



MODERN DIAGNOSIS OF PERIPHERAL ARTERY DISEASE

Aytimova Gulsanam Yusupovna

Senior Lecturer the Department of Obstetrics and Gynecology

Urganch branch of Tashkent Medical Academy, The Republic of Uzbekistan, Khorazm region Urganch city

ANNOTATION

It is difficult to predict future trends in the epidemiology of lower limb artery disease, considering the changes in risk factors in population, especially smoking and diabetes, as well as increase of patients' survival with ischemic heart disease and stroke. The results of some investigations, published over the last few decades, indicate a decrease in incidence of alternating lameness. Considering the general etiology of atherosclerosis of various peripheral arteries, the presence of vascular lesions of one basin increases the frequency of asymptomatic and clinical explicit atherosclerosis of another localization

KEYWORDS: *Atherosclerosis, IHD (stenocardia [stable or unstable] / myocardial infarction, cerebrovascular disease (ischemic stroke or transient ischemic attack), a multi-vascular disease (coronary and cerebrovascular disease), cardiovascular risk factor (hypercholesterolemia, arterial hypertension, saccharine or smoking).*

THE ACTUALITY OF THE ISSUE

The modern concept of the diagnosis of peripheral artery disease is one of the urgent issues of modern medicine. Peripheral Artery Disease (PAD) is a pathology, characterized by the formation of plaques in the peripheral arteries. As reported at the Scientific Sessions of the American Heart Association in 2007, the prevalence of asymptomatic current peripheral arterial disease at adult population in the United States of America had been constantly increasing, and now it is found in almost 5% of adults aged 40 years and older [1,6]. In addition, peripheral artery disease is an indicator of the conditions of arteries and its presence is associated with rising risk of heart attack and stroke [10-11].

The epidemiology of lower limb artery disease has been studied in many countries, including Europe. According to the population researches conducted in Sweden, the prevalence of lower limb artery lesions in people aged 60–90 years was 18%, and alternating claudication was 7% [3]. One third of patients had no clinical symptoms. The prevalence of critical limb ischemia was significantly lower than 0.4% [3]. The estimated annual frequency of acute limb ischemia varies from 500 to 1000 cases per 1 million people; it is higher in patients with diabetes.

The frequency of atherosclerosis of the arteries of the lower extremities is closely related to the age. It is

low at the age of 50 and increases sharply at an older age. The prevalence of lower limb artery disease is different in men and women, however, the results of some researches testify that this difference decreases with age. Incidence (the number of new cases) also closely depends on age. In the Framingham research, the incidence of alternating claudication in men increased from 0.4 per 1000 at the age of 35–45 to 6 per 1000 at the age of 65 and older [5, 7]. In women, the incidence was about 2 times fewer than in men, but it was alike in old age.

It is difficult to predict future trends in the epidemiology of diseases of the lower limb arteries, considering the changes in risk factors in population, especially smoking and diabetes, as well as the increased survival of patients with ischemic heart disease and stroke. The results of some investigations, published over the last few decades, indicate a decrease in incidence of alternating lameness. Considering the general etiology of atherosclerosis of various peripheral arteries, the presence of vascular lesions of one basin increases the frequency of asymptomatic and clinical explicit atherosclerosis of another localization. From a clinical point of view, the presented data indicate that patients with clinical manifestations of atherosclerosis, it is necessary to take into consideration the possibility of asymptomatic damage to other arteries. This especially concerns for the elder people, who has specifically

ischemic heart disease, cerebrovascular disease, and lower limb artery disease.

