

INFLAMMATION

PRECURSOR TO CHRONIC DISEASE



Eicosanoids regulate the inflammation response – some increase it and others decrease it. Both are necessary, and they work together in concert controlling one another modulating the entire process.

If the self-regulating cycle fails and inflammation continues unchecked, a variety of chronic or auto-immune conditions can ensue. When this happens, we refer to the eicosanoids as either 'good' or 'bad,' depending on what role they play.

**'GOOD' EICOSANOIDS
SUCH AS PGE1 & PGE3 :**
Prevent blood clots
Cause vasodilation
Reduce Pain
Decrease cell division
Enhance immune function
Enhance brain function

**'BAD' EICOSANOIDS
SUCH AS PGE2:**
Promote blood clots
Cause vasoconstriction
Increase pain
Encourage cell division
Depress immune function
Suppress brain function

Everyone has experienced inflammation at some point or another. It is a normal, protective bodily response to infection and tissue injury, and it is a critical component of the healing process. In fact, it is encountered so often in medicine that it even has its own suffix – *'itis'* – tonsillitis (inflammation of the tonsils), colitis (an inflammatory bowel disorder), meningitis (an inflammation of the meninges), etc. The reddened tissue, the pain, the warmth and swelling that all accompany the inflammatory response are signs that the afflicted area is being 'walled off' from the rest of the body and that containment and repair has begun.

A normally functioning immune system switches inflammation on and off in response to threat or injury several times every day. It is normally a balanced, self-regulating system. Inflammation can however become a health risk when it continues beyond its normal parameters. In addition to direct tissue damage, inflammation can lead to immune system dysfunction, stroke, atherosclerosis, arthritis/ bursitis and auto-immune problems such as lupus, colitis, IBS & IBD, nephritis, fibromyalgia and myocarditis. Current studies indicate that conditions such as obesity, Alzheimer's disease, cancer and even aging may be linked to chronic, subclinical inflammation, and *it is even being postulated that all disease may be related to inflammation.* Controlling inflammation may be the key to controlling disease in general.

When the body is injured or an infection is detected, a sequence of chemical and physiological events is initiated called 'the inflammatory cascade.' As a result, eicosanoids are produced from lipids in the local cell walls. Eicosanoids are hormone-like compounds that regulate the inflammatory response. According to Dr. Steve Sinatra, "eicosanoids can be considered super-hormones capable of great health benefits (the "good" eicosanoids) as well as great harm (the "bad" eicosanoids) depending on which eicosanoid a cell produces. Unlike typical hormones that are produced by a particular gland, every cell in the body is capable of producing eicosanoids."

Pro-inflammatory eicosanoids are created through a process involving cyclooxygenase (COX) enzymes. Non-steroidal anti-inflammatory

drugs (NSAIDs) such as aspirin, acetaminophen, and ibuprofen block the COX pathways, thus preventing the production of inflammation-producing factors and are commonly used to control pain and inflammation. NSAIDs usually cause stomach upset and ulceration; prescription COX-2 inhibitors such as Celebrex®, Vioxx®* and Bextra* block the COX-2 pathway, and are easier on the stomach. There are also proteins created by recombinant DNA technology that are being used to treat inflammation. Regardless of the drug of choice, the approach is the same – to interrupt some critical step in the inflammatory process. This works temporarily, but it does nothing to address the cause. This is one of homeopathy's greatest strengths.

Homeopathy does more than just eliminate symptoms; it goes to the core of the problem. Western medicine doesn't know why the self-regulating cycle fails, or what causes chronic inflammation to continue. Homeopathy doesn't need to know how or why the malfunction occurs. By acting energetically, on a vibration level, it penetrates deeper and helps the body repair itself and restore its own homeostatic balance.

