

Atherosclerosis

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Atherosclerosis is a disease of the arteries characterized by fatty deposits on the intima or inner lining. These fatty deposits called atherosclerotic plaques or atheromas cause the artery to narrow and lose elasticity. The narrowing of the artery due to atheromas is a cause of heart disease and stroke and other circulatory disorders. As such, atherosclerosis is the major cause of mortality in the United States.

There is no one theory which is universally accepted concerning the development of atherosclerosis. Most authorities believe it begins in response to injury to the endothelial cells lining the intima of the artery. This may be due to infection, high levels of homocysteine, or something else. Whatever the cause, the changes in the endothelium of the artery cause white blood cells moving through the blood to adhere to the inner arterial wall. This allows various substances in the blood stream to invade the wall of the artery causing more irritation resulting in the accumulation fatty substances. These substances (triglycerides and low density lipoprotein, or LDL) become oxidized causing smooth muscle cells to attempt to repair the damage causing an atherosclerotic lesion. Ultimately, a cap of collagen (a type of connective tissue) covers the lesion. Finally, calcium accumulates over the site and an atheroma or plaque is formed hardening the artery.

Plaque not only constricts an artery it can also cause a complete blockage, especially if it ruptures and a blood clot is formed. Particles from a rupture can also move down the blood stream and ultimately block smaller arteries causing a heart attack, or a stroke.

Major Risk Factors for Atherosclerosis:

If you have high blood cholesterol levels, high blood pressure, diabetes, and are physically inactive and smoke, you are at high risk for this disease. Other risk factors include high levels of homocysteine, fibrinogen, C- reactive protein, glucose and high triglycerides, increased platelet aggregation, and “Type A” personality. Low levels of high density lipoprotein, or (HDL), low anti oxidant status, low levels of magnesium and potassium are also risk factors. Obesity promotes most or all of these risk factors. A family history of atherosclerotic disease, especially early onset, is a predisposing factor. Abnormalities in lipid metabolism also increase susceptibility.

Lifestyle Modifications:

Diets high in saturated fats appear to be largely responsible for high blood cholesterol and are thought to promote atherosclerosis. The low density lipoproteins, or LDLs are definitely atherogenic, with lipoprotein (a), or Lp (a) being the worst because it is composed of an additional molecule of an adhesive protein called apolipoprotein (a). The

high density lipoproteins, however, or HDLs seem to prevent accumulation of cholesterol in the tissues.

Blood levels of the above lipoproteins are partly regulated by dietary factors and exercise. Twenty minutes or more daily of aerobic exercise can improve your lipid profile. Also, a predominantly plant based diet low in red meat, fried foods, high fat dairy products such as ice cream, butter and eggs is essential. Your diet should be high in leafy green and brightly colored vegetables such as spinach, cress, turnip greens, peppers, tomatoes and carrots, whole grain cereals and breads, nuts and seeds, and low in refined sugars and salt. Daily consumption of one or more of the following kinds of fiber will reduce total cholesterol by up to 20%: oat bran, oatmeal, guar gum, pectin (found in Apples) and psyllium.

Cold water fish such as salmon, mackerel and cod should be substituted for red meat whenever possible as can the white meat of poultry. Margarine, vegetable oil and other foods high in trans fats should also be avoided. Natural oils like canola, soy, safflower, fish and flaxseed should be consumed to meet the need for essential fatty acids. Flax seed oil is preferable to fish oils as the former often contain lipid peroxides which stress the body's antioxidant defenses. The best oils for cooking are canola and olive oil.

Nutritional and Botanical Supplements:

Niacin has been shown to be the most effective natural supplement in lowering cholesterol because it lowers the LDL form and raises the HDL form. Niacin is better than the popular drug Lovastatin because it also lowers lipoprotein (a) and has few side effects compared to statins. It is also a lot cheaper. Large doses of niacin over 500mg a day should be administered under the guidance of a physician. Pantethine, a form of vitamin B6, is another effective natural supplement that lowers lipids and has no real side effects. Vitamin C lowers total cholesterol and triglycerides and raises HDL. It also reduces lipoprotein (a). Vitamin E is another vitamin that protects against heart and other degenerative diseases. It should be taken as mixed tocopherols or high gamma tocopherols since these mixtures seem most effective. High homocysteine levels, may be lowered by vitamins B6 and B12, and folic acid when taken together.

Garlic and onions are protective against cardiovascular disease and should be eaten regularly. Garlic supplements are also useful at a minimum dose of 4,000 mcg of allicin, or one to four cloves. Another potent cholesterol and triglyceride lowering agent is gugulipid, which is comparable to that of prescribed lipid lowering drugs without the side effects.

All of the above supplements are available at most health food and vitamin stores.

These nutritional suggestions are not intended to treat or cure disease and or be used as a substitute for sound medical advice. This information should be used in conjunction with the services of a trained, licensed healthcare practitioner. If you are under a doctor's care, seek advice before taking supplements or starting a new exercise program.

