Annals of the University of Oradea, Fascicle: Ecotoxicology, Animal Husbandry and Food Science and Technology, Vol. XVI/A 2017

Analele Universitaţii din Oradea, Fascicula: Ecotoxicologie, Zootehnie si Tehnologii De Industrie Alimentara, Vol.XVIA 2017

THE PATTERN OF OCCURRENCE OF ATHEROSCLEROSIS BY AGE

Nicolae Nicoara*, Alexandra Pop, Anca Papita***, Paulas Bogdan*** Bianca Andreica*****

* University of Oradea, Faculty of Medicine and Pharmacy, Department of Morphological Disciplines, Oradea- Romania, 1 Universităţii St., 410087

** (corresponding author) University of Oradea, Faculty of Medicine and Pharmacy, medical student alepop95@yahoo.com, Piata 1 Decembrie nr.1

*** University of Oradea, Faculty of Medicine and Pharmacy, medical student

Abstract

Atherosclerosis is an almost unexplained disease in older people. The pattern of this disease is different in males to women because women have resistance to the development of atherosclerosis to menopause. Progression of atherosclerosis appears to begin with the presence of milk platelets that are present even in children. In men, it seems to follow a linear development, and in women it has a sudden development with the onset of menopause.

Key words: inflammatory lesions, cholesterol, lethal complications

Introduction

Atherosclerosis is the disease of unknown etiology with numerous risk factors associations. From morphopathological point of view, atherosclerosis combines the characteristics of chronic inflammatory lesions with neoformation and accumulation lesions. (Kotiuzhynska, 2017)Thus, we have a general chronic inflammatory syndrome associated with some studies with the development of atherosclerosis. At the level of the lesion, we find the fibrotic structure characteristic of the repair process after the injuries it advocates for the inflammatory cause. (Stenvinkel, 2000) Foam cells that are macrophages that ingest cholesterol also plead for the inflammatory process. (Rajagopalan, 1996) We have smooth muscle proliferated in the atheromatous plaque, also advocating the inflammatory cause. (Jonasson, 1986) Cholesterol is still considered a risk factor for atherosclerosis, being identified in crystalline arteriosclerotic plaques, thus pleading morphologically for an accumulation lesion. (Allahverdian, 2014)

Calcium is also found in deposits in the atheroma plates. (Waters, 1990) Plowing of smooth muscles can be considered as a lesion of neoformation. (Davies, 1993) Arterial hypertension is also considered as a risk factor for atherosclerosis by an unknown physiopathological mechanism in the metabolic syndrome. (Hoeks, 1995) In patients with diabetes, a faster evolution of atherosclerosis was observed compared to non-diabetic patients. (Steiner, 1999) Coronary arteries are most vulnerable to the complications of atherosclerosis or acute myocardial infarction, which is the leading cause of mortality in developed countries. (Leaman, 1981) Atherosclerosis complicated with cerebral thrombosis is also an important cause of death and disability due to ischemic stroke. (Moody, 2003) At the lower limbs, atherosclerosis leads to chronic obliterative arterioapathy with an important negative effect on locomotion and often leads to lethal complications such as varicose ulcer supernatant and gangrene of the extremities. (Zardi, (2003))

Material and method

The most common and early aortic crosa is affected by atherosclerosis, under the plaque that protrusions in the vascular lumen, the mean size is 2 cm^2. (Nicolosi, 1997)The next area as affected is the cerebral arteries, with no specificity in a particular area. (Holme, 1981)The following frequency is represented by the carotid arteries, especially the carotid sinus. (Bonithon-Kopp, 1996)The thoracic aorta is and frequently affects her like the aorta caraway in the form of deposits that protrude into the lumen. The abdominal aorta is often affected by it. Coronary arteries are less affected by atherosclerotic plaques. Common iliac arteries also exhibit atheroma deposits. In men on average, affection begins around the age of 35 and around 60 years old, almost all male subjects are affected by atherosclerosis. Women rarely notice atherosclerotic deposits prior to onset of menopause. (Hormonal perturbations such as polycystic ovaries should be considered in association with the presence of atherosclerosis in women before menopause, knowing that they are a cause of male hormones in the blood). After menopause, the progression of atherosclerosis has the same pattern as in the man, so just about 60 years old, almost all people experience extensive atherosclerosis.

Large arteries appear to be the first to be affected by atherosclerosis, or the aorta, followed by abdominal aortic joint, common iliac arteries. Medium caliber arteries are the following in order of damage, namely the cerebral arteries and the coronary arteries.