So, how does one know if there is a chronic or subclinical inflammatory state if there are no outward signs or symptoms? Diagnostically there haven't been many direct tests for inflammation. Elevated homocysteine and C-reactive protein (hs-CRP) levels are generally considered good indicators for the existence of inflammation. Recently studies have identified an even more reliable indicator for early, subclinical or 'silent' inflammation. The ratio of essential fatty acids, the omega-6 arachidonic acid (AA) to the omega-3 eicosapentaenoic acid (EPA) in plasma reflects the balance of pro- to anti-inflammatory eicosanoids. Dr. Barry Sears, president of the Inflammation Research Foundation, advises that AA/EPA ratios above 15 indicate the patient is in a chronic disease state, and ratios between 10 and 15 indicates the patient may be headed for chronic disease. Ideally the ratio should be below 3.0, and the fastest way to lower the ratio is to add fish oil to your diet. Additional information about this ratio and testing may be found at www.drsears.com/drsearspages/bloodtestserv.jsp

* both were recently taken off the market

PANDEMICS AND EPIDEMICS

Pandemic – a condition or disease affecting an entire country or world

Epidemic – a condition or disease affecting a localized place and time

According to a Washington (Reuters) report, Friday, June 24, 2005, influenza kills 36,000 Americans and puts 200,000 more in the hospital in an average year. "A more serious strain strikes every few years and a so-called pandemic strain emerges once every 27 years, on average. The more virulent strains sweep around the world within months . . . Half a million Americans could die and more than 2 million could end up in the hospital with serious complications if an even moderately severe strain of a pandemic flu hits . . . Pandemics hit in 1918 -- killing up to 40 million people globally -- 1957 and 1968. *Health experts all say the world is overdue for another and fear the avian flu in Asia may be it.* The World Health Organization says an H5N1 avian flu pandemic could kill up to 7.4 million people globally, because people lack immunity to it . . . The study found that the United States has stockpiled 2.3 million courses of the best anti-influenza drug, oseltamivir [Tamiflu] . . . which does not cure influenza but can prevent infection if taken early enough."

The western medical model claims that the only way to resist infection is to have been exposed to the organism, thereby developing immunity to it. Historically, homeopathy has a different philosophy. By toning the immune system homeopathically, and by using the remedies prophylactically (i.e. preventatively), a population stands a better chance of resisting an epidemic or pandemic. Next month's newsletter discusses this topic in detail. Whether its children bringing home the latest colds and flu from their 'back to school' trek, or indeed our world is primed for another viral onslaught, perhaps it would be wise to prepare our clients. Be sure you are on our mailing list!

DR. BARRY SEARS' SILENT INFLAMMATION QUESTIONNAIRE

Most inflammation results in pain. If, however, the level of inflammation is subclinical, meaning that it doesn't yet cause pain or physical symptoms, it is still possible that 'Silent Inflammation' may be doing harm to the body that will eventually show up as chronic disease. Take the following test to see whether or not you may be battling inflammation and not even know it!

- _____ Are you overweight?
- _____ Are you always craving carbohydrates?
- _____ Are you constantly hungry?
- _____ Are you tired, especially after exercise?
- _____ Are your fingernails brittle?
- _____ Is your hair limp with little texture?
- _____ Are you constipated?
- _____ Do you sleep excessively?
- _____ Are you groggy upon waking?
- _____ Do you lack mental concentration?
- _____ Do you lack a sense of well-being?
- _____ Do you have headaches?
- _____ Are you constantly fatigued?
- _____ Do you have dry skin?

This questionnaire is only based on observation, but it may alert you to the possibility of inflammation being present. If you answer yes to three or more questions, it is likely that you have elevated levels of silent inflammation and chronic conditions are in their earliest stages of development.

TOPICS

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PLEASE DELIVER TO:

In this issue we look at subclinical inflammation, its link to a variety of chronic diseases, and how homeopathy can help bring it under control.

Eicosanoids are a family of more than 100 hormone-like compounds produced from fatty acids that drive the inflammation process. These include prostaglandins, prostacyclins, leukotrienes, and thromboxanes. Eicosanoids derived from GLA, ALA, and EPA are generally beneficial, while eicosanoids derived from AA are potentially harmful. ‘Good’ eicosanoids (which are anti-inflammatory and vaso-dilating) and ‘bad’ eicosanoids (which are pro-inflammatory and vaso-constrictive). Because they are produced in and by every cell in the body, production depends on the local environment.