Peripheral artery disease risk factors are similar to those coronary artery diseases and atherosclerosis in general. Traditional risk factors include smoking, dyslipidemia, mellitus and arterial hypertension. However, data on the relationship of these risk factors with atherosclerosis of some peripheral arteries are limited. In addition, certain risk factors may be of greater importance in the extension of atherosclerosis of some vessels, however, comparative studies are few. Several epidemiological researches have established the important role of smoking in the extension of lower limb artery disease; the identified relationship depended on the intensity of smoking. Smoking is considered a more powerful risk factor for lower limb artery disease compared with coronary atherosclerosis. In most studies, patients with intermittent claudication smoked or quit smoking. Smoking cessation is associated with a rapid decrease in the extension of intermittent claudication, which was similar to such non-smokers in a year [7]. Mellitus is another risk factor that has a particular importance in the extension of atherosclerosis of the lower limb arteries. This primarily relates to severe atherosclerosis, accompanied by gangrene or ulceration, while in the case of intermittent claudication, association with diabetes is comparable to the coronary artery disease. Risk degree depends on the duration and gravity of diabetes. In most epidemiological researches, high total cholesterol and low cholesterol high density lipoprotein (HDL) were autonomous risk factors for lower limb artery disease. Data on the role of other risk factors, such as obesity, alcohol consumption, and plasma homocysteine levels, in the extension of lower limb artery disease is controversial. Studying the role of hemostatic, rheological and inflammatory markers, such as plasma fibrinogen levels and C-reactive protein, revealed their independent relationship with the prevalence and incidence of atherosclerosis of the lower limb arteries, although it remains unclear whether this association is primary or secondary. Genetic factors and other new biomarkers are currently being studied.

It is necessary to consider risk factors and known concomitant diseases, including arterial hypertension, dyslipidemia, mellitus, smoking, and as well the presence of cardiovascular disease. While collecting an anamnesis, symptoms of damage to various vessels should be identified: a family anamnesis of cardiovascular diseases, stenocardia, symptoms which emerging from walking (for example, fatigue, cramps or pain in the buttocks, hips, legs, or feet), especially if they walk quickly in quietness, any pain in the legs or

feet that is changed in standing or lying down, badly healing ulcers of the lower limb.

Objective of the investigation. Improving the early diagnosis of ischemic cerebral stroke by elaborating and introducing into clinical practice a complex of methods ultrasound investigation.

Materials and methods. During the research, we carried out an ultrasound scrutiny of 230 patients who had suffered from peripheral artery disease, and referred to the Urgench railway hospital. 34 (14,8%) of these patients were under the age of 59 years, 149 (64,7%) of the patients under the age of 60-74 years, 47 (20,4%) of the patients aged 75 or older.

The echographic examination was carried out after a clinical examination on an ultrasound machine "Chison" (China) with a linear convex multi-frequency detector 5.0 MHz. The investigation was conducted in B-mode. In the mode of color energy doppler displaying, allowing to visualize in a color format along their length, with the measuring of the diameter of the vessels. Pulse-wave dopplerographic technology was used to determine blood flow velocity. Assessment of the quantitative characteristics of blood flow included the following indicators: maximum systolic blood flow velocity (Vmax), maximum diastolic blood flow velocity (Vmin), systolic-diastolic ratio, pulsation index (PI) and resistance index (RI).

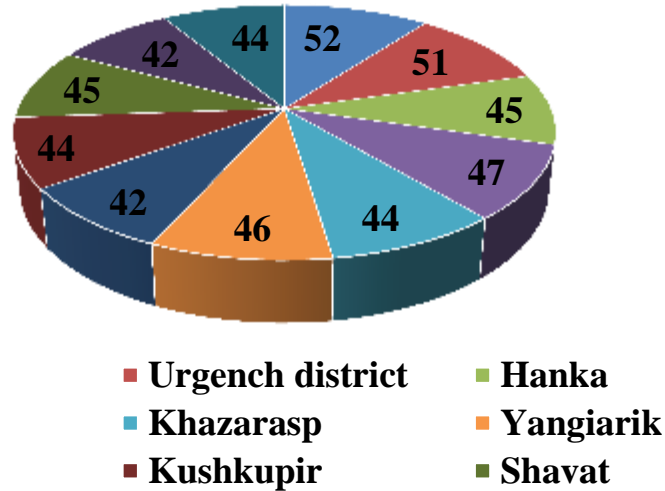
RESULTS

On the basis of the results carried investigation, new methods have been substantiated scientifically and elaborated fundamentally, and existing methods for ultrasound diagnosis of peripheral artery disease have been improved. As a result of the research, Important theoretical and practical significant data on the position of peripheral vessels were obtained.

Our investigation was conducted under real clinical practice in hospitals in 10 districts and the city of Urgench, Khorezm region between 2017–2019. Primary care of physicians was connected in the data collection related to the clinical characteristics of patients, cardiovascular risk factors, and patient history. Participation in this research was offered to all patients who corresponded the inclusion criteria. Patients who were not able to go through the scope of the research and patients with infectious diseases were excluded. Participation in the study was voluntary.

