine are associated with a sensation of feeling happy, abnormally high concentrations can make people feel unhappy.

This increased level of inflammation in the body can cause a person to feel unhappy all the time. It can make them feel like there is no goodness or happiness around them as they lose the sense en of joy and wellness.

- Inflammation can affect the balance of serotonin and dopamine in the body
- Inflammation can make a person feel unhappy
- Just feeling sad is not the same as having depression
- Depression is more severe and can include anger and even aggressiveness
- Depression is a clinical diagnosis
- If you are unhappy, angry, and have trouble coping with everyday life for more than a short period of time, see your doctor for a proper diagnosis and treatment

Anxiety

Anxiety by itself is a rather overwhelming word. It can mean different thing to different people. It includes from stress, tension, anticipation, frustration, insecurity, fear and even indecision. In fact, anxiety is different for everyone, yet the common denominator is an uncomfortable feeling as if everything is about to go completely wrong.

This sensation of anxiety is something that is related quite closely to depression. Most of the time, depression is accompanied by anxiety, and this makes the situation even worse for suffering patients.

Throw inflammation into the mix, and it only aggravates the problem by inhibiting the release of serotonin in the body. Since serotonin is the hormone which gives a person the feelings of relaxation and wellness, not having enough serotonin creates the opposite effect, making the person feel anxious and depressed more often, or they may feel it more intensely..

To explain it a little further, there is a neurotransmitter in the body which is activated when a person feels excited. With increased inflammation in the body, this neurotransmitter (called glutamate) is also increased in the body. This causes the amount of anxiety in the individual to rise up since there are too many excitatory neurotransmitters in the brain.

Along with anxiety, inflammation has also been found to cause insomnia in individuals. Inflammation inhibits the production of melatonin, which is necessary for developing and continuing a sleeping pattern. When there is an absence of melatonin, a person suffering from inflammation has disturbed sleeping patterns with longer or shorter slumber times. This can further aggravate their anxiety.

So, in a nutshell, anxiety is caused by various factors and they all seem to have the common underlying issue of inflammation.

- Inflammation affects hormones and neurotransmitters in the body
- Imbalances can contribute to feelings of anxiety
- Inflammation also affects sleeping, leading to too much or too little sleep

Brain Fog

Brain fog is another condition which occurs as a result of inflammation. It is a condition in which the individual feels disoriented and can't focus their mind like they usually do. Along with that, the person's memory is also affected and the individual has trouble concentrating on tasks.

On a cellular level, brain fog is believed to be triggered by higher than normal levels of inflammation and some hormonal changes. When any of the hormone levels rise or fall drastically, everything in the body gets thrown off and the normal brain signals ares disrupted.

In other words, inflammation causes neurotransmitters in the brain to work slowly, so messages are not delivered efficiently from the brain to the body, or from one part of the body to another.

When neurotransmitters convey messages slowly, bodily functions don't work as efficiently either. Also, cells also get energy slower due to increased inflammation which causes lethargic reactions.

A person may feel tired and fatigued, and due to that the brain also feels foggy and groggy.

Inflammation may also permanently damage parts of the brain, which means that all the messages that are sent through those areas will give unclear signals to brain. This results in signs of uncertainty in the brain.

Over all, the individual experiences a lack of attention, inability to focus and concentrate, and finds it hard to establish a vivid image of memory related things in the brain.

- Inflammation affects the levels of hormones and neurotransmitters in the brain and body
- Signals being sent to and from the brain get disrupted, or move slowly
- Inflammation makes people feel tired, unable to focus or concentrate, and affects memory

Autism

It has been suggested in different research studies that there may be links between autism and inflammation.

But what is autism?

Autism is one word that applies to a broad range of conditions that include challenges with social skills, repetitive behaviors, speech, and nonverbal communication.

There are different kinds of cells in the brain, one of which is called microglia. These cells act like the defense mechanism of the brain by providing immune responses to harmful agents that can pose a threat to the brain.

In cases of healthy inflammation, the microglia helps the brain by having an immunising effect against foreign particles such as fungi, bacteria and viruses that may infect the healthy tissues of the brain cells.

However, if the level of inflammation increases too much, the microglia may also become overactivated. This causes damage to the healthy tissue of the brain. Plus, the affected microglia may also interfere with connections in the brain called synapses.

Some experts believe that when these synapses are disturbed, autism may occur. However, more research needs to be done on the subject. The very early stages of research do, however, establish some kind of association between autism and inflammation.

- Autism is a word that describes a range of problems with social skills, speech problems, nonverbal communication, and repetitive behaviors
- A kind of cell the brain, microglia, provides an immune response to harmful bacteria, fungi or viruses
- If the microglia is too active, it causes problems with the brain's synapses
- There is a connection between inflammation and autism, but researchers have more work to do to fully understand it

Alzheimer's Disease

Alzheimer's is the most common form of dementia and includes problems with a person's memory, thinking and behavior. Symptoms develop slowly and become worse over time. In the advanced stages, the condition degenerates so severely that it interferes with daily tasks and the person's ability to safely take care of themself.

Alzheimer's is not a normal part of aging but is considered to be another brain disorder that is caused by inflammation. Research has shown that inflammation in the brain can trigger Alzheimer's and it can also speed up the development of the symptoms.

Again, we need to mention the microglia in the brain. The microglia are important for providing immune responses to threats like bacteria, viruses and fungi in the brain and keep it protected. They are also the second most common cells in the brain and act on behalf of the immune system for the central nervous system. They constantly search for signs of inflammation or infection by toxins..

As they go about clearing damaging sources from the brain, they also release pro inflammatory molecules called cytokines that activate other microglia.

Typically, this response is short lived and the microglia go back to their resting state. However, in Alzheimer's disease they remain activated and start to produce specific proteins that bring about more noticeable effects of Alzheimer's disease.

- In Alzheimer's Disease, the microglia go beyond protecting the brain and over react, causing damage instead
- The microglia release pro inflammatory molecules
- Alzheimer's is not a normal part of aging but a disease caused by inflammation in the brain

Parkinson's disease

Parkinson's disease impacts the nerve cells that produce dopamine in the brain. The condition reduces a person's ability to coordinate their movements and includes symptoms like tremors, stiff muscles, and changes in speech and gait. The brain also is less able to manage secondary symptoms including anxiety, depression and dementia.

The problem may start at a very early stage with a person having difficulty coordinating the movement of their fingers or toes. Later on, the problems start to get worse and a time comes when the person cannot even walk on their own.

There are cells in the body called dopaminergic neurons. These cells make dopamine, which is a necessary hormone for the brain.

This hormone helps in the production of brain coordinating functions. When the amount of inflammation in the brain is too high, the dopaminergic cells or neurons enter pathways that lead to the destruction of brain cells. This is one of the processes leading up to Parkinson's disease in the individual.

As long as the disease continues, the individual also has increased levels of inflammation, and this makes the problem even worse.

- Parkinson's disease affects a person's ability to coordinate their body movements
- It includes stiff muscles, changes in how a person walks or talks, and tremors
- Inflammation leads to the destructions of some brain cells
- If you experience any of the signs of Parkinson's disease, see your doctor for a diagnosis and carefully follow whatever treatment is recommended

ADD

Attention Deficit Disorder or ADD is another major illness that is closely associated with inflammatory responses in the body. ADD is an altered form of ADHD or Attention Deficit Hyperactive Disorder, in which the person's inability to concentrate and stay focused is a basis for diagnosis.

This means that a person suffering from ADD gets distracted easily. However, people with ADD do not necessarily show any signs of impulsive behaviour or hyperactivity.

Inflammation may trigger different responses in people with ADD, with one reaction to inflammation causing pain, or other reactions being so mild to be noticed that the cells don't even respond. However, the inflammation is still there.

Once again, the inflammation results in higher than normal levels of dopamine. While dopamine is necessary for the coordination of activities in the brain, too much dopamine disturbs the brain functions.

Research has shown that medications that stimulate dopamine levels in the brain are also effective in reducing the possibility of occurrence of disorders like ADD.

- Inflammation can cause levels of dopamine in the brain to get too high
- When there is too much dopamine the brain doesn't function as well as it should
- People with ADD are easily distracted and find it hard to concentrate or stay focused.
- There are treatments for ADD. See your doctor for help.

Aggressive Behaviour

Aggressive behaviour is also linked to inflammation as shown by different studies. Most indicate that people with aggressive behaviours have two inflammation markers in their blood, namely C reactive protein and interleukin.

These two markers are believed to be related to aggression and impulsiveness, but not with other psychiatric problems. Right now, we do not know if inflammation prompts aggression or if aggressive feelings trigger inflammation. But there is enough evidence to indicate that both are biologically connected, and a damaging combination.

Inflammation can cause a serious disease called Intermittent Explosive Disorder. This disorder is typically associated with social abuse and anger tantrums that occur frequently. Inflammation disturbs the hormone levels in the blood and also destroys the regulation of brain function, which causes this problem.

Summary

Since inflammation in the brain does not present symptoms we can see, unless it is a severe condition like the ones mentioned above, it becomes difficult to realize that inflammation is at work. The best recommendation is to maintain overall health by eating right, exercising regularly, sleeping well and to avoid triggers like smoking and alcohol which can bring about inflammatory responses.

- Inflammation affects many conditions in the brain, but because we cannot see the inflammation in the brain it is hard to realize its effect
- Inflammation affects hormones and neurotransmitters, and these affect how our bodies work
- Inflammation even affects our ability to focus, pay attention, and our emotions, such as anger
- We can reduce the chance of having unhealthy levels of Inflammation in our bodies by eating healthy foods, avoiding sugar and too much carbohydrate, and alcohol
- For better health, move your body! Walk, swim, go for a bike ride.

Chapter 8

Your Weight Problems May Not Be Your Fault

While chronic diseases are one thing, weight problems are another. So much so, that the topic deserves an entire chapter to itself.

As you have already seen, chronic inflammation can be traced to many of today's health hazards, and the same is true for weight management issues.

People often feel that they have to blame themselves for sudden weight gain or obesity. Sometimes, it is right to do so since a person's lifestyle and diet plays a major role affecting obesity or weight problems. However, this is not always the case. There can be other factors which remain hidden but play a major role in excess weight problems.

Let's retrace our steps back to inflammation once more. Inflammation, when it gets out of hand, can be quite troublesome for the body in terms of gaining weight and obesity. Chronic inflammation is often the underlying reason for weight problems.

There are more than one way that inflammation can cause weight problems in a person.

Internal factors for inflammation

Hormonal imbalances in the body

Various research indicates that inflammation is linked to weight gain in a few different ways. The majority of these studies suggest that there are fewer excess weight problems in people who have more anti-inflammatory properties in their bodies.

In other words, inflammation has a direct link to fat cells. Fat cells can even result from inflammation, and that creates a vicious cycle. In fact, the body's production of triglycerides is related to inflammation since these cells cause inflammatory responses when they discover any infection, virus bacteria, fungi or disease.

What triggers this vicious cycle is inflammation's effect on the hormones that store fat in the body. If the hormonal balance of the body is disturbed, there are bound to be some side effects and harmful conditions in the body.

Chronic Inflammation affects three main hormones in the body. These hormones are responsible for some of the most important nutritional and metabolic processes.

1. *Insulin:* Insulin helps to regulate the amount of sugar in the blood. It is the hormone which is produced by the pancreas when the blood sugar levels spike up. When blood

sugar levels increase, the pancreatic cells release insulin. Insulin controls the conversion of glucose to glycogen, which is then stored in the body.

When inflammation in the body is too high, it makes the body resist the effect of insulin. As insulin is less effective, it causes the onset of excessive thirst and appetite and the gains extra weight.

2. *Leptin:* Leptin is another hormone which plays a major role in helping us to feel full. When there is more inflammation in the body, the person is more likely to develop resistance to Leptin.

   Due to this resistance, the appetite become stronger, and as the person eats more they gain weight, sometimes an unhealthy amount of extra weight.

   Leptin's primary job is to control an individual's appetite by regulating the metabolic process. But with more inflammation in the body comes a greater number of fat cells.More fat cells ultimately leads to more leptin.

   Now, that may seem like a good thing, but chronic inflammation has a negative effect on the brain. It impairs the ability of the human brain to respond to signals sent by the leptin hormone. This means the brain does not respond to the leptin, which is essential for suppressing appetite. Since the hormone stops working efficiently, the person feels hungry and eats too much, which increases their weight. When a person weighs too much it causes problems in the body.

3. *Cortisol:* Cortisol is another hormone that is affected by inflammation. It is produced by the adrenal glands and its job is to help manages stress. cortisol is called the stress hormone of the body. When it is released in small amounts this hormone helps the body, since it counters stress. When there is too much inflammation, the amount of cortisol exceeds the what the body needs, which causes weight problems such as obesity.

Effect of Prostaglandins on Obesity

Inflammation also cause the body to make prostaglandins. These compounds are good for the body since they are present in all cells and tissues. Prostaglandins are fat molecules that have the same effect as some hormones and play the same role in the body.

Exploring the effects of prostaglandins on weight gain shows that they increase the production of fat cells in the body, and they also slow down or even stop the breakdown of fats in the body.

One kind of prostaglandin even stimulates the production of excess fat and then stores it in the liver. This results in the formation of liver fat. Since inflammation also affects the tissues that store fat in the body, or adipose tissue, it gets hard for the body to store excess fat there. So it has to find somewhere else.

