ARTERIOSCLEROSIS
Arteriosclerotic Vascular Disease, Arteriosclerosis

The thickening, hardening and loss of elasticity of the walls of arteries.

⚠ Risk factor ♂ Male & Female

About Arteriosclerosis

Arteriosclerosis is the thickening, hardening and loss of elasticity of the walls of arteries. This process gradually restricts the blood flow to one's organs and tissues and can lead to severe health risks brought on by atherosclerosis (the terms are sometimes used interchangeably), which is a specific form of arteriosclerosis caused by the buildup of fatty plaques, cholesterol, and some other substances in and on the artery walls (Pic. 1).

Atherosclerosis is a complex multifocal (with more centres) arterial disease of medium- and large-size arteries (Pic. 2) involving interactions of multiple genetic and environmental factors. It is characterized by endothelial dysfunction, vascular inflammation, and the buildup of lipids, cholesterol, calcium (Pic. 3), and cellular debris within the intima of the vessel wall. This construction results in plaque formation accumulating on the inner walls of arteries, and as the artery walls thicken, the pathway for blood narrows (Pic. 4), and this can decrease or block blood flow diminishing oxygen supply to target organs (Pic. 5).

The primary symptom of arteriosclerosis is the pain, poor organ function, and bad general condition. Diagnosis can be based on a physical exam, blood test, EKG and the results of these tests (among other exams).

Treatment is often in the form of preventative measures of prophylaxis (preventing of disease). Drug therapy for underlying conditions, such as drugs for the treatment of high cholesterol, drugs to treat high blood pressure (ACE inhibitors), and anti-coagulant drugs, are often prescribed to help prevent arteriosclerosis. Lifestyle changes such as increasing exercise, stopping smoking, and moderating alcohol intake are also advised.

Symptoms

- sudden weakness
- facial or lower limbs numbness
- confusion
- difficulty understanding speech
- problems seeing

Associated diseases

- cardiovascular disease
- hypertension (high blood pressure)
- diabetes
- erectile dysfunction

Complications

Arteriosclerosis is the dominant cause of cardiovascular disease (CVD) including myocardial infarction (MI), heart failure, stroke and claudication (leg and/or buttock pain that occurs when walking).

Cardiovascular disease (Pic. 6) as a complication of arteriosclerosis is today the most important cause of morbidity and mortality among elderly people especially in the developed countries.
Risk factors

- obesity
- smoking
- genetic factors
- hypertension
- high cholesterol levels

Prevention

Making lifestyles changes is very important to help reduce complications:

- eat a healthy and balanced diet – including a variety of fresh fruits and vegetables
- to be active every day (30 minutes or more of physical activity every day)
- to manage blood pressure
- to achieve and maintain a healthy body weight
- to quit smoking or remain smoke free
- to take medicines as prescribed by the doctor
- to have cholesterol checked regularly by doctor, as part of an assessment of overall risk of heart, stroke and blood vessel disease; the higher patient risk, the more often that he should have these checks.

How it can affect fertility

Male fertility

Hypertension and high levels of cholesterol can injure the arteries that supply blood to the penis. Thus, damage of the penile arteries or veins can lead to erectile dysfunction which in turn seems tightly linked to vascular dysfunction. Erectile dysfunction is defined as the consistent inability to attain and maintain an erection sufficient to permit satisfactory sexual performance. Even with an erection problem, a man may still have sexual desire and be able to have an orgasm and to ejaculate.

Although infertility may be a marker of diminished fitness, which may accelerate the development of impaired health in the future, it may also occur as a consequence of current health. Men with infertility have a higher risk for a variety of other chronic medical conditions, including diabetes, heart disease, alcohol abuse, and drug abuse.

Female fertility

Women’s fertility is not strictly affected by atherosclerosis but it could be impaired by hypertension or high blood cholesterol, such as unexplained infertility is associated with decreased uterine and ovarian arteries blood flow during the luteal phase (second half of the cycle).

Prognosis

Doctors think of atherosclerosis to be the main cause of erectile dysfunction (ED).

The thought was driven from the hypothesis that small arteries will be clotted before the large or medium ones. Since erection depends mainly on the amount of delivered blood to the penis, normal arteries thought to have no problem in supporting the process of blood delivering. In contrast, if the arteries become stiffen due to the deposition of atherosclerosis (which in turn will reduce their compliance as a result of the increment in arteries walls resistance), the amount of delivered blood will be declined which affects the process of erection.

In these cases, there are methods of assisted reproduction, which are able to fertilize eggs outside the body, and than insert embryo to the woman’s womb.

Women’s fertility is not strictly affected by atherosclerosis.
The illustration shows a normal artery with normal blood flow (figure A) and an artery containing plaque buildup (figure B).

Microphotography of arterial wall with calcified (violet color) atherosclerotic plaque (hematoxylin and eosin stain).

Micrograph of an artery that supplies the heart showing significant atherosclerosis and marked luminal narrowing.
Fatty materials (plaque) accumulates on the wall of the arteries resulting to a narrower artery which becomes stiffer and dilated. When this happens, the leg muscles are forced to work harder in order for it to receive enough supply of blood and oxygen.

Sources

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