Eicosanoids from Gamma Linolenic Acid (GLA)

The body processes GLA through several steps, eventually leading to beneficial eicosanoids the most important of which is prostaglandin E1 (PGE1). PGE1 has three basic functions: it reduces inflammation, dilates blood vessels, and inhibits blood clotting. The strong anti-inflammatory properties help the body recover from injury by reducing pain, swelling and redness. The other two functions keep blood vessels open wide, and keep blood flowing freely.

Eicosanoids from Arachidonic Acid (AA)

The body processes AA into “bad” or potentially harmful eicosanoids (sometimes called ‘series 2 eicosanoids’) like prostaglandin E2 (PGE2). PGE2 is one of the strongest of the prostaglandin family, increasing inflammation and blood clotting/platelet aggregation and constricting blood vessels. While these functions are necessary to keep you from bleeding to death, excesses are now linked to rheumatoid arthritis, stroke and heart attack, diabetic nerve damage, depressed immune response, hypertension, allergies and possibly even cancer.

Eicosanoids from Alpha Linolenic Acid (ALA) and Eicosapentaenoic Acid (EPA)

The eicosanoids in this group are a mixed bag: some of them dilate blood vessels, while others constrict. This group includes prostaglandin E3 (PGE3) which is a weak pro-inflammatory and inhibitor of blood clotting. In general, PGE3 is a useful defense mechanism against trauma and infection.

The body must maintain a delicate balance between these eicosanoids – of particular concern is the balance between PGE1, PGE2, and PGE3. The body must produce enough beneficial eicosanoids such as PGE1 and PGE3, otherwise the strong pro-inflammatory, blood-vessel-constricting, and blood-clotting effects of PGE2 will overwhelm the system.

Inflammatory Terminology

Prostaglandins are a class of eicosanoids within the cell that stimulate nerves that signal pain to the brain and force you to stop what you’re doing — “Drop the hot pan!” They swell the blood vessels at the injured site, opening space in the capillary walls for the white blood cells to enter. The blood and plasma rushing out of those enlarged vessels causes the swelling, tenderness and redness. Prostaglandins are responsible for the pain of menstrual cramps.

Cytokines communicate with your brain when they detect an intruder, sounding the alarm. Cytokines and chemokines can also promote the growth of neoplastic cells. A sub-class of cytokines called *leukotrienes* (or *interleukins*) insures that the immune response is checked before it destroys outlying healthy cells and tissue. Importantly, they call off the inflammatory response. If you have overactive leukotrienes, your body can lose control of the process — white blood cells begin to digest healthy tissue, causing excessive damage and scarring, a common symptom in many autoimmune disorders. The following acronyms represent the most dangerous pro-inflammatory cytokines:

- TNF α - a tumor necrosis factor released by mast cells
- IL-6 interleukin-6
- IL-1(b) interleukin-1 beta
- IL-8 interleukin-6

Histamines are the chemical released from activated mast cells, and are responsible for that itchy nose, watery eyes and rash during an allergic reaction. Their job is to help you rid yourself of whatever toxin is causing the problem (by sneezing, coughing, crying and scratching). They bring more blood and lymphatic fluid to the site of the invasion, which transports your white blood cells to the site and toxins away. The amount of histamine that gets released determines how bad the allergy attack will be.

Chemokines – several types of chemotactic cytokines that attract other leukocytes into an inflammatory area.

Reactive Oxygen Species (ROS) are produced by activated phagocytes: macrophages and neutrophils. They are toxic for microorganisms but can also lead to tissue injury, and have proven to be powerful DNA-damaging agents.

Phospholipase A2 – The enzyme responsible for the release of essential fatty acids from the cell membrane, which is the first step in a cellular response. EFAs result in eicosanoid synthesis and the subsequent inflammation cascade.

Lipocortin – protein synthesized in response to corticosteroids which inhibits the action of phospholipase A2. This is why cortisol works to combat inflammation – the problem is that it doesn’t address the reason for the inflammation, and it damages the immune system.