As a result, the excess triglycerides are then stored around the organs of the body. You have probably seen the effect of this on someone's stomach and waist area.

Excess of Glutamate and Weight Problems

Glutamate is another compound in the body which acts as a neurotransmitter. It promotes normal brain function, memory, learning and normal brain development.

However, people who suffer from chronic inflammation have too much glutamate in their body. Elevated levels of glutamate in the brain are as a cause of cell injury and death. Glutamate also affects appetite regulation because this neurotransmitter has an excitatory effect. In other words, it makes a person feels hungry—hungrier than they used to be.

Used as a common additive and flavor enhancer in Asian foods, , dietary glutamate is better known as monosodium glutamate or MSG. Since it increases appetite, it makes people eat more.

It is believed that people who eat a lot of glutamate may be consuming too much food, and eating too fast to allow their brains time to process the information that they are full. It becomes hard for people to stop eating even when they are not hungry, and even when they are full.

It's easy to see that too much glutamate can cause weight problems in the people who are already suffering from inflammation.

- Some hormones affect weight gain, including insulin, leptin and cortisol
- Inflammation affects the amount of these hormones in the body
- If the brain doesn't get the signal that the person is not hungry any more, the person keeps eating, eats too much, and can gain an unhealthy amount of weight
- If the brain doesn't get the signal that the person is full, the person will keep eating.
- Things that are added to foods can cause weight gain, like MSG
- Chronic inflammation can cause weight gain

External factors for inflammation

While hormone imbalances can create havoc inside the body, other factors that are outside the body can create havoc too. These substances affect the body when a person breathes them in or ingests in some way, such as absorbing them through the skin, eating or drinking them. When one of these substances is inside the body, it can cause an inflammatory response. if there is already some inflammation In the body, this will create more.

Inflammatory Foods and Other Factors

There are a lot of factors that can bring about chronic inflammation and then subsequently cause weight problems in the body. One of these reasons may be the presence of bacteria in food or water that a person eats or drinks.

Another problem is the increased use of pesticides in crops and other chemicals like dioxin buildup on grains such as wheat or corn. Plus, when allergens such as dust and pollen get mixed into foods the problem gets even bigger. Together, all these factors can not only cause havoc on the digestive system but also make weight gain a long-term issue.

Also, it is worth noting that certain foods have inflammatory properties of their own- meaning they cause inflammatory responses in the body if you eat enough of them. these include well-known offenders like high amounts of sugar, grains, beans, and high fat foods, genetically modified foods, and processed foods. Foods that contain additives or preservatives can also cause problems. Physical conditions like not getting enough sleep, or experiencing hormone fluctuations in the body can also add to the mix and become a cause of chronic inflammation.

Chronic Inflammation and Emotional Eating

Chronic inflammation also causes weight problems through emotional eating. Inflammation is largely responsible for anxiety and depression.. Increased levels of dopamine don't allow the body to work properly. Along with that, inflammation also causes less serotonin to be released in the body. Since serotonin is the happy hormone of the body, having less of it causes stress.

When people feel stressed, they tend to eat more than they usually do. Sometimes, people eat a lot. Due to their increased stress, many people feel the urge to eat sugar and high carbohydrate foods like cookies, cake, pasta, baked beans with lots of sugar or maple syrup, sandwiches, or cereal. This increases the amount of inflammation in their bodies. And you know what happens next. The inflammation can indirectly lead to weight gain problems through the fluctuation of hormone levels in the body.

Inflammation and Insomnia

Increased inflammation in the body can lead to insomnia. And when a person doesn't get enough sleep, it makes it harder for the body to fight excess inflammation.

Various studies exploring sleep patterns indicate that people who suffer from insomnia and have a sleep timing of less than 8 hours are more likely to face weight problems. Thus, inflammation also causes weight gain or obesity by reducing the amount of sleep the body gets.

Effect on Adipose Tissue

Adipose tissue is one of the types of connective tissues present in human body. These tissues store excess fat. When you have high levels of inflammation, the adipose tissues cannot store all the fat properly.

Due to this, the fat gets stored in the liver, around other organs, and also in other parts of the body. By reducing the ability of the adipose tissue to work properly, inflammation can cause weight gain issues.

Summary

Keeping all this information in mind, it becomes evident that inflammation does have an effect on weight problems along with impacting other parts and organs of the body. So, before blaming lifestyle or diet alone, it is important to assess if inflammation may be at work silently and have a hand in weight gain problems or obesity.

Consider getting rid of inflammatory foods from the diet and maintaining hormonal balance in the body to prevent weight problems that may possibly result from inflammation.

- Inflammation stops various parts of the body from working properly
- When the body doesn't work properly, fat gets stored around the organs and in the liver, leading to big bellies
- Often, people eat when they are upset or unhappy. This emotional eating usually leads to eating sugary and high carbohydrate foods that make inflammation even worse.
- Choose organic foods if you can, or wash, peel and prepare food properly to avoid chemicals and additives that could lead to weight gain.

Chapter 9

Inflammation and Premature Aging

Aging is a natural process that everyone has to go through. The process is fine as long as it starts occurring at the right time. However, if the process of aging begins too soon, it is called premature aging.

Premature aging can be caused by an unhealthy lifestyle, a chronic disease or even a genetic disorder. The cause of premature aging cannot be determined instantly but there are a few things that may lead to it.

For instance, there are stress related factors that can lead topremature aging. Unfortunately, chronic inflammation is at the top of the list.

Inflammation and Aging

In fact, the Yale School of Medicine identifies inflammation as the common factor in various age related diseases including arthritis and Alzheimer's.(11)

Unfortunately, it is very hard to detect the presence of silent inflammation in the body. If there are no specific symptoms chronic inflammation can exist for a long time before we can see signs of premature aging.

The same study establishes Nlrp3, a gene involved in the immune system, as a "specific sensor that activates inflammation with age." It goes on to state that as a person ages ,the immune system start producing small levels of inflammation in the body. However, Nlrp3 does more than just trigger tenderness and swelling. Its mere presence is bad for the body, even when it is not causing a disease. Instead, it can lower bone density, impair cognitive function and promote insulin resistance.

So far, the effects of inflammation mentioned here talk about signs of premature aging that cannot be seen and can only be felt. For instance, creaky bones, muscle pain, digestive issues, and so on. But inflammation can also bring about signs of aging on the outside of the body as well. At least we can see those ones!

Next, we will discuss how inflammation can bring about both visible and invisible signs of premature aging.

Autoimmune Diseases and Premature Aging

Autoimmune diseases tend to cause premature aging and, you guessed it, they occur as a result of inflammation in the body. There are up to 80 such disorders.

As you have already read in this book, autoimmune diseases are associated with chronic inflammation. This relationship can also cause premature aging since both these factors weaken various systems of the body.

As an example, rheumatoid arthritis is a kind of arthritis that causes the body to become weak. It is a gradual process that accompanies aging and results in inflammation that damages cartilage, loosens joints and may even lead to joint deformity.

These diseases may also have episodic flare-ups when the condition worsens, and there may not be any more times when symptoms get better or disappear altogether.

Another example of an autoimmune disorder caused by chronic inflammation includes lupus. Lupus causes premature aging by weakening the organs and reducing the basic physical and metabolic processes in the body.

Lupus causes the the joints and internal organs of the body to stop working properly and break down, which causes aging for the person. The symptoms of lupus include the appearance of a rash on the face, and muscle pain just like that of arthritis. Along with that, the sufferer may also lose their hair and develop a sensitivity to strong light. All these are symptoms of premature aging.

Inflammation also causes conditions like inflammatory bowel disease. This can harm the body since it reduces the bones' ability to absorb calcium and vitamin D. That leads to bones that are not strong. You might know someone who fell and broke their hip. That happens in older people who do not have strong bones. Also, these things can lead to osteoporosis, which is another disease that is associated with premature aging.

There are many examples are many but this book has only so many chapters. So let's look at how autoimmune diseases tie in with premature aging.

On a molecular level, immune cells become slow to react when attacked by foreign agents. Known as immunosenescence, the process is cause by genetic factors and environmental factors.. In other words, the immune system starts to age and doesn't work as well as it used to.

As immunosenescence sets it, there is more inflammation in the body.. This phenomenon even has a name. It's called inflammaging.(12)

The molecular damage triggered by ongoing inflammation is invisible in the early stage. The person just doesn't know the inflammation and the damage is happening. Instead, it continues over the years and finally the person becomes aware of some symptoms. In normal aging, it happens later on in life. In premature aging, the symptoms happen when a person is younger.

How well the immune system works and the level of inflammation in the body are tightly connected. Autoimmune disorders not only get worse due to inflammation, they also increase the inflammation. It's a vicious cycle.

Toxic Substances and Premature Aging

Some substances are toxic to the body. They cause damage to organs, or upset the way the body works. Toxic substances can have a mild effect on the body, or they can cause death.

How do toxins get in the body? If you have an injury, you could absorb dangerous bacteria through the damage to your skin. If there is mold in a house people can breathe in the mold, causing all kinds of health problems. Drinking or eating foods that have not been washed or prepared well can bring fungi, bacteria, viruses and chemicals into the body. There are toxins in food, animals, bacteria and even the air we breathe, especially in industrial or polluted areas. And what do toxins lead to? Inflammation, and even chronic inflammation.

Factors like genetics, the environment and the body's ability to handle them determines how fast or slowly a person ages. Add toxins into the mix and suddenly the aging process accelerates. We often think of diseases like rheumatoid arthritis as age-related, but they can be diagnosed in children as young as two years old.

Gases

One of the most toxic substances in the air in the atmosphere is carbon monoxide. Carbon monoxide is produced when cars burn gas and diesel fuel, by furnaces, fireplaces, andas a result of air and land pollution. Symptoms of carbon monoxide poisoning include headache, nausea, vomiting, dizziness, and more.

Another toxin is nitrogen dioxide. There are no early warning signs of exposure. Instead, this gas is more likely to be inhaled deeply into the lungs where it can trigger inflammation of the air passages or cause fluid accumulation in the lungs.

Breathing some gases may also cause allergic reactions that lead to inflammation and affect systems in the body such as respiration and digestion.

Outdoor and indoor air pollutants

Air pollution, whether it occurs outside or inside the home, is a main cause of respiratory inflammation. When people breathe in dirty air, pollutants can cause serious damage to the lungs and the whole respiratory tract.

You have probably heard of asthma. Asthma is a chronic disease of the lungs and includes inflammation and narrowing of the airways. If asthma is not treated, it can kill the person. People who suffer from asthma can avoid smoke, such as fireplaces, getting too close to a barbecue, avoiding people who smoke, and avoid breathing polluted air. Some people wear a small mask over their nose and mouth to trap dirt, pollen and some chemicals. Also, little devices called inhalers can deliver medicine quickly to the lungs to help a person breathe if they have an asthma attack,

Air pollution can also be a factor in) some kinds of cancers and cardiovascular conditions.(13)

COPD, chronic obstructive lung disease, is another inflammatory condition. The airways are narrowed, making it harder to breathe, and is often caused by pollutants that cause inflammation. COPD cannot be cured.

Air pollution can also cause chronic inflammation of the blood vessels, leading to clogged arteries and a higher risk of cardiovascular problems.(14) Fine particles in the air are breathed in, and have been linked to heart diseases and elevated markers of inflammation in the blood.

Synthetic chemicals

There are many synthetic chemicals hiding in everyday products used for cleaning the house and in personal care products. While the primary purpose of these products is to ‘clean’, ‘sanitize’, ‘disinfect’ etc., they are often loaded with toxins. Chlorine bleach is a toxin, but many people have it in their homes.

Regular exposure to toxins has been linked with chronic diseases and to low grade inflammation. Commonly synthetic chemicals include phthalates, PERCs, parabens, sulfates and QUATs, to name a few. Plus, synthetic fragrances (such as most perfumes, colognes and air fresheners) are found in many products. They are designed to make the product smell good and mask other potentially hazardous ingredients. If you read the ingredients on labels, you may find them in shampoos, soaps, makeup, laundry detergents, dishwashing liquid, toilet paper, and more.

Most of the chemicals are inhaled or absorbed through the skin. This can lead to a wide range of health problems including chronic breathing disorders, hormone problems, allergies, disruption and neurotoxicity.

All these complications are linked to premature aging.

To avoid premature aging, protect yourself from pollution, and read the ingredients listed on labels before buying products. Vinegar and safe water is a good natural cleaner for household use. Also, you can look up many products on the Environmental Working Group website (ewg.org) and see how safe they are.

Heavy metals in drinking water

Heavy metals in drinking water also pose a serious threat to human health. Mercury and lead can trigger autoimmunity, which can lead to a variety of health problems including chronic inflammation.

Heavy metals get into the drinking water supply through industrial and consumer waste, and sometimes water naturally contains arsenic or other toxins. If you keep drinking or bathing in water that contains heavy metals it can cause low grade inflammation in the body. When you keep drinking the water, it becomes chronic inflammation. This damages health and speeds up the aging process.

The biggest of these health threats include damage to cognitive function or the ability to think, damage to the organs and damage to the blood..

Naturally occurring food toxins

Some things that people choose to eat do contain toxins. The toxins may comes from processing the food, such as canned foods. Or chemicals may be added to the food to preserve it.