In total, 554 patients met the inclusion criteria during the observation period. 48 patients refused to participate in the study, four patients dropped out of the study. The investigation involved 281 men (56.0%) and 221 women (44.0%).

Distribution of patients by place of residence



The middle age was an average of 52.6 years, with a maximum age of 60 years and a minimum age of 45 years and a standard deviation of 7.3 years. There were women on average 52.6 ± 6.8 years old, men 51.2 ± 8.8 years old. The distribution of patients in 10 districts and the city of Urgench, Khorezm region is shown in the table.

The research included patients older than 45 years. A survey was conducted in 524 patients in 10 districts and Urgench city, Khorezm region in the period from 2017-2019 years. The examined population included 502 patients after exclusion of 22 patients. The most common reason for patient exclusion was that patients refused to participate in the investigation.

502 patients were examined, among the examined 353 (70,3 %) patients, no PAD was detected, and 149 (29,7%) were diagnosed with PAD.

502 patients were examined, which constituted 281 (56.0%) men and 221 (44.0%) women; patients over 45-59 years old were 100 (20,0%), of which 55 (54,7%) were men, 45 (45,3%) were women. of these 320 (63.7%) patients 181(56.5%) are men, and 139 (43.5%) are women elderly patients (60-74 years old) with an average age of $66,31 \pm 4,85$ years old); 82 (16.3%) patients of old age (75-90 years (average age $78,92 \pm 5,79$ years) (according to the WHO age classification)) among them, men were 45 (54.3%), women 37 (45,7%).

Fig 1. Patient Distribution

While examining patients, the proportion of young people (up to 45 years old), middle (45-59 years old), elderly (60-74 years old) and senile (75-90 years old)

age was 40 (8%) (45 men-(54.3%), women-37 (45.7%)), 100 (20%) (men-55(54.7%), (women-45 (45.3%)), 320 (63.7%) (men-181 (56.5%), women-139 (43.5%)), 82(14%) (men-45 (54.3%), women-37 (45.7%)), due to the (figure 7). Most of the examined were represented in patients over 60 years of age - elderly and senile age - 402(80%) men - 226 (56.2%), women - 176 (43.8%) people.

The average age of the patients was 67.8 ± 11.7 years, 281 (56.0%) were men (table). On average, patients had overweighted (body mass index 26.8 ± 5.5 kg / m²). In (483) 96.3% of patients had at least one cardiovascular risk factor. Patients were divided into groups of patients with coronary heart disease 134 (26.6%), patients with cerebrovascular disease 99 (19.8%), patients with multiple vascular pathology (both coronary and cerebrovascular) 35 (7.6%) and patients, who had at least one cardiovascular risk factor, but had neither coronary nor cerebrovascular diseases 234 (46.6%). 36 (7.6%) were regular smokers at the time of the survey. Only 103 (20.5%) patients had complaints of pain in the lower limb. Intermittent claudication was observed in 22 (4.4%) patients. The absence of pulsation in one or several arteries was noted in 179 (35.6%) patients.

Chronic arterial insufficiency of the lower extremities was identified in a history of 13 (13%) patients aged 45-60, 51 (16%) elderly patients, and 21 (26%) elderly patients.

Clinical and demographic baseline characteristics of the examined (total n 502)

	Medium (SD)
Age, years	67,8 +11,7
45-60 years n (%)	100 (20,0%)
60-75 years n (%)	320 (63,7%)
75 and older n (%)	82 (16,3%)
Gender, male n (%)	281 (56,0%)
Body mass index, kg/ m2	26,8± 5,5
Hospital Type N (%)	
Academic	297 (59,2%)
District	205 (40,8%)

DISTRIBUTION OF THE EXAMINED PATIENTS DEPENDING ON THE GENDER, AGE AND LOCATION

№		n=502	45-59 years old		60-74 years old		75-90 years old	
			Man	Female	Man	Female	Man	Female
1.	city Urgench	52 (9,2%)	6	5	19	13	5	4
2.	Urgench District	51 (10,8%)	5	6	17	14	5	4
3.	Khanka	45 (9,0%)	5	4	16	12	4	4
4.	Bagat	47 (10,4%)	5	4	17	13	5	3
5.	Khazorasp	44 (8%)	5	3	16	12	4	4
6.	Yangiarik	46 (10,1%)	5	4	16	14	4	3
7.	Khiva	42 (9,4%)	4	3	16	12	4	3
8.	Kushkupir	44 (9,0%)	5	4	17	11	4	3
9.	Shavat	45 (9,0%)	5	4	16	13	4	3
10	Yangibozor	42 (7,0%)	5	4	15	12	3	3
11	Gurlen	44 (8,4%)	5	4	16	13	3	3
Overall			55	45	181	139	45	37
Total			502 (man 281/ female 221)					