SUGGESTED ANTI-INFLAMMATION PROTOCOL

Effectively dealing with inflammation involves a multi-disciplinary approach including diet, exercise, stress management and homeopathic treatment. Chronic inflammatory conditions may have been undiagnosed for years and will take time and effort to bring the process under control and repair the damage that has been done.

THREE CORE RECOMMENDATIONS:

INFLAMMATION MED: Traditional NSAIDs (non-steroidal anti-inflammatory drugs i.e. aspirin, ibuprofen or naproxen) and corticosteroids (such as prednisone) treat symptoms, but give little consideration to the cause. Inflammation Med works to help correct the problem that creates the inflammation in the first place.

FATTY ACID COMPLEX: Prostaglandins (the hormones that regulate inflammation) are made from fatty acids, so it is important to get the right balance of omega-6 to omega-3 fatty acids in your diet (see June 2005 Newsletter). According to Dr. Andrew Weil, this enables the body to reduce inflammation, lower blood pressure, prevent irregular heart beats and promote healthy blood flow over time. The Borage and Evening Primrose oils in the Fatty Acid Complex are both rich sources of GLA, which is a precursor to a potent anti-inflammatory agent PGE-1.

GLANDULAR REMEDIES: The tissue or organs involved would benefit from sarcodal therapy to assist in their rebuilding. It is also important to discern which tissues and organs are actually involved. For example, local acute inflammation of the sinuses may be helped with Mediral's Sinuses glandular. If, however, it is chronic and has become systemic, other areas may also be involved, such as brain, spinal cord, pericardium, etc. Collateral secondary organs and tissues affected may be more difficult to identify because many of them are not equipped with pain receptors, and there may be few or no symptoms in the early stages of damage.

ADDITIONAL CONSIDERATIONS:

PAIN MED: Temporary relief of pain may ease the patient's suffering until the inflammation is brought under control. Conventional pain medications (i.e. non-steroidal anti-inflammatories, COX-2 inhibitors, corticosteroids) can cause problems, such as reducing good the eicosanoids and causing indigestion and ulceration.

BACTEX or VIREX: There is evidence that some chronic, low-grade inflammation may be caused by bacterial (i.e. Chlamydia pneumoniae, Helicobacter pylori) or viral (i.e. herpes simplex, cytomegalovirus) infections.

NUTRITION: Chronic inflammation may have its beginnings in the gut, since it is estimated by some that up to 2/3 of the bodies' immune system is located in there. High glycemic-index foods increase insulin levels and can encourage inflammation, so a reduced carbohydrate diet may help. If a food allergy is suspected (and it should be), an elimination diet is recommended to identify the offending foods (dairy and wheat antigens are increasingly common dietary allergens). A good source of Omega-3 fatty acids, such as purified cold water fish oil or Mediral's Fatty Acid complex, should be included, and antioxidants from fresh vegetables help protect against oxidative damage from free radicals - the less physical damage done to the body, the less inflammation there will be.

EXERCISE: Physical activity releases endorphins into the blood, lowers CRP levels and helps to regulate insulin levels, all of which help to counteract inflammation.

ENVIRONMENT: Constant exposure to toxins in your environment can keep your immune system over-stimulated. Synthetic fibers, adhesives, cleaning products, pesticides and even heavy metals can cause your body to remain in a constant state of active detoxification. Unless you can eliminate them from your environment, a homeopathic remedy made from the offending item may assist in bringing the body back into homeostatic balance.

STRESS: Physical, mental and emotional stressors can be stronger insults to the body than physical trauma. Stress produces cortisol from the adrenal glands, and prolonged exposure to cortisol leads to impaired immune system function. Learning some coping strategies and mechanisms (i.e. yoga, prayer, meditation, deep breathing, biofeedback) can assist the body in reducing the chronic, exhausted fight-or-flight response and help to restore the inflammatory / anti-inflammatory balance. Adequate rest is also a coping factor.

Due to a number of complicating and interactive factors, Mediral does not recommend that prescription pharmaceuticals be stopped except under the supervision of a physician who will monitor the progress of the condition and simultaneously introduce natural alternatives to treat the underlying causes.