Chemicals are used inalmost every step of the process that makes food available for us to eat. This includes spraying chemicals on food to keep bugs away, processing the food, and packaging the food.

The result is people end up eating things like pesticides, preservatives, sodium nitrate and sodium nitrite, phthalates, and mercury.

Many of these chemicals cause or encourage inflammatory in the body.

Plus, after such heavy-duty processing, the food loses a lot of its nutrients. Vitamins, minerals and more can be damaged by high heat or other processing. Companies add additives and flavorings to try to put back the nutrition that was lost, but it can still add in to the risk of developing inflammation and other health problems.

Toxic substances can cause chronic inflammation that can lead to of premature aging. IF the toxic substances are carcinogenic, they canalso cause cancer.

Carbohydrates and Premature Aging

Carbohydrates also play a major role in causing premature aging by causing chronic inflammation. When a person keeps eating a diet that has too many carbohydrates, it is more likely to cause inflammation than eating a good diet.

The fact that sugar is collagen's natural enemy is well established. The science behind this states that sugar molecules bind themselves to collagen fibers and cause them to lose their strength and flexibility. This is known as glycation.

As a result, the skin loses its elasticity. It becomes more sensitive to sun damage, and starts to show fine lines and sagging.

This does not just happen to the skin. In fact, most diseases that include inflammation are affected by glycation. (15)

As you read earlier in this book, chronic Inflammation also causes obesity. Obesity is another factor related to premature aging. Since it also has an effect on the insulin regulation in the body, eating too many carbohydrates results in premature aging in more than just one way.

Frailty and Premature Aging

Frailty is not a disease itself but it is caused as a result of many other diseases. Frailty is associated with weakened immune systems and the decline of the physical and metabolic processes in the body. Due to these diseases, the organs in the body do not work as well as they used to. In time, they will even shut down. Sometimes a person may be able to get an organ transplant, or they may die.

Chronic inflammation in the body results in the person becoming frail.. The muscle functioning is also lessened, the person is more likely to fall ill, their bones may break more easily, and eventually the person's body is not able to function.

Chronic inflammation shows up as higher levels of markers like C-reactive proteins and interleukin 6. These high levels also predict the onset of disability and the person may be less able to cope with pain. Other factors, including sudden weight loss for no apparent reason, can lead to frailty. All these factors further form the basis of premature aging in an individual.

What makes the whole dilemma worse is that there is no currently available cure for aging so there is no way for an individual to fight premature aging.

- Everyone ages—or they die—but premature aging happens when the body breaks down too soon
- Many things can cause premature aging, including genetic disorders, chronic inflammation, toxins, poor diet and pollution
- Use a face mask over your eyes and mouth to protect yourself from air pollution
- Read labels, and avoid buying products that contain toxins.

- Be careful how you use products! Don't splash chlorine bleach on your bare skin. Use gloves, or use a safe, natural product.

Aging of the Endocrine System

Premature aging is not only a result of inflammation. Premature aging may also cause inflammation to occur. This happens due to the weakening and lessened functioning of the endocrine system. The endocrine system produces and releases hormones in the body.

Over time, the growth hormones are no longer released into the body. This reduced causes inflammatory responses. It also leads to a decreased effect of the cytokines produced as a result of inflammation. Thus, less growth hormone in the body means there is a greater impact from cytokines in the body.

Also, with age, the production of cortisol increases in the body. This is the stress hormone and it is produced by the adrenal glands. When there is more cortisol in the body, there is a greater chance of inflammation.

Cortisol causes stress in the body, and stress can cause chronic inflammation. Remember? The body's primary response to stress is inflammation in the area. So it's a never-ending circle. Cortisol causes stress, stress causes inflammation, and inflammation—well, inflammation causes a lot of problems in the body.

We haven't talked about the production of sex hormones in the body. The sex hormones help to keep the levels of inflammation down by reducing the levels of cytokines that cause inflammation. Over time, the amount of sex hormones like estrogen, testosterone and androgen decrease in the body. Since there are less sex hormones in the body during old age, the likelihood of chronic inflammation increases.

Aging of the Immune System

Another cause of inflammation during old age is due to the aging of the immune system. Over time, there is a decrease in the size of thymus gland. This gland is helpful in the immune processes in the body. It helps to make white blood cells that fight against foreign particles such as bacteria, fungi and viruses that may harm the body.

Since the size of thymus gland is small, there are fewer white blood cells with defence mechanisms in the body. This makes the immune system weak, which makes it harder for the body to fight off diseases, infections, and otherinvaders. As a result, pro inflammatory cells are activated in the body increasing the inflammation in the body. This inflammation is the precursor to a poor defence system in the body, which further leads to premature aging and many age related diseases and disorders.

Effects of inflammation on the skin

On the outside, the skin is the body's first line of defense against frequent assaults. It can easily get burned by the sun, nicked by a paper cut, break out in blisters or suffer from internal inflammation. In fact, any of these things can lead to the skin becoming red, swollen, painful and inflamed.

Internally, any distressing symptom that affects the skin is instantly noticeable. Be it eczema, acne, psoriasis, or rosacea, which, by the way are all inflammatory conditions, the redness, blotchiness and flakiness cannot be ignored.

The skin suffers when inflammatory responses such as vasoconstriction, dilation, hormonal imbalances and swelling take a toll on the skin's appearance. Internal anti-inflammatory activity can show immediate symptoms like flare-ups, breakouts and long-term symptoms like fine lines, wrinkles and sagging skin.

Plus, inflammatory responses that elevate cortisol levels can also slow down wound healing, so it takes longer for the skin to recover from collagen breakdown.

When collagen production is compromised in this or any other way, the skin loses its elasticity, suppleness and resilience. Instead, it starts to take on a dull, less vibrant look making it appear way beyond its actual age.

Common skin issues that are made worse by inflammation can make the skin look older. Inflammation can speed up the formation of fine lines, wrinkles, and enlarged pores. Also, people suffering from chronic inflammation may have puffiness, blotchiness, redness and sagging skin, no matter how careful they are with their skin care routine.

Next, we take a look at how inflammation can have an adverse effect on skin.

Fine lines and wrinkles

Fine lines are the natural first step to having wrinkles. However, fine lines and wrinkles will come sooner if a person suffers from long-term, silent inflammation.

The lines occur as a result of collagen and elastin breaking down due to external factors. This includes exposure to UV rays from the sun. Put a protective cream on your skin 30 minutes before sunbathing, and make sure the SPF number is high enough to protect you. Inflammation also has a similar effect on the inside of the body, where red, swollen skin loses its ability to retain moisture well and becomes more susceptible to developing wrinkles. Also, over time the body is less able to make new collagen and elastin.

Enlarged pores

Inflammation affects large pores on the skin and can even lead to thickening of the skin.(16) Thickened skin can, in turn, lead to larger pores. The large pores are easier to notice as smaller cells accumulate around the edge of the pores making them appear larger.

Most skin inflammation conditions like acne and rosacea also create enlarged pores. This can occur as a result of oxidised sebum. Sebum is the oily, waxy substance secreted by skin glands.

Normally, making sebum is a good thing. However, if there is an attack of inflammation, the body produces too much sebum. This leads to too much oil on the skin and causes the pores to get blocked.

This blockage can be seen as large pores filled with blackheads. The blackheads contain lots of sebum that has been oxidised, or exposed to oxygen. This causes the top of the sebum in the pores to turn black.

The oxidized sebum can lead to an increase in inflammatory chemicals. If someone is already suffering from chronic inflammation, the amount of inflammatory chemicals released will be greater than usual.

Sagging skin

Even though the most common cause of sagging skin is aging, it is not the only one. Other factors include the loss of the skin's supportive connective tissue, the collagen and elastin mentioned earlier.

Our skin gets exposed to the sun, and this can cause damage to the skin. Even losing a lot of weight in a short time can be a factor in skin damage, as the skin may not have enough time to adapt to the weight loss. Plus, the facial muscles get weaker with age and the pull of gravity cannot be denied, leading to fine lines, bags and wrinkles.

So when long standing inflammation starts to play its part and so many other factors are already at work, the skin loses its natural elasticity even faster.

Other considerations

The effects of inflammation on the skin do not work in isolation to make an individual appear to age faster. Instead, external factors like sun exposure, environmental pollutants and poor dietary choices can all gang up and trigger inflammation. The same can also happen when an individual uses abrasive or harsh products, washes their skin too much, or it comes in contact with allergens.

Together, these actions have a dehydrating effect on skin, causing it to flake easily and weakening the collagen.

While only so much can be done about long standing, low grade internal inflammation, there are some precautionary measures that people with inflammatory skin conditions can take. For instance, just as it is important to know what ingredients in skin care products can help calm inflammation, it is equally important to know which ones to avoid.

The general idea is to stay away from petroleum-based products, those that contain alcohol and others that have surplus amounts of essential oils. In lieu of these, it is recommended to use products that have a variety of both essential and non-essential amino acids, peptide blends and antioxidants.

Catching chronic inflammation in its earliest stages can greatly assist in achieving successful aging. Or, to say it another way, it can become easier to maintain a good quality of life as a

person ages. And instead of suffering from debilitating chronic conditions, individuals can enjoy better health in advanced age.

Summary

Inflammation that is undetected because it is low grade or too mild to be detected appears to be a primary culprit in the premature aging process. There is no denying that inflammation and premature aging are connected and that one has an effect on the other.

The amount of inflammation is directly related to the premature aging of the body. To prevent the onset of premature aging, it is important to control inflammation in the body internally and on the skin externally by not eating inflammatory foods, not using chemical laden products, and correcting hormone imbalances.

- Inflammation is part of all the age-related degenerative diseases
- There are things you can do to maintain better health as you age
- Avoid pollution in the air, food and water
- Use safe, natural products for cleaning and personal grooming
- Pay attention if your body doesn't seem to feel or work like it should. If it continues, see a doctor for diagnosis and treatment
- Make sure any hormone imbalances are corrected
- Use protective lotion on your skin when you are going to be out in the sun
- Make sure the SPF number is high enough for the amount of sun and the length of time you will be outside
- Avoid foods that cause inflammation, alcohol, and petroleum-based products

Chapter 10

Inflammation and hair loss

Not many people know this, but strangely enough, hair loss is also linked to inflammation in the body. To understand this better, let us quickly look at the basics first.

Sebum production

For starters, everyone has sebaceous glands in their skin which secrete an oily substance known as sebum. The function of sebum is to lubricate and waterproof the skin.

However, when there is inflammation in the body, sebum production increases. Not surprisingly, inflammation of the sebaceous glands results from an imbalance of hormones. Excess sebum clogs pores, oozes out and can cause inflammation on the scalp in people suffering from chronic inflammation.

Fungus and hair losss

Another factor that can contribute to inflammationrelated hair loss is fungus. as gruesome as it may sound, many people have a fungus on their scalps, and they don't know it. In fact, dandruff is a result of fungus on the scalp.

Autoimmune conditions

In autoimmune conditions, the body’s immune system thinks its own cells are invasive objects and tries to eliminate them. This, in turn, causes inflammation and the body reacts to a problem that doesn't exist.

In the case of hair loss, the immune system thinks that hair follicles are a threat and destroys them, causing alopecia. Plus, inflammation also disrupts the proper nourishment of hair follicles, impacting the scalp.

Scalp inflammation conditions

Cicatricial alopecia is an inflammation of the scalp in which the sebaceous glands and stem cells at the top section of the hair follicle are affected by inflammation. This condition damages the follicle and creates scar tissue. This type of damage is often irreversible in many cases, so the hair will not grow back even after the inflammation is treated.

Infectious folliculitis

This condition is caused by an infection of the scalp and there is itching or soreness in the area. In this case, the infection itself brings on the inflammation and can lead to hair loss.

Folliculitis can impact hair loss on the scalp and anywhere else hair is growing on the body. To identify folliculitis, look for small acne like spots around the hair follicles. A small ring of inflammation may also be seen around the opening of the hair follicle.

In the earliest stages of folliculitis, the hair fibers may still be present. But as the condition progresses, the hair starts to fall out. Severe forms of folliculitis can cause extreme inflammation, which may permanently damage hair follicles and leave bald spots on the scalp.

Most cases of folliculitis are triggered by bacterial infections.

In cases where the condition is non-infectious, it is caused by excess oil and sebum production. It is also possible to get folliculitis that is triggered by fungal, viral or yeast agents.

Discoid lupus erythematosus

This inflammatory condition is also referred to as DLE and typically appears on the face, ears and scalp of the affected person. It is distinguished by scarring or lesions of inflamed patches that have a scaling and crusty appearance.

When such lesions occur in hairy areas such as the scalp or beard, hair loss, hyperpigmentation and permanent scaring can occur.

As an autoimmune condition, to the causes of DLE include genetic predisposition, hormones, certain drugs, viral infections, and too much exposure to sunlight or ultraviolet sunlamps.

DLE can affect males and females of any age but is more common in females than males. The condition may also be localised or widespread across the body.

Lichen planopilaris

This is another inflammatory condition which causes patchy progressive permanent hair loss mainly on the scalp.

This condition typically affects young adult women but can also be found in men. It is smooth white patches of scalp with hair loss. When the condition occurs, you cannot see any hair follicle openings remaining in these areas of hair loss. Instead, the patchy areas are characterized by redness and scales around each hair follicle.

This makes hair strands weak and they can be easily pulled out. Several smaller patches may merge to form large, irregular areas with no hair.