SAMPLES OF FREQUENCY DEPENDING ON TYPE, RISK FACTORS AND RELATED TO CARDIOVASCULAR PATHOLOGY

Coronary ATZ n (%)	134 (26,6%)
Cerebrovascular ATZ n (%)	99 (19,8%)
2 or more vascular basins n (%)	35 (7,0%)
only risk factor n (%)	234 (46,6%)
ischemic heart disease, doc.	134 (26,6 %)
Cerebrovascular disease, doc.	99(19,8%)
Cardiovascular Risk Factors at least 1 (n (%))	483(96,3%)
Hypercholesterolemia, treatment n (%)	56(23,9%)
Arterial hypertension n (%)	101 (43,2%)
Diabetes n (%)	53 (22,6%)
Smoking, n (%)	18 (7,7%)
Abdominal aortic aneurysm n (%)	3 (1,3%)
Stenocardia, stable n (%)	55 (41,0%)
Stenocardia, unstable n (%)	19 (14,2%)
Myocardial heart attack, without Q wave (%)	20 (15,0%)
Myocardial infarction, Q wave (%)	40 (29,8%)
Coronary artery bypass surgery or angioplasty n (%)	7 (20,0%)
Chronic heart insufficiency, n (%)	28 (80,0%)
Ischemic stroke n (%)	61 (61,6%)
Transient ischemic attack, dock n (%)	38 (38,4%)
Carotid artery revascularization n (%)	3 (1,3%)

We identified 4 categories of patients that determined the type of patients (coronary, cerebrovascular, multi-vascular, having only RF):

1) IHD (stenocardia [stable or unstable] / myocardial infarction,

2) cerebrovascular disease (ischemic stroke or transient ischemic attack),

3) a multi-vascular disease (coronary and cerebrovascular disease), or

4) at least one cardiovascular risk factor (hypercholesterolemia, hypolipemic therapy, arterial hypertension, saccharine or smoking).

The prevalence of atherosclerotic changes in various vascular basins increases by getting older, and the generalization of the process happens. 21% of patients with atherosclerosis of lower limb arteries had a clinical picture of chronic lower limb ischemia.

CONCLUSIONS

Thereby, nowadays a large number of hemodynamic, rheological, immune and other risk factors for thrombosis are described in literature. The medical literature constantly outlines new methods for assessing the patient's readiness for surgery, and the interpretation of the results of old tests is subject to revision. In this regard, it seems promising to create an integrated risk assessment system for early thrombotic complications, which includes the results of a number of the most reliable methods that can adapt to the emergence of new diagnostic methods and harmoniously integrate them into the existing prognostic algorithm.

REFERENCES

1. Ilyenko L.I., Zubareva E.A., Mitkov V.V. *Ultrasonic research methods in neonatology*. M. 2003
2. Mitkov V.V. *Clinical Guide to Ultrasound Diagnostics*. Vidar 1997
3. Hofer M. *Ultrasound diagnosis*. M. 2006
4. Fazilov A.A. *Ways of improving clinical ultrasound diagnostics*. A.2005
5. Vereshchagin N.V., Morgunov V.A., Gulevskaya T.S. *Pathology of the brain in atherosclerosis and arterial hypertension*. M. 1997
6. Shmid E.V., Lunev D.K., Vereshchagin N.V. *Vascular diseases of the brain*. M.1976.
7. Lelyuk V.G. Lelyuk S.E. *The state of the brachiocephalic arteries and the heterogeneity of the clinical manifestations of coronary artery disease*. M. 1998.
8. Lelyuk V.G. Lelyuk S.E. *The basic principles of hemodynamics and ultrasound examination of blood vessels*. Vidar. 1997.
9. Shakhnovich A.R. Shakhnovich V.A. *Diagnosis of cerebrovascular accident*. Transcranial Doppler. M.1996.
10. Vladimir G. Lelyuk M.D/ Svetlana E. *Ultrasound angiology*.
11. Burns P.N. *Overview of echo-enhanced vascular ultrasound*. Med.biol. 1989