Results and discussions

Extending atherosclerosis to nearly the entire elderly population with often lethal evolution raises the need to continue detailed research on the cause and risk factors of associations. Identifying a pattern of occurrence with respect to the age of onset, the affected territories, the severity of the damage can bring significant implications for the risk assessment of complications in a particular group of people. The different age of onset in men and women provides a detailed analysis of differences between the two sexes not only of hormonal differences but also of inflammatory syndrome, cholesterol and blood triglycerides in order to identify a more accurate correlation between these associations. It is also necessary to analyze the correlation between eating habits and the evolution of atherosclerosis in the two sexes.

Conclusions

From morpho-pathophysical observations regarding the order of blood vessel damage to atherosclerosis, large arteries appear to be affected first.
Atherosclerosis is a disease of unknown origin that almost totally affects the general population in developed countries.
Complications of atherosclerosis are the leading cause of mortality and morbidity in developed countries.
Among the complications of atherosclerosis include acute myocardial infarction, ischemic stroke, and chronic obstructive arterial disease.
Etiological factors of atherosclerosis remain unknown, there are only risk factors.
The main risk factors are increased LDL cholesterol, increased triglycerides, inflammatory syndrome, obesity, diabetes, sedation, some acute infections (Chlamydia).
There are differences in the age of onset between the two sexes in men starting earlier.
Future research for the possible identification of a pattern of atherosclerosis is needed for a more accurate quantification of risk.

References

Allahverdian, S. C. (2014). Contribution of intimal smooth muscle cells to cholesterol accumulation and macrophage-like cells in human atherosclerosis. *Circulation, CIRCULATIONAHA* , 113.
Bonithon-Kopp, C. T. (1996). Relation of intima-media thickness to atherosclerotic plaques in carotid arteries. *Arteriosclerosis, thrombosis, and vascular biology, 16(2),* , 310-316.

Davies, M. J. (1993). Risk of thrombosis in human atherosclerotic plaques: role of extracellular lipid, macrophage, and smooth muscle cell content. *Heart, 69(5)* , 377-381.
Hoeks, A. P. (1995). Different effects of hypertension, atherosclerosis and hyperlipidaemia on arterial distensibility. *Journal of hypertension, 13(12)* , 1712-1717.
Holme, I. E.-L. (1981). Risk factors and raised atherosclerotic lesions in coronary and cerebral arteries. Statistical analysis from the Oslo study. *Arteriosclerosis, Thrombosis, and Vascular Biology, 1(4),* , 250-256.
Jonasson, L. H. (1986). Regional accumulations of T cells, macrophages, and smooth muscle cells in the human atherosclerotic plaque. . *Arteriosclerosis, Thrombosis, and Vascular Biology, 6(2),* , 131-138.
Kotiuzhynska, S. U. (2017). MODERN APPROACH FOR ATHEROSCLEROSIS EXPERIMENTAL MODELING. *In International Scientific and Practical Conference World science (Vol. 6, No. 4* , 25-28.
Leaman, D. M. (1981). Coronary artery atherosclerosis. *Circulation, 63(2)* , 285-292.
Moody, A. R. (2003). Characterization of complicated carotid plaque with magnetic resonance direct thrombus imaging in patients with cerebral ischemia. *Circulation, 107(24),* , 3047-3052.
Nicolosi, R. J. (1997). Dietary conjugated linoleic acid reduces plasma lipoproteins and early aortic atherosclerosis in hypercholesterolemic hamsters. *Artery, 22(5),* , 266-277.
Rajagopalan, S. M. (1996). Reactive oxygen species produced by macrophage-derived foam cells regulate the activity of vascular matrix metalloproteinases in vitro. Implications for atherosclerotic plaque stability. *Journal of Clinical Investigation, 98(11)* , 2572.
Steiner, G. S. (1999). Baseline characteristics of the study population in the Diabetes Atherosclerosis Intervention Study (DAIS). *The American journal of cardiology, 84(9)* , 1004-1010.
Stenvinkel, P. H. (2000). Are there two types of malnutrition in chronic renal failure? Evidence for relationships between malnutrition, inflammation and atherosclerosis (MIA syndrome). *Nephrology Dialysis Transplantation, 15(7),* , 953-960.
Waters, D. L. (1990). A controlled clinical trial to assess the effect of a calcium channel blocker on the progression of coronary atherosclerosis. *Circulation 82(6)* , 1940-1953.
Zardi, E. M. ((2003)). Hemodynamic effects of a prostacyclin analog (iloprost) on portal flow velocity and volume and visceral artery circulation in patients with lower limb arteriopathy. *Ultrasound in medicine & biology, 29(2)* , 209-213.