Patches of lichen planopilaris can be seen on the sides, front and lower back of the scalp. Individuals suffering from this condition will often feel itching, pain, discomfort, tenderness and burning in the affected area.

The condition is slowly progressive and results in diffuse hair loss.

Alopecia areata

This autoimmune condition is caused by an inflammation around the hair follicle. In this condition, the immune systems mistakes hair roots for invading foreign agents. White blood cells collect around the roots, causing inflammation. The buildup of white blood cells and the inflammation cuts off the supply of nutrients to the hair follicles causing them to weaken and ultimately fall out.

In this condition, however, hair will grow back if the autoimmune activity is treated.

Alopecia androgen

This inflammatory condition is caused by hormonal changes in the body. The primary hormone involved in hair loss is DHT or dihydrotestosterone. When it is present, DHT interacts with hair follicle cell membrane receptors and interferes with the process of hair growth.

In the case of alopecia androgen, there is also too much sebum production, which leads to the hair thinning and falling out.

Other conditions

Even inflammatory skin conditions like psoriasis and eczema can hurt the scalp. Depending on how soon the person treats the problem, it is possible that the hair may grow back once the inflammation has been treated.

Psoriasis

Psoriasis is called scalp psoriasis when it appears on the head. It can leave reddish, scaly and raised patches on the scalp. It may appear as either a single patch or multiple patches, and sometimes the condition may cover the entire scalp. In some cases, the psoriasis may also spread to the forehead, back of the neck and even behind the ears. The autoimmune response causes the skin cells to grow too quickly and build up into patches.

Scalp psoriasis is believed to be an autoimmune condition. A person may be more likely to get scalp psoriasis if it runs in their family.

In mild cases, symptoms can include a little scaling, whereas moderate to severe cases may include red, bumpy, scaly patches, dandruff-like flaking, itching, burning and even hair loss.

The hair loss itself does not happen from scalp psoriasis but is often a result of the persistent scratching. People with scalp psoriasis are also likely to pick at the scaly spots, which weakens and breaks the hair. Plus, there is always the stress that comes with psoriasis and that may also bring about temporary hair loss.

Often, hair loss from scalp psoriasis is not permanent.

Eczema

Eczema, or more specifically seborrheic eczema, is a mild yet chronic form of dermatitis or skin inflammation. It causes patches of inflamed skin in areas that are sweaty or greasy.

This can include the scalp, ears, chest, and skin folds. It may seem to mimic dandruff but the patches are greasy instead.

When the condition occurs on the scalp it can result in hair loss because hair follicles find it hard to grow in an unhealthy, inflamed environment.

Seborrheic eczema is caused by a yeast which is found on skin with a large quantity of sebaceous glands. Together, these two factors can cause inflammation or irritation in the affected area. The person may also experience itching and burning due to excess sebum production and sweat.

Unchecked seborrheic eczema can also cause a receding hairline as weakened hair follicles and strands tend to break easily when combed or tugged. Some people may also experience a whitening or darkening atf the edge of the scalp.

Scleroderma

Scleroderma is associated with varying degrees of inflammation and pain. It is a disease of the skin's connective tissue. The condition includes hair loss, joint pain, and calcium deposits under the skin, among other things.

Scleroderma happens when skin cells produce too much collagen. This makes the skin thick, not just on the hands or feet but also on the scalp. In the most severe cases, excess collagen may also start to grow around the internal organs as well.

Thyroid issues

Another autoimmune response involving inflammation, and incorrect levels of thyroid hormones can also cause hair loss are thyroid problems.

The condition is known as hypothyroidism if the thyroid is not active enough, and hyperthyroidism if the thyroid is overactive. Both can cause diffuse hair loss with the hair appearing uniformly sparse. People suffering from either condition often have autoimmune thyroid disease.

Healthy hair growth depends on proper thyroid functioning and imbalances can result in too much or too little thyroid hormones being produced. For instance, if there is too much thyroid hormone, hair can become fine and start to thin. With too little thyroid hormone the hair may start falling out, not just on the scalp but elsewhere on the body as well.

In many cases, the hair loss is only temporary and hair will grow back as the thyroid levels are corrected.

So while inflammation is at work in most cases, an inflamed scalp may also be a sign of an infection and irritation. Cases of an inflamed scalp comes with identifiable signs of scaling, dry skin, itchiness and rashes and should be diagnosed properly by a specialist.

Summary

An inflamed scalp will no doubt be sensitive, so be gentle when treating the affected area. Avoid the use of harsh chemicals and products, and even any unsuspected irritants and allergens. While it is important to keep the area clean, take care to avoid drying it out when you wash your scalp.. Good washing practices include gently applying products to your hands, rubbing your hands together a few times, and then gently rubbing the products on your scalp.

- Sometimes the immune system attacks the body by mistake, creating inflammation and other problems in the skin near the hair.
- It can affect hair on the scalp or other parts of the body
- Sometimes the hair will grow back, but sometimes it doesn't
- Choose non-allergenic products that will gently clean your hair and skin
- If your scalp gets itchy, oily, or you notice more hair than usual in your comb or hairbrush, see your doctor.

Chapter 11

How to Deal with Chronic Inflammation

By now, you know that inflammation is not only about external signs such as swelling, bruising and so on, but that it goes much deeper than that. In fact, uncontrolled inflammation plays a part in all major diseases and conditions ranging from heart disease and cancer to diabetes and depression.

Yet tfinding and treating chronic inflammation is not a lost cause. There are ways to manage and perhaps even reverse the condition. If anything, the hazardous effects of chronic inflammation on the body and mind of a person show the importance of finding ways to reverse or prevent inflammation.

Research has shown that there are several ways to reverse inflammation. Changing to eating a healthy diet and making good lifestyle choices will help, and are definitely a step in the right direction.

However, there is much more than simple diet and lifestyle changes involved.

Multiple studies conducted on longevity, including factors to ensure longevity and finding those factors that threaten longevity, identify chronic inflammation as a main problem that shortens the lifespan of a person. Experts believe that due to chronic inflammation, a person's chances of living past the age of 100 are not very good.

Another factor that is very important for reversing inflammation is exercise and the amount of physical activity in a person's life. We will take a more detailed look at this next.

Physical Activity and Chronic Inflammation

For most people, physical activity means going to the gym or doing strenuous exercises at home. However, to treat chronic inflammation, this is not the only kind of activity to consider.

Since many people have jobs and commitments where they sit for long hours, their bodies become more susceptible to inflammation. Therefore, it is a good idea to stand up and move around at least every hour to increase the blood flow and relax the muscles so the body will keep functioning well.

Most people sit for at least 10 hours a day and may do a one-hour workout. However, one hour of activity cannot compensate so much time sitting, with little physical activity.

Research tells us that if you sit for 8 hours straight, you may become more susceptible to type 2 diabetes as tolerance to the disease decreases significantly. So it matters little if you exercise daily or remain sedentary; if you sit continuously for prolonged periods, you are still likely to develop inflammation, which is a factor in so many health problems. The body needs to be in regular motion to avoid inflammation.

In terms of exercise, doing high intensity training is the best way to go about relieving chronic inflammation. This type of intense workout helps the body to release myokines, which are compounds in the body that act as anti-inflammatory agents. In addition, they also prevent the release of inflammatory agents from the fat cells deposited in the adipose tissue of the body.

Chronic Inflammation and the Mind

The human brain is able to alter a lot of things in the body. Recent studies have shown that meditation and mindfulness can help rid the body of many physical diseases and stress. They also have an effect on inflammation as proved by a study conducted at Coventry University. Ivana Buric, is a psychologist at the Brain, Behaviour and Belief Lab at the university. In her research, she has studied a group of more than 100 people over the course of 9 years.

During the study, it was observed that mindfulness and meditation can affect the levels of inflammation in the body. According to the research, meditation helps to switch off the inflammation button in the body and leads to lower chances of inflammation..

Steve Cole is a researcher at the University of California who backed up Buric's research and says that the results of her research are quite believable. (17)

Since inflammation is also related to diseases like heart diseases, diabetes, inflammatory bowel syndrome and auto immune diseases, mindfulness and meditation may also help people to break out of other illnesses in the body triggered by chronic inflammation. There are a lot of methods that people can use to reverse inflammation using their minds.

Reversing Inflammation with Diet

Diet also plays an important role in the onset of inflammation and is one of the first things that need to be checked when dealing with inflammation.

It is well documented that eating a lot of carbs or processed foods can increase inflammation in the body. The glucose levels of the body rise when sugar or carbs are ingested. This causes higher levels of inflammatory cytokines, which are harmful for the body since they lead to chronic inflammation.

At the same time, cytokines also raise the number of free radicals in the body, which worsens when there is inflammation. The best thing to do is to cut down the amount of sugars and carbs in diet. Also, avoid eating processed foods, since they often contain sugar and have additives that may trigger harmful responses in the body.

There are also two essential fatty acids the body needs, namely omega 6 fats and omega 3. Of these, the amount of omega 6 fatty acids need to be cut down to reverse inflammation.

Instead, it is better to have higher amounts of omega 3 fatty acids in the diets. Foods containing this nutrient include different kinds of fish, flax and hemp seeds, and nuts such as walnuts.

.

In addition, there are some foods that may cause inflammation in the body. The most common of these is gluten. Gluten sometimes triggers autoimmune responses and is a common food allergen.

Dairy products may also cause sensitivity in some people, so it is a good idea to be careful with your diet and ensure that you avoide foods that cause inflammation. Instead, eat anti-inflammatory foods like healthy proteins and vegetables. Supplementing with vitamins and minerals could also be part of the diet to help reverse inflammation, but more about those later.

Chronic Inflammation and the Environment

This is not a secret, but inflammation can also be caused by more than just an unhealthy life style or a poor diet. As a matter of fact, the environment also plays a role in causing inflammation in the body.

Keeping this in mind, it is important to know that pollutants in the air such as the greenhouse gases and other harmful gases, chemicals or dust can cause inflammation in the body. Plus, water can also contain heavy metals or chemicals,resulting in chronic inflammation.

As mentioned earlier, the World Health Organization identifies about a hundred diseases that are caused as a result of the environment and environmental factors. (18)

To reverse the effects of inflammation caused by the environment, it is important to alter the environment or at least make some changes in your personal interaction with the environment.

Suggestions include choosing cleaning products, including detergents, soaps or dish washing liquids, that contain natural ingredients rather than those filled with toxic chemicals.

Instead of buying processed fruits and vegetables from the store, it is better to buy organic products or to grow your own organic products in the garden.

Since the home is a major part of the environment, it is important to ensure that the things at home are not causing inflammation. For instance, paint used on walls should be free of hazardous chemicals and carpets should be kept dust-free, and cleaned using nontoxic chemicals.

Even toiletries and makeup can lead to inflammation. So, it is important to only use the toiletries such as toothpaste and shampoos that only contain natural ingredients and are free of any kind of chemically active additives.

Some people may even suffer from chronic inflammation due to exposure to pollen grains. This can be a problem in the spring when trees and plants produce pollen. It is important to ensure that the environment is free of toxins and take all possible steps to avoid going to places that have dust, pollen and toxic chemicals in the air.

Reverse Inflammation with Supplements

When you need help to reverse inflammation, consider taking suitable supplements. There are quite a few that are easily available.

Curcumin is a supplement made from turmeric that has a lot of health l benefits.Studies have proved that curcumin helps to reduce the markers of inflammation in people suffering from cancer. It helps reduce the level of inflammation in the body and also helps to prevents diseases like cancer.

As mentioned earlier, omega 3 fatty acids are helpful in removing inflammation from the body. These fatty acids are present in fish oil and help reduce and to counter diseases such as heart diseases. There are several compounds present in these oils that help remove inflammation from the body and promote good health. Also, if a person is suffering from inflammation which results from working out to hard, fish oil is great tool for reversing that too.

Ginger can also be used as a supplement to reverse inflammation since it has a lot of anti-inflammatory and anti-oxidant properties. It helps reduce the quantity of inflammatory cytokines in the body which decreases the chances of getting chronic inflammation.

Ginger can be ingested just by biting a piece off the ginger root, or by making a ginger tea by boiling water and adding ginger to it.

Resveratrol also helps to reduce inflammation in the body. It is a supplement which is found in all fruits that have purple skin and also found in wine and cherries. According to many researches, this compound helps reverse inflammation as the inflammatory markers in the body were found to be less after the ingestion of Resveratrol. Also, it helps to reduce obesity and production of fat which can further assist in preventing inflammation in the body.

Vitamin C is also commonly used to reduce or prevent inflammation.

When you buy supplements, it is important to buy them from sellers who have good reputation and have some good testimonials and reviews. Check on the internet for independent lab tests of supplements. Also, it is always better to consult a doctor before starting any supplement in case there is a medical condition that maybe worsened by the use of a particular supplement.

Stress and Chronic inflammation

Inflammation can also be reversed by reducing stress levels in the body. For instance, having a lighter schedule along with not developing depressive helps reverse chronic inflammation in the body.

Also, it is important to get ample sleep so that the body can function properly. Plus, making sure your hormone levels are correct can also help since these two factors can further aggravate inflammation in the body.

According to a study conducted at the Emory University in Atlanta, getting less sleep than recommended can increase the amount of inflammation in the body. (19) It may also cause further stress on the body systems which then contributes to chronic inflammation.

Summary

To reverse chronic inflammation, more than one step needs to be taken. There are so many things that most people do wrong everyday without realizing it that these things make them fall prey to chronic inflammation.

Correcting these mistakes and bad habits along with eating the right diet and taking the right amounts of the right supplements can help to get rid of chronic inflammation.

- If you have chronic inflammation, make sure you exercise regularly. Ask a professional what kind of exercise is best for you and how long to do it.
- Change the exercises sometimes to make exercising more enjoyable.
- Make sure your diet is rich in vegetables, fish, cheese and meat. Fruits contain sugar, so be careful how much fruit you eat.
- Consider taking supplements that fight inflammation. These include curcumin, Vitamin C, resveratrol, and more.
- Look online for independent tests of different supplement brands, and buy brands that are highly rated by independent tests.

- Reduce the stress in your life. You might need to give up some of your commitments, or change to activities that will help you relax.
- Make sure you sleep well, and sleep long enough. The body repairs itself during sleep.

Chapter 12

Healing Through Your Food

A number of studies have established that inflammation is caused by the kinds of food one eats and that inflammation can also be reversed by eating specific foods. As such, a person's diet plays a major role in both triggering and reversing inflammation in the body.

According to Dr. Frank Hu, who is a Professor of Nutrition and Epidemiology in the Department of Nutrition at the Harvard School of Public Health, "Many experimental studies have shown that components of foods or beverages may have anti-inflammatory effects." (20) This means that without heading to the pharmacy, patients can get the cure for their problem in their kitchens.

Foods that Cause Inflammation

Common knowledge dictates that all kinds of refined or processed foods pose danger to health by promoting inflammation. These include all kinds of processed foods and carbohydrates including breads, and potatoes, and desserts.

Fried foods have a large amount of oil in them which results in increment of cholesterol levels in the body and also bring about inflammation. Plus, beverages like soda, juice and others that have been sweetened with refined sugar are also likely to cause inflammation in the body.

As such, it becomes crucial to cut down the intake of these particular foods. Based on Dr. Hu's research findings, foods that are typically associated with an increased risk for chronic diseases such as type 2 diabetes and heart disease are also associated with excess inflammation.

Most other researchers also link the increase in weight caused by these foods to inflammation. Iit has also been observed that these foods, even on their own without taking the weight factor into consideration, are responsible for causing inflammation in the body.

Some foods and added ingredients may also affect inflammation.

From Dr. Hu's research, it is clear that a person does not need to be overweight or obese to be a victim of chronic inflammation. Certain foods and drinks, when consumed frequently enough, are enough to cause inflammation. This results in other diseases like heart problems, diabetes and autoimmune diseases in the body.

Reducing the quantity of processed foods, fried food and carbohydrates can help prevent inflammation from attacking the body. To reduce inflammation, the individual needs to focus on a diet in which all these components are only eaten in very small amounts to prevent the body creating inflammatory responses.

Vegetables and Leafy Greens for Healing Inflammation

Healing inflammation by eating certain vegetables in probably one of the easiest and the most effective ways. The general rule of thumb dictates that the greener the vegetable, the more its advantages. The rule also holds true even in terms of inflammation. Vegetables contain antioxidant properties that help remove toxins from the body, thus reducing the inflammatory response.

Along with that, vegetables also have plenty of anti-inflammatory phytonutrients and flavonoids that are effective in ridding the body of hidden inflammation. Dark, leafy green vegetables are also rich in vitamin E, which is fights against inflammatory molecules such as cytokines. When enough leafy greens are included into the diet, they offer the benefits of fighting inflammation, lowering cholesterol and lowering blood pressure.

The top leafy green vegetables to fightinflammation include Swiss chard, kale, spinach, bok choy, and broccoli, to name a few. Among these, kale yields excellent supplies of antioxidants, vitamin K and omega 3 fatty acids. Spinach is full of anti-inflammatory phytonutrients, including both flavonoids and carotenoids, and broccoli offers the potential to help recover from a vitamin D deficiency.

Including these foods in meals is easy as they can easily be added to a meal or made into salads. and there is another choice. It is easy to juice many veggies and make them part of an anti-inflammatory diet.

Take celery, for instance. It is a great choice for reversing inflammation in the body as it is chock full of antioxidants and cleansing agents that rid the body of toxins. In addition, it is also a rich source of potassium.

Since potassium helps to remove toxins from the body, celery's effectiveness is multiplied. If you have too many toxins it invites inflammation in the body, and an absence of toxins helps to keep inflammation from starting..

Beets have anti-inflammatory properties and are also great for cleansing the body. They have the anti-inflammatory compound called betalain which helps prevent inflammation and also repairs the damage that has been caused to the cells by pre-existing inflammation in the body. Beets are a rich source of potassium and magnesium. Both minerals help to cleanse the body and can help keep inflammation in check.

Starchy vegetables like potatoes convert into sugar in the body. Only eat small amounts of potatoes and rice. You don’t want them to raise your blood sugar and increase the chance of inflammation.

Moving ahead, the body is not able to process calcium properly until there is the right amount of potassium to help the process. If there is a potassium deficiency in the body, calcium starts building up in the body and forms crystals which often appear as kidney stones or stones in the gall bladder. The body sees this as an attack and activates inflammatory agents in response to it. This excessive activation of inflammatory agents can lead to chronic inflammation. Then you have two problems, the inflammation and the kidney or gall bladder stones.

The potassium in beets and celery helps the body to process calcium and digest it well so that inflammation does not get triggered.

Fish and Fish Oil for Reversing Inflammation

Most diets contain more than adequate amounts of omega 6, which may not be doing the body any favors. Instead, it is recommended to increase the quantity of omega 3 fatty acids in the diet to fight inflammation and benefit from its other health protecting properties.

Salmon is a great source of anti-inflammatory omega 3 fatty acids. The omega 3 in fish oils can not only stop inflammation from progressing and actively treat already existing inflammation. And since the body cannot manufacture omega 3 fatty acids, it is essential to get them through the diet.

The potency of omega 3 fatty acids in fish have also been observed to help decrease the need for medications for inflammation.

And now, coming back to salmon, since salmon has a lot of these beneficial fats, it ensures that the brain will work properly. This. helps to limit the fluctuation of hormone levels that can cause inflammation. It is important to eat fish that is caught in fresh, unpolluted water or marine environments. Farmed fish does not have the same nutrient quality as naturally produced ones and often contains antibiotics and other things you might not want to eat.

An anti-inflammatory diet should iinclude at least two meals per week in which fish is the main course. The best ways to prepare fish include baking and broiling rather than frying. For people who do not like fish or seafood, the same benefits may also be gained by taking fish oil supplements.

It is also important to eat less foods that have omega 6 fatty acids while increasing the supply of omega 3s.

Nuts for Reversing Inflammation

Nuts are also very effective against inflammation. To protect the body from inflammation, it is important to have a diet which does not include too much red meat. However, eliminating or limiting red meat may also result in insufficient amounts of essential nutrients. To compensate for this loss, it is important to eat seeds and nuts that can give the same nutritional advantages to the body as red meat but without any of the health hazards associated with excessive red meat consumption.

Eating walnuts and other nuts can help protect the body from inflammation and are also very effective against other diseases like diabetes. Walnuts contain some nutrients that are very rare in other foods making walnuts a good source of energy and nutrition.

Nuts also have polyunsaturated and mono unsaturated fats but contain no trans fats. This makes them a good choice to include in an anti-inflammatory diet. Plus, nuts like pecans, hazelnuts, almonds and peanuts also have impressive amounts of vitamin E which can protect the body from the effects of harmful free radicals and also offer other anti-inflammatory properties.

Nuts are also one of the easiest and healthiest snacks available. To make the diet richer in anti-inflammatory foods, sprinkle nuts onto salads, make them into nut butters or use them in veggie burgers. Just don’t eat too much—you'll gain weight!

Healthy Oils for Reversing Inflammation

Fats are often blamed for promoting inflammation, but it is important to remember that not all fats are bad. In fact, if you are able to distinguish between the good and bad varieties of fats, you can be very proactive in reversing inflammation in the body.

Let's take a look at the good fats first. The shining star in this category is real olive oil. It is a great source of many beneficial nutrients needed by the body. It helps ito keep inflammation away and also safeguards the body from any other diseases that are caused by chronic inflammation.

Another great choice is coconut oil. It is used a lot in different parts of the world, and not just for culinary purposes. While cooking is one healthy way to use coconut oil, it is also used on the skin as a remedy for inflammation in cases of arthritis.

The free radicals that are formed in the body due to excessive inflammation are the primary reasons for the body getting damaged and is also the reason for onset of other illnesses. Coconut oil has anti-oxidant properties that are helpful for removing toxins from the body and leaving the body rejuvenated and functioning properly.

Both olive oil and coconut can be used in cooking everyday meals. Olive oil is also an ideal choice for making a salad dressing. You can mix it with red wine vinegar, white wine vinegar, sherry vinegar or fruit vinegars to make a salad dressing. Or, you can put herbs in the olive oil and in time the oil will absorb their flavor. Rosemary, thyme and basil are common choices.

Make sure you buy real olive oil. Some brands are actually a mix of oils and do not offer the same benefits as real olive oil. How can you tell if it's real olive oil? Put it in the fridge. A real olive oil will get thicker, but other oils will stay thin and easy to pour.

One of the popular diet trends, and one that is often recommended by healthcare professionals, is the Mediterranean diet, which features olive oil, fish and vegetables as its star ingredients. This diet is also highly recommended for reducing or preventing inflammation as it advocates a healthy way of eating where red meats, dairy products and calorie laden desserts are eaten loss often and the focus is onhealthy foods and natural sources of heart healthy fats.

This way of eating can support respiratory and heart health, is associated with a reduced risk of diabetes, and is not as restrictive as some other diets. This makes it easy to follow a Mediterranean diet and support anti-inflammatory activity in the body.

Fruits for Reversing Inflammation

Fruits play an important role in reversing inflammation and healing the body from pre-existing inflammation in the body. All berries, and specifically blue berries have antioxidant properties that heal the body. Much of this antioxidant potential comes from a compound caller quercetin which is quite beneficial for getting rid of inflammatory stimuli and anti-inflammatory response.

Pineapple had has an anti-inflammatory compound called bromelain. This compound is quite helpful in making sure that the immune system in the body stays regulated and that the body does no react to false alarms. Pineapples also have a high concentration of potassium and magnesium which can help cleanse the body of toxins and other harmful agents.

Avocadoes are another fruit that needs mention in this category. While most fruits primarily contain sugar, avocadoes are very rich in healthy fats. One study where subjects consumed a slice of avocado with a hamburger showed reduced levels of inflammatory markers compared to people who ate just a hamburger. (22)

However, fruits contain a sugar called fructose, which the body can only store in the liver. Eating too much fruit can lead to fatty liver disease, and if you have diabetes or are at risk of developing diabetes, it is better to eat little or no fruit. Avocado is the safest fruit to eat, and is very nutritious.

Seeds for Reversing Inflammation

Seeds deserve special mention because of their amazing of anti-inflammatory properties.

Among these, chia seeds are rich in both omega 3 and omega 6 fats. Chia seeds are also very effective in reduceing the quantity of harmful cholesterol in the body, which ensures that the body is protected from any kind of inflammatory responses.

Flax seeds are another anti-inflammatory food option and offer benefits similar to those of chia seeds. Along with anti-inflammatory properties flax seeds also have an impressive amount of anti-oxidants to rid the body of toxins. They work at a cellular level by keeping cells healthy so that they ward off infection effectively and are not attacked by harmful foreign agents that may lead to inflammation as a response.

Flax seeds also have a regulatory effect on hormones in the body so they are helpful in maintaining hormonal equilibrium. This regulating feature also has an anti-inflammatory effect to minimize the chance of an inflammatory flare up.

Make sure to eat ground flax seeds. If you eat them whole, they just pass through your body undigested. This is great if you need more fibre though!

Which Foods to Keep Out of the Kitchen

Just as it in crucial to know which foods to include in the diet to promote anti-inflammatory activity in the body, it is equally important to know which foods to stay away from.

To introduce and maintain an anti-inflammatory pattern to the diet and lifestyle, experts recommend starting off by making changes to the way you eat.. People suffering from inflammation need to get rid of all processed foods, carbohydrates like potatoes, rice, pasta, desserts and and any other harmful foods mentioned above. It is also a good idea to eat very small amounts of fruit.

Not surprisingly, the foods that aggravate inflammation are also often linked to a higher risk of chronic diseases as well. Many of these foods also contribute to weight gain, which in itself is a risk factor for inflammation. A quick look below will tell you exactly what foods may be fueling your low grade inflammation:

Sugar

Sugar finds a way of sneaking itself into almost every food. Apart from the obvious processed foods such as sodas, candy, snack bars and desserts, sugar is also found in many other foods such as frozen meals, yogurt, sauces, bread, and most processed and prepackaged foods. Even processed ham, sausages and salami often contain sugar.

When there is too much sugar in the blood, the body cannot use it fast enough. This can raise levels of the pro-inflammatory markers, like C-reactive proteins, that show there is inflammation in the body. . Sugar also makes it harder for white blood cells to fight bacteria, weakening the immune system and making an individual more susceptible to infections and diseases.

Vegetable oil

Vegetable oils do all that they can to clog arteries, increase visceral fat, and mess up the fatty acid composition of the body's cells. Many of them are loaded with trans-fats and also contain high levels of omega 6s and very few, if any omega 3s. Look for real olive oil, especially extra virgin olive oil. It has not been processed using high heat, so it still contains its nutrients.

Dairy

While moderate amounts of yogurt have been linked with keeping inflammation in check, a lot of dairy can easily become a source of inflammation inducing saturated fats. Dairy is also a very common allergen and can bring about inflammatory responses through the release of histamines. Look at the label and see how many carbohydrates are in each serving of dairy products. Unfortunately, it is now common for companies to add a lot of sugar to yogurt. Cows eat grass, which is a carbohydrate and their milk contains sugar. Half and half or high fat cream contains very little sugar. You can add water to reduce the fat content and make milk with almost no sugar in it!Grain fed meats

Many of today's cattle and poultry are not raised on a diet of grass, so cattle farmers feed them grain and often give them antibiotics. The result is that the meats contain antibiotics, more omega 3s from corn and soy diets, and may also hormones given to the cows to help them grow faster.

Together, these features factor in to raise the risk of increasing inflammation in the body. Look for grass fed beef and organic beef, which is raised without hormones and antibiotics.

Summary

Just as chronic inflammation is an ongoing problem in the body, healing it or preventing it through the diet needs to be an ongoing process too. Perhaps healing hidden inflammation through eating the right foods is the easiest way since it offers a convenient and quick approach to treating inflammation through items. Also, it uses foods that are readily available in the kitchen and can be prepared easily.

- The best, most healthy food, is natural plant and meat products tha have been grown without chemicals, hormones or antibiotics.
- Look for food that are certified as organic. This means the foods or meats were grown under strictly controlled conditions and do no use dangerous chemicals or contains hormones or antibiotics.
- Reduce or prevent inflammation by eating very little sugar and very low amouns of carbohydrates.
- Look for real olive oil, and test it by putting it in the fridge. If it doesn't get thicker, it's not real olive oil.

The goal is to follow a diet that is rich in f vegetables, nuts, whole grains, fish and healthy oils while saying away from offenders like hydrogenated oils, trans-fats, sugar and carbohydrates, and too many animal proteins.

Chapter 13

Healing through Your Environment

How can healing take place through the environment? Especially internal healing where inflammatory responses are at work? That's a good question.

To answer this question, it is important to understand what an environment is first. An environment is everything surrounding a person. It includes all the living and nonliving factors in the area surrounding you. living things like animals, other people and plants and non-living things like air, water and soil, the cleaners we use, things we put on our bodies like shampoos, soaps and scents, detergents, fabric softeners, and more.

All these factors can either be good for us, not have any effect at all, or be harmful. Environmental factors can sometimes improve people's health of individuals or it can become triggers for chronic or serious diseases or disorders, including inflammation.

Once again, let's remember the World Health Organization survey which states that there are many diseases that are caused by the environment. This includes at least a hundred diseases that are caused by harmful chemicals and toxins.

These chemicals are present in almost everything around us, ranging from the water we drink, shower and cook in every day to household products that are used in everyday chores. The effect of all these chemicals over prolonged periods of time combines to trigger inflammation in the body. The inflammation gets worse and leads to other diseases such as rheumatoid arthritis, cancer, asthma and more.

Because there are so many things that can cause an inflammatory response in the body, it is not possible to account for each and every single trigger, but we can point out the well-known triggers. Next, we discuss specific triggers that everyone with inflammatory issues should watch out for. And if you don’t have inflammation yet, avoid these triggers so you don't develop inflammation.

Environmental Toxins and Inflammation

Environmental toxins are all around us. These toxins include pesticides and herbicides used to grow food, chemicals in the water system, chemicals used to make cloth for clothing, chemicals that are part of our carpets, and hormones and antibiotics in meat.

Many kinds of gases and tiny particles produces by vehicle engines and manufacturing processes cause air pollution. When there is too much of a gas or particle in the air, water or soil is it extremely harmful to human health. Common examples of pollution include, urban smog, haze, ozone depletion, and in very severe instances, acid rain. Burying some kinds of products in the ground also poisons the soil, such as containers with chemicals, certain kinds of paints, thinners, dyes, and other items.

When a person is exposed to these pollutants, it causes health problems like eye, nose and throat irritation. It may also cause wheezing, coughing, a feeling on tightness in the chest and breathing difficulties. These are all typical symptoms of silent, ongoing inflammation deep inside the body.

Among the harmful environmental pollutants, carbon monoxide, sulfur dioxide and methane are very common and very dangerous. Carbon monoxide is produced by vehicle engines that burn gasoline and diesel fuel—cars, trucks, buses all put carbon monoxide in the air. Corbon monoxide is very harmful to blood circulation and tends to bind to the proteins in blood and decrease the amount of oxygen in the blood.

As a result, blood that is supposed to carry oxygen starts to carry carbon monoxide instead. This can cause blood poisoning and breathing problems also become more common. The body sees carbon monoxide as an invasion by foreign species and tends to activate the inflammatory responses to try and protect the body.

Another environmental toxin is ozone and it is just as damaging to the body. Ozone is formed from light and chemical reactions and is part of the smog or haze that often occur in cities and manufucaturing areas. Ozone causes a lot of lung diseases and plays major role in making respiratory disorders get worse in people. According to the EPA, ozone “compromises the ability of the body to fight respiratory infections.” (23)

Since ozone disturbs the body’s natural way of dealing with infection, it can make inflammatory conditions worse. The body does not get a clear signal about which foreign particles are harmful and which ones are not harmful, so the starts to react by creating inflammation every time a foreign particle enters the body, even if when the particles are medicines or certain foods.

Other environmental toxins include soot, dust, and other gases that are produced as a result of burning fuel or other natural sources of energy such as coal. Once again, the body thinks these chemicals are foreign elements so it makes inflammation to counter them. When this keeps happening, it leads to chronic inflammation.

Household Products and Inflammation

We think that he products we use at home are safe, since we can buy them easily off the shelf in any store and we use them to keep our homes clean and free of germs and dirt. These products include detergents, wsoaps, bath and shower cleaners, floor cleaners, window

cleaners, disinfectants, etc. However, many of these products contain harmful chemicals that can have negative effects of the body.

One of these major culprits is a group of chemicals called phthalates. These are found in specific household products like air fresheners and insect repellents, along with many personal care products including perfume, cologne, deodorant, hair spray, soaps, detergents and shaving creams, to name a few. Detergents or dish soap that smell good often contain phthalates of other items that come with a fragrance. In fact, when a product gives off a smell, it is the phthalates that you get a whiff off.

Phthalates enter the body through the skin, or even in our food, and then affect the organs. The body respondsto them by making inflammation since they are something from outside that the body doesn't recognize.

Another one of these harmful products is PERC, or percholoroethylene.. PERC is normally used in dry cleaning products, for cleaning upholstery and carpets. According to the EPA, PERCs may even have carcinogenic properties. (24)

The harmful components in these chemicals enter the body when a person breathes them in. You may have noticed a certain smell from dry cleaned clothes or carpets. PERC enters the body through the nasal passageways and triggers inflammatory responses since the body does not know what they are and responds to them like any unknown chemicals.

There are also other chemicals in these household products such as triclosan, QUATS (quaternary ammonium compounds), butoxyethanaol, ammonia, chlorine (often used in homes as a bottle of bleach for laundry and cleaning hard surfaces), and sodium hydroxide. If you have been using any of these products, it will help to protect you from inflammation if you stop using them.

Cigarette Smoke and Inflammation

Cigarette smoke is a major cause of chemicals and harmful components to getting inside the body and in the air. Cigarette smoke contains large amounts of tobacco, which contains the chemicalnicotine. Niotine has the same effect on the body as high blood pressure. It speeds up the heart rate, which means that the body is not able to regulate circulation and heart function properly. It makes the body work harder than it needs to.

Also, cigarette smoke is perceived by the body as a harmful, foreign agent and the body tries to defent itself by making inflammatory cytokines and releasing them in the body as a way of countering the effects of the smoke. If the individual is a regular smoker, the body keeps triggering inflammatory responses. This leads to chronic or hidden inflammation in the long run. Perhaps you have heard someone with a "smoker's cough." The smoke actually builds up in the cells of the lung, and if you look at lung tissue from a smoker you will see the dark grey or black spots caused by the cigarette smoke. This also happens to miners working underground and breathing in dust, especially in coal mines.

Once the black spots are in the lungs, there is no way to get rid of them. Be smart—don't smoke, or work underground in a coal mine without a proper mask to filter the coal dust of out the air.

Synthetic Chemicals and Inflammation

The snthetic chemicals present in synthetic (non-natural) products are quite harmful to the human body and can cause inflammation. These chemicals include nitrates and phosphates that are present in synthetic materials and they bind with the enzymes in the body rendering them useless for their function.

Phthalates are one of the most common synthetic materials used in the making of plastic. Phthalates make plastic bend easily. Phthalates are used to make plastic bottles used for drinking water, sodas and other liquids. If the plastic bottle is left in the sun, it will heat up and released even more phthalates than when the bottle is cold. Even small amounts of phthalates can cause inflammation in the body by triggering the immune system to defend the body against this foreign, invading chemical.

Heavy Metals in Water

One of the most common and most harmful ways that toxic chemicals get into the body is through water. Water is essential for human health. People did if they do not drink enough water. Harmful heavy metals that may be present in the body include mercury, cadmium, arsenic, chromium, thallium, and lead, to name just a few. Some rocks and soils naturally contain these heavy metals, which is why it is important to test natural well water and make sure it is safe. An osmosis filter, which boils water and separates the metals out, can be used to create safe water.

All these metals have damaging effects on both physical and mental health. When water containing these heavy metals is consumed, it goes to all parts of the body through the blood and also because water is the solvent for all kinds of reactions in the body. Too much toxic metal in the body can cause cancer in the skin, nasal passages, lungs, bladder, brain, and more. Thallium affects the brain, nerves and muscles. Breathing in high amounts of cadmium in a short period of time) can cause flu-like symptoms such as fever, chills and muscle pain) and can damage the lungs. Mercury is often used in thermometers, so be careful the next time you check the termperature outside! If you drop the thermometer, wear rubber gloves and be very careful cleaning up the liquid. Put it in a separate plastic bag, tie the top close, and dispose of it properly as toxic waster. Your city hall can tell you how to do that.

When any of these heavy metals get into the body, the immune system releases cytokines This causes a lot of inflammation in the body since water is present in all parts of the body.

Since water is also a part of DNA, these heavy metals can also cause genetic issues, which mean that agents or markers of inflammation may be passed down to future generations.

Produce Treated With Pesticides and Inflammation Markers

Nowadays, most of the fruits, vegetables and grains we buy are grown on large industrial farms. Since the demand for staple foods has increased, industrial farms tend to use artificial methods of growing these crops to produce larger amounts of food—higher-yields—control insect pests, diseases, and try to make each piece of produce look perfect. For faster harvesting, crops are treated with pesticides that contain large amounts of nitrates and phosphates.

These two chemical components are structurally similar to the factors that enzymes need to function in the body. Thus, the nitrate and phosphates bind with the proteins and enzymes in the body, but this makes the proteins and enzymes useless. They don't work the way they are supposed to, so the body does not get the health benefits of eating them.

In fact, the immunse systems sees them as invaders and responds to them by making inflammation. The enzymes that the body does have are not enough to keep us healthy, and makes the problem worse. By now you have guessed what happens—eating the nitrates and phosphates ends up causing chronic inflammation. Another vicious cycle starts occurring.

Even beef and dairy products contain these harmful chemicals. Industrial dairy farmsfeed their cattle artificial hormones and genetically modified grains to make the cows produce more milk. Other factory farms feed cattle grains instead of grass, and special hormones that make the cattle grow faster than is natural for them and put on weight sooner. This way, the cows can be slaughtered for meat when they are younger. Look for meat and dairy products that are organic; they will not contain the hormones and chemicals most factory farmed cows are fed.

Heavy Metals in Fish and Seafood

Another area for concern is seafood. Since fish and seafood comes from the ocean and lives in the water, these products often contain harmful chemicals that are dumped into the ocean.. Factories and industries dump their industrial waste in the water, and this contaminates the oceans with heavy metals such as mercury, lead, chromium, and many other chemicals.

These chemicals pass into the fish and other sea creatures since these species they constantly inhale water to get oxygen.. Therefore, it is important to eat seafood that is free of heavy metals and harmful chemicals.

Ask where the seafood comes from, and and find out whether it is close to polluted waters.

Also, be aware that many fish are farmed today. Large pools are dug on land and the fish are raised in crowded, unnatural conditions. The water may not be cleaned often enough. This causes diseases in the fish, so they are often fed antibiotics to present disease—instead of growing healthy numbers of fish in the ponds and cleaning the water often enough. Tuna is one of the most popular fish, but check your government's guidelines and see how often it is safe to eat tuna.

Summary

The environment plays a major role in creating inflammation in the body, and its reversal. It is important to create an environment in which everyone can be safe, without being exposed to inflammatory agents or inflammation causing chemicals.

Cutting down on the amount of damaging or inflammatory chemicals in household products, foods, cigarette smoke, and synthetic products can help to minimize the amount of inflammation the body creates.

- If you have a choice, stay away from areas with air, soil or water pollution
- Use a mask that covers your nose and mouth to reduce the amount of air pollution you breathe in
- Choose foods that are certified as organic. This means they have been grown and processed according to strict standards that make the food much healthier than standard large scale or factory farming practices.
- Always wash new clothes before you wear them. Fabrics coming from Asia to the West are sprayed with rat poison so rats won't eat the fabric while it is on the ship. You don’t want to walk around wearing rat poison!
- Avoid buying clothes that have to be dry cleaned. Dry cleaning uses dangerous chemicals. When you get clothes back from a dry cleaner, hang them in a room with the window open for several hours to let the wind blow out some of the chemicals.
- Choose fish and seafood that come from safe, unpolluted waters. If the store doesn't know where the fish or seafood was caught, go to another store.
- Bring your drinks in a metal water bottle instead of plastic. Metal bottles won't leach chemicals into your drink if the bottle is in the sun, such as on a car seat or if you are outside. Also, the metal bottle can be well-cleaned and sanitized.

Chapter 14

Healing Using Your Mind

Having control over their mind gives a person a great opportunity to control many physical conditions in their body and perhaps heal many medical conditions including inflammation. In

fact, some research analyse the effect of mind-related exercises and techniques on the physical fitness of the body.

Since the brain is the control centre of the body, it is not surprising that controlling the brain can help to affect the body.. In turn, using the mindis also one of the most convenient ways of dealing with physical issues. After all, you always have your mind with you. It never gets left behind or forgotten!

Healing Through Mindfulness Meditation

Mindfulness meditation is a meditation technique that works helps a person to achieving a state of drug-free, alert and focused relaxation.

According to a recent study, this kind of focus meditation may help with chronic inflammatory conditions such as rheumatoid arthritis, inflammatory bowel disease and asthma. (25) Also, these meditation practices help to promote a healthy form of aging by preventing premature aging. Mindfulness-based stress reduction works by focusing attention on the breath, body sensations and noticing but not reacting to your thoughts while you are sitting, walking or doing yoga. In fact, you could practice mindfulness meditation while you are a passenger in a car (not the driver though!), while you are on a bus or train or plane, stting in a waiting room, on a coffee break or lunch break.

Interleukin, a kind of cytokine, is an inflammatory marker in the body which shows the extent of the inflammation in the body. Mindfulness meditation is effective in reducing the amount of this marker body, thus showing that there is less inflammation and less of all the diseases related to it in the body.

Some research indicates that practicing mindfulness meditation can lower the inflammatory biomarkers in the body. The research also explores what mindfulness training does to the brain to create these inflammatory health benefits, according to David Creswell, who was the lead author of the study. Creswell is also an associate professor of psychology at the Dietrich College of Humanities and Social Sciences at Carnegie Mellon University. (26)

The study was conducted on a group of 35 subjects, all of who were suffering from high levels of stress in their daily life. During the study, they were taught how to do mindfulness meditation and practiced it for for some time. After that, their brains were scanned. The brain scans showed that the brains of those people who had been practicing mindfulness meditation had lower amounts of of stress, which meant less inflammation was present in their bodies.

Dr. Creswell observes that these brain changes show the subjects learned to improve their reaction to stress and better stress resilience. He goes on to state that mindfulness meditation training boosts the brain’s potential to better manage stress.

Since stress is an important factor in inducing inflammation, reducting stress in the body through mindfulness meditation is a useful, drug-free way to reduce the inflammatory markers and inflammation from the body. To help reduce your stress and to lower the level of inflammation in your body, practice mindfulness meditation every day for at least half an hour.

If you have a 30-minute trip home on the bus, you can do your mindfulness meditation before you get home, and arrive feeling less stress, relaxed, and ready to enjoy your evening!

Healing Inflammation through Yoga

Yoga is an ancient practice to keep the mind and body healthy. People have been practicing this form of relaxing exercise for centuries with great success. Studies have shown that yoga helps make the body immune to foreign agents and is also effective against hypertension in the body.

In an article in Psychology Today, Marlynn Wei, says that, “The study published in *BMC Complementary* and *Alternative Medicine* found that yoga breathing for just 20 minutes was able to lower stress-related markers of inflammation.” (27)

The research was done on a group of people, half of whom were asked to read something for 20 minutes, and the other half were asked to do yoga for 20 minutes. The 20 minutes of yoga was divided into 10 minutes of repeating the mantra “Om” while the other 10 minutes were spent practising rhythmic breathing. This practice involved inhaling and then pausing for a set period of time before exhaling again. (This is also usually often of meditation.)

After the allotted time was over, the researchers found through testing that the people who were reading showed no change in the levels of their stress markers but the people who were doing yoga had less inflammation in their bodies than they had before the yoga class.—The reearchers found the youga group ey had less inflammatory markers in their bodies than before they began the yoga class, including lower levels of interleukins and cytokines, which are the basic inflammatory markers in the body. And they did it in just 20 minutes!

Effective Yoga and Meditation Practices

Doing yoga for half an hour every day can producea lot of benefits. You can do yoga right after waking up in the morning or at any other time of the day, whenever it is convenient to do it. Or you could practice meditation. May people enjoy taking a yoga class, where the instructior explains how to do the yoga poses, how long to hold them, and guides the class through the poses in a way that gradually loosens up the muscles and makes it easier.

Meditation begins by sitting with the spine straight, and choosing not to react to your thoughts..

Then, the puts their hand lightly on top of their stomach, inhales so it pushes their hand outward. This is called breathing through the diaphragm. After inhaling, pause at the top of the breath for four counts. Then, gradually exhalefor four counts, and relax for four counts. That's it; breathe in for four counts, pause for four counts, exhale for four counts, and relax for four counts. Repeat this at least 10 times. You might find that your meditation ime becomes a special time that you look forward to everyday; it will help you to relax, unwind, and get rid of your stress, as well as helping your health by reducing inflammation.

The Harvard trained psychologist Marlynn Wei also suggests that you repeat a word or phrase, called a mantra, during the meditation. This helps you to stop thinking about things that are bothering you and help to create the right atmosphere. In her article posted on Psychology

Today she discusses the steps as inhaling slowly and steadily, feeling the chest expand with air. After pausing
to let the air fill and circulate through the body, follow by exhaling to empty all the used air from the lungs, releasing any tension.

Healing Inflammation through Controlled Breathing

Controlled breathing can have a major effect on the inflammatory factors in the body by affecting the vagus nerve. Of of the 12 cranial nerves that come from the brain, the vagus nerve is the tenth one. It is also the longest cranial nerve. It starts in the brain and goes to all parts of the body, including the whole digestive system, the liver, and spleen and passes through the cardiac system, the lungs and the pancreas.

The body has two type of systems that are based on the way the nervous system reacts to stimuli. One of them is the sympathetic nervous system, which helps the body in case there is danger. It includes the fight or flight response. Working opposite to it is the parasympathetic nervous system, which calms the body and is most commonly in known in scientific terms as the rest and digest system of the body. The vagus nerve has both sensory and motor functions.

The health of the vagus nerve depends upon the tone of the nerve. This tone determines how fast a person breathes and how fas the hear can pumpblood. When a person inhales, the air goes into the blood in the lungs, and the heart rate accelerates to pump blood to all parts of the body which contains the recently inhaled oxygen. When exhaling, the heart rate decreases slightly since there is no oxygen to be pumped.

The difference between the breathing rate and heart rate is directly proportional to the vagal tone which means that vagal tone is the highest when there is a greater difference between the two rates.

A stronger vagal tone helps to keep the body healthy by being effective by moving oxygen efficiently through the body to the cells that need it. In addition, it helps reduce inflammatory markers in the body which ultimately reduces the chances of triggering other diseases in the body. (28)

Effective Controlled Breathing Practices

There are many ways to improve the tone of your vagus nerve. Humming is great way, since there is a connection between the vagal nerve and the vocal cords. Better yet is to chant the word Om, since it has proved to be beneficial for reducing inflammation levels in the body for ages. Another way is to talk. People who talk a lot also have stronger vagal tones since talking uses the vocal cords and activates the vagal nerve.

Even a common task like using cold water to wash the face reduces inflammation by activating the vagus nerve. The best way to do this also is to breathe through the diaphragm instead of breathing through the lungs. Dr. Shawna also further adds that the significance of this simple and basic practice on overall health, and in particular on inflammation can be far-reaching.

Healing Through Relaxation Practices

Although some people might not know this, relaxing exercises or doing some relaxation practices also are helpful against inflammation in the body. One of the ways to perform these exercise is to do a body scan. It can be easily done at home. To begin, relax the body by first breathing in and out, as if you were starting to meditate.Then, focus on one part a the end of the body. Most people start with their toes. Be aware of your toes. Is there any tension or discomfort there? Now, imagine that your toes are relaxing and feel very comfy. Take a breath, and bring your attention to the next part of your body, the feet. How do your feet feel? Are they tired? Sore? Hot? Cold? Think about your feet feeling perfectly comfortable, and just the right temperature. Breathe again, and bring your focus to your ankles. You might even want to rotate your ankles to help loosen the muscles around them. Take your time, and imagine each area of your body as your work from your feet up to the top of your head. Relax your muscles, breathe out any tension. When it is finished, you will feel relaxed, maybe even a bit sleepy—and your boy will feel better!

You can do this whevever and wherever you have time. Some people like to do it in bed before they go to sleep.

For religious people, saying a prayer and performing controlled breathing exercises is also a great way of reducing inflammation in the body. Such people tend to suffer less from stress, which further leads to the reduction of inflammatory markers in the body. Another way of doing relaxing exercises is to perform them through visual imagery. This may be a little hard for those individuals who have difficulty making up a situation or place in their mind. You can download guided relaxation exercises online and follow them. It's easy, and you can find a voice you really like to listen to, making it even better!

Other Relaxation Techniques for Inflammation

The way this relaxation technique works is that the person has to sit quietly in a quiet place and breathe in a controlled manner while focusing on an image at the same time. The image needs to be conjured up in the mind which means that it has to be something the person feels strongly about or a memory that makes the person happy and relaxed. The image in one's mind should not be negative and disturbing the mental image with thoughts of any stressful things or idea will also ruin the effect of this practice.

Ancient practices like Tai chi and Qigong are also equally helpful in reducing inflammation in the body. They involve exercises with rhythmic breathing and moving through different postures. This gentle exercise help to keep the inflammatory responses in the body at a minimum by encouraging a well-regulated hormonal and circulatory system in the body.

Doing these exercises daily helps to reduce inflammation from the body by removing some of the stress that creates inflammation and also to reduce the already existing inflammation in the body by lowering stress.

Since the mental state of an individual is crucial in of the way they experience and react to symptoms such as nausea, pain, depression and fatigue, feeling afraid or stressed can trigger the heart to pound and the bowels to empty. This, of course, triggers inflammation. These processes aren't usually under conscious contro,l but there are indirect methods that can be used to influence them.

Summary

To prevent or reduce inflammation, take time to meditate, do youga, Tai Chi or Quigong, use some visual imagery or follow a recording of a guided visulaization. Andyou don't have to just one technique. Once you learn the yoga poses and you learn meditation, you can do them together if you want! Or you can use a variety of techniques, maybe doing a yoga class on some days, joining a meditation group, or following a variety of guided visulaizations. . Try to commit to mindfulness for a minimum of 20 minutes a day. However, the longer and the more often you use these relaxation techniques, the more benefit you will get from them, and the more inflammation will be reduced.

- Inflammation responds to stress, and stress can be controlled.
- Learn meditation, either a sitting meditation or walking meditation
- Use yoga, Tai Chi or Quigong
- Do a body scan, using your mind
- Follow a recorded visualization, or think of your own
- You have choices! Use different techniques, alone or with others, and enjoy the benefits of less stress and less inflammation

Chapter 15

Healing through Exercise

It is no secret that exercise helps the body and offers a range of helpful and healthful advantages. Exercise, when done right, may also help keep a lot of diseases at bay without depending too much on medication.That's a tall claim indeed, but very possible in certain cases.One of the health challenges exercises can help you with is inflammation. This has been the focus of a lot of medical research lately. Inflammation seems to be influenced by exercise in a number of ways. Quite interestingly, the effects can both be positive or negative, which

means that the individual needs to find the right balance between what exercise to do and how to do it.

Exercise and Inflammation

Exercisin the wrong way and for too long can increase the rate of inflammation in the body but can also help the body to ge rid of inflammation too. In fact, the whole process is regulated by the endocrine system which is composed of a number of hormones that serve a variety of functions.

For starters, the first hormone released during exercise is epinephrine. This hormone increases the heart rate in the body and results in faster pumping of the blood. bringing more blood to the muscles.

Another hormone that is released is norepinephrine, and it also has an impact on the blood. It raises the blood pressure in the body to ensure that blood is supplied to all parts of the body. Glucagon is also released in the body, and is important to ensure that the body has enough glucose, or sugar, in the blood.

Another active participant in this process is cortisol, which is a hormone of the adrenal gland. Cortisol affects many functons of the body, including blood pressure, it affects your natural cycle of sleeping and waking up, and it is one of the major stress hormones, very active in the fight of flight response. Plus, cortisol has a very bhelpful function against inflammation since it helps reduce inflammatory markers in the body.

Overall, a moderate session of exercise can help your body to lower inflammation.

How Exercise May Worsen Inflammation

Just as too much of a good thing can be bad, a certain amount of exercising can be helpful but too much can cause even more inflammation in the body.

For instance, if someone is working out extremely hard for longer periods of time, it is likely that the body will activate its inflammatory responses to deal with the tiny tears to muscles and tendons, and other factors in the body.

According to Mark Sisson, author of the bestseller, *The Primal Blueprint*, “If you keep stringing together spikes in inflammation without recovering from the previous one, they start to overlap and that starts to look a lot like chronic inflammation. That gives you a plateau, a mesa of inflammation. Avoid the mesa.” (29)

The takeaway from his advice is that exercise should be done in a way that it does not cause excessive inflammation in the body. A certain level of inflammation is okay since it allows the body to get stronger, but when it occurs periodically, it can become harmful.

The right way to exercise is to warm up carefully, not to work too hard and cause damage to your body, to use appropriate amounts or weight or repetitions or distance, to take sufficient

breaks between workouts, and to ease up and cool down at the end of your workout, to let your breathing and heart rate lower gradually. Look for an exercise coach, a trainer, or videos by a certified coach to help you figure out what to do, how to do it safely, and for how long.

Several studies also show that excessive and extensive exercises can cause inflammation to increase in the body. The inflammatory markers, cytokines and interleukins, are often found to be higher in athletes who practice without a break and do not give their body enough rest. Patients who suffer from cardiovascular diseases also experienced increased inflammation when the exercise plan they follow is an acute one.

Thus, it is clear that excessive exercise, or exercise that is too intense tends to increase the inflammatory markers in the body and the person may even suffer from chronic inflammation if the process of acute exercise continues.

Summary

Exercise patterns must be modified in a way that makes them suitable for the body and for the exercises to get the maximum benefits from the routine without having any negative effects on the body in terms of chronic inflammation.

To maximize the anti-inflammatory effects of exercise, make it a habit to work out at least 30 minutes every day. Mix and match activities by combining both aerobic exercise with moderate strength training moves. At the same time, be wary of overdoing it since this will fuel inflammation instead of regulating it.

- Exercise can help to reduce inflammation in the body
- If you exercise the wrong way, such as working too hard or too long, it can cause tiny tears in your mucles or tendons, which will lead to an inflammatory response
- Remember to warm up and cool down. This gets your body ready for exercise and helps your body relax after you have worked out.
- You don’t have to buy a gym membership to relax. Find a park or some attractive streets and start walking! Park farther away from buildings, take the stairs instead of elevators, or walk to the grocery store and carry a few things home that aren't too heavy.
- When you begin exercising, work at a comfortable pace for the first five minutes, then gradually increase it.
- If you lift weights, start with just a couple of pounds. Add more repetitions instead of more weights, at first.
- If it feels too hard, it probably is! Build up your fitness and endurance gradually.
- If you aren't sure what to do, find a video by a certified trainer and follow it, or ask a local trainer or exercise coach.

Chapter 16

Healing Inflammation through Supplements

There are times when following a proper diet or engaging in physical activity are not enough to reduce inflammation. Likewise, it may not suffice to practice mindfulness and eat a healthy diet to deal with inflammation.

Because it is part of a number of health conditions, inflammation needs to be dealt with in a sure and certain way. You may get additional help by taking good qualilty supplements.

Often, people suffer from different nutrient deficiencies in their bodies. This is why they need to take supplements to compensate for an inadequate intake of minerals and vitamins and to protect the body against inflammation.

Effects of Supermarket Supplements

Supplements often advertise various health claims, including some that deal with inflammation. While some supplements may actually be strong enough to be helpful, a lot fall short of their claims. If anything, many of these supplements have been found to be packed with unnecessary fillers, lower levels of ingredients than the label says, and potentially harmful additives.

Perhaps the most unfortunate thing about supplements is that most of them are not even subjected to the same FDA tests for safety and effectiveness as prescription drugs. The FDA only tests about 1% of the 65,000 dietary supplements that are available in the market. However, the FDA does regulate the claims that supplement manufacturers make.

Be aware that the word "natural" has no legal meaning in the USA. You could say that a bathtub is "natural," but that doesn't mean you'd want to eat it!

In terms of potency, many of these products have been found to be loaded with fillers and synthetic ingredients, with little or no active ingredients. Manufacturers may also be cutting down costs by including inactive parts of specific herbs and botanicals, which do not offer the same healing benefits as the correct part of the herb itself.

If prepared carefully, these supplements may actually offer benefits against inflammation, but most are often exposed to chemicals and heat before being shipped or packaged. These handling practices are not quality efficient compromising the quality of the final product.

Another important consideration is that some shelf supplements do not come with an expiration date, making it hard to know if the supplement is still effective and even safe for consumption.

Look online for websites that test supplements and report the results. Labdoor.com is a free website that buys supplements, has them tested by labs, and reports the findings. Consumerlab.com is a huge website with a lot of information about many supplements made by many manufacturers, but requires a subscription for access.

Below, let's take a look at a few substances that have been studied extensively for their potential to fight inflammation.

Green tea

Green tea is the one of the most effective supplements against inflammation. The extracts from the tea plant, *camellia sinensis*, have antioxidant properties that help reduce inflammation in the body and also to prevent any diseases that may be caused by the excessive inflammatory markers in the body. The same plant produces white tea, green tea, and black tea; it is when the leaves are picked and how they are processed that is different

A number of population-based studies and clinical trials have revealed that green tea consumption is beneficial to human health. (30) This Japanese study establishes that people who consume green tea regularly can avoid premature cardiovascular death helping them to live longer than others who consume less green tea.

When used in supplemental form, green tea extract offers a lot of potency with the help of its antioxidant compounds called catechins and polyphenols. Its effects on inflammation can be observed from its ability to burn fat more easily, reducing the risk of cardiovascular disease and lowering bad cholesterol.

In addition, various lab studies show that green tea may also help protect against loss of brain cells, arthritis, and improve immunity against cold and flu symptoms.

Quercetin

Quercetin is another highly recommended supplement to offer relief from inflammation. Quercetin is a flavonoid which is found in various fruits and vegetables, with the highest concentrations found in apples and citrus fruits.

Quercetin contains a lot of anti-oxidant properties due to the anti-inflammatory agents in it. One of the ways it combats inflammation is by regulating inflammatory factors like C-reactive proteins, nitric oxide synthase and cyclooxygenase. (31) This function gives quercetin its most important inflammation-reducing properties.

Quercetin helps regulate the immune function of the body by regulating the working of pathways in the body using the help of enzymes and other proteins in the body. This ensures that the body does not react to foreign particles by creating inflammation unnecessarily.

Quercetin is also effective in reversing diseases that are associated with inflammation. It helps to prevent hardening of the arteries, to prevent heart diseases and also to protect the body from subsequent chronic infections.

Quercetin supplements are generally considered safe to use with virtually no side effects at the recommended dosage.

Apple cider vinegar

Apple cider vinegar is an ingredient that can help almost any health problem. It has extensively been used as a health tonic for centuries to treat a host of health conditions.

Inflammation is sometimes caused by the pH of the body being too acidic. Since apple cider vinegar has an alkaline pH, it helps keep acidity levels low in the body, which is also helpful for keeping inflammation levels lower.

At the same time, apple cider vinegar also helps keep the levels of potassium high in the body. As mentioned earlier, potassium is needed to regulate the calcium levels in blood because without it, the body may react to calcium as a foreign particle and cause inflammation.

Another way that apple cider vinegar prevents and even reverses inflammation is because it contains Vitamin C. This Vitamin is very effective in lowering the inflammation levels in the body by keeping the activation of inflammatory markers in the body at a minimum. It also helps reduce stress in the body, which further helps to lower the inflammation in the body.

In supplemental form, apple cider vinegar capsules offer the same benefits as apple cider vinegar itself, but without the strong taste that some people don't enjoy. The capsule version is also more convenient and easy to take with you.

Kale

Kale acts as an effective supplement against inflammation because it contains a lot of vitamins that help reduce inflammation in the body and also reverses inflammation that is already present.

Kale contains Vitamin A, which possesses a lot of antioxidant properties. These properties help flush out harmful oxidants from the body. This ensures that the body will not react to them as foreign agents and will not create an inflammatory response.

Kale also contains some B Vitamins, which reduce inflammatory markers in the body. Vitamin K has been known to reduce inflammatory markers as well as protect against heart disease, and osteoporosis.

The concentration of the inflammatory markers in the body, such as C reactive protein, is opposite to the amount of Vitamin B. By eating kale, the amount of B Vitamins in the body is increased, which ultimately lowers the amount of inflammatory markers in the body.

Folic Acid is another name for Vitamin B9, and it helps reduce the levels of inflammation in the body even when used in smaller amounts.

Quality kale supplements incorporate all the features of the food itself. They offer anti-inflammatory support along with the benefits of being all natural, non-GMO and gluten free.

Pectin

Various research studies indicate that pectin has significant effects on inflammation in the body and reversal of existing chronic inflammation in the body.

How so? Because galectin 3 is a protein in the body that causes inflammation. Citrus pectin helps stop its action in the body by binding with it.

Citrus pectin also helps prevent inflammation in the liver by possessing antioxidant properties that can make the liver free of any inflammatory markers. Plus, citrus pectin also helps in the removing of liver cells that have been damaged. The body may perceive these cells as foreign agents and have an inflammatory response against them. Citrus pectin, by removing these cells, helps prevent any further damage in the body.

Citrus pectin supplements are a helpful addition when trying to regulate inflammation as pectin in its natural form cannot be absorbed by the intestines, but its modified or powdered version can. As such, supplementation through powdered pectin or in capsule form can perhaps yield more anti-inflammatory benefits that pectin sourced from fruits.

Kelp

Kelp is a seaweed which is rich in iodine and helps promote anti-inflammatory effects in the body when used as a supplement. Kelp has an ingredient called fucoidan which has anti-inflammatory properties that are effective at reducing inflammatory markers in the body. (24) Kelp also helps with weight loss.

A study showed that ingredients in kelp help inhibit the effect of lipases that are involved in the conversion of normal body fuels to fats to be stored as reserve foods. (32) By stopping this process, kelp helps to keep the levels of fat low in the body. Since the wrong fatty acids also give rise to inflammation, kelp is quite effective in keeping the inflammation levels low by reducing the amount of fat deposits in the body.

Summary

It is important to realize that even healthy diets can have nutrient gaps. That is when good quality supplements from reliable manufacturers can come in handy.

Proper supplementation can not only help protect individuals against deficiencies but may also yield benefits that cannot be secured from diet alone. And especially in the case of chronic inflammation, suitable supplements may help bring things back into balance.

- Supplements can help to reduce inflammation in the body
- Vitamin C, some of the B vitamins, quercitin, and ingredients in green tea have been studied and found to be helpful for reducing inflammation
- Apple cider vinegar is also helpful, and is available in capsules as well as bottles.
- If you buy a bottom of apple cider vinegar, make sure it has the "mother," a wispy substance in the bottom of the bottle, so you know it is good quality
- Before you buy supplements, check online and find brands that have been independently tested and have good ratings
- Check how much you need to take. You can get information online or in the library. You will probably need very different amounts of one supplement than another!
- Store the supplements with the lid tightly closed, in a cool place, out of the sun

We hope that this book has helped you to understand what inflammation is, why it is important, when you need it, and when it becomes a problem. Inflammation is an important topic because everyone has inflammation some time, whether it is from a cut on your knee or a chronic problem like arthritis.

Remember that you can get help with inflammation from a trained healthcare professional.

Thank you for buying this book.

To your good health!

References:

https://www.medicalnewstoday.com/articles/248423.php

https://www.webmd.com/diet/anti-inflammatory-diet-road-to-good-health

https://www.health.harvard.edu/staying-healthy/foods-that-fight-inflammation

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3548567/

http://www.who.int/quantifying_ehimpacts/publications/preventing-disease/en/

http://www.johnshopkinshealthreview.com/issues/spring-summer-2016/articles/understanding-inflammation

http://www.sciencedirect.com/science/article/pii/S0185106316300737#bbib0125

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2990475/

https://news.yale.edu/2013/10/21/controlling-triggers-age-related-inflammation-could-extend-healthspan

https://www.frontiersin.org/articles/10.3389/fimmu.2017.00670/full

shared.web.emory.edu/whsc/news/releases/2010/11/poor-sleep-quality-increases-inflammation-study-finds.html

https://draxe.com/anti-inflammatory-foods/

https://www.health.harvard.edu/staying-healthy/foods-that-fight-inflammation

https://www.epa.gov/indoor-air-quality-iaq/ozone-generators-are-sold-air-cleaners

https://yosemite.epa.gov/opa/admpress.nsf/0/e99fd55271ce029f852579a000624956

https://www.psychologytoday.com/blog/urban-survival/201610/new-study-finds-yoga-breathing-lowers-inflammation

https://www.ncbi.nlm.nih.gov/pubmed/17184768

https://www.ncbi.nlm.nih.gov/pubmed/27142736

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1069023/

https://www.ncbi.nlm.nih.gov/pubmed/24833586

https://www.jstor.org/stable/20485697?seq=1#page_scan_tab_contents

https://www.cardiosmart.org/News-and-Events/2016/11/Inflammation-Triggers-Heart-Problems-From-Air-Pollution

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4326908/

https://rarediseases.org/rare-diseases/eosinophilic-fasciitis/

https://www.ncbi.nlm.nih.gov/pubmed/23196671