

The relationship between carotid phenotypes and metabolic syndrome in patients with ischemic stroke

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Introduction. The metabolic syndrome (MS) represents one of the most important elements in the pathogenesis of strokes.

Keywords: metabolic syndrome, stroke, risk factors, atheromatous plaques.

Purpose. To estimate the frequency of the MS and to assess its relationship with various phenotypes of carotid artery in patients with ischaemic stroke.

Material and methods. We conducted a retrospective study on 210 patients with ischaemic stroke. All subjects were examined in the Cerebrovascular Diseases Department of the Institute of Emergency Medicine, Chisinau, Republic of Moldova. Patients were divided into two groups according to the presence/absence of the MS: 1st group consisted of 102 patients with MS, respectively 2nd group - 108 patients without MS.

Results. 48.6% of patients had MS. Mean age of the studied group was 66.9±8.5 years. Atherosclerotic plaques with severe carotid stenosis at the extracranial level were found in 32.3% of the participants from the 1st group compared to 17.5% from the 2nd group. It has been noted that there is a significant difference between the intima-media thickness values and the diameter of common carotid artery in these two groups (p<0.001, p=0.04) (tab. 3). It has been established a correlation between the number of MS constituent risk factors and the intima-media thickness (r=0.31).

Tab. 1 Anthropometric characteristics.

Parameter	1 st group	2 nd group	p
Sex Male / Female	49/53	56/52	49/53
Age (Years)	66,7±7,5	67,3 ± 9,38	0,66
Body mass index (kg/m ²)	31,1±2,6	27,4 ±2,1	<0,001
Waist circumference (cm)	104±6,47	91,77±7,4	<0,001
Systolic blood pressure (mm Hg)	144±5,9	146±6,4	0,52
Diastolic blood pressure (mmHg)	87±7,9	82±7,5	0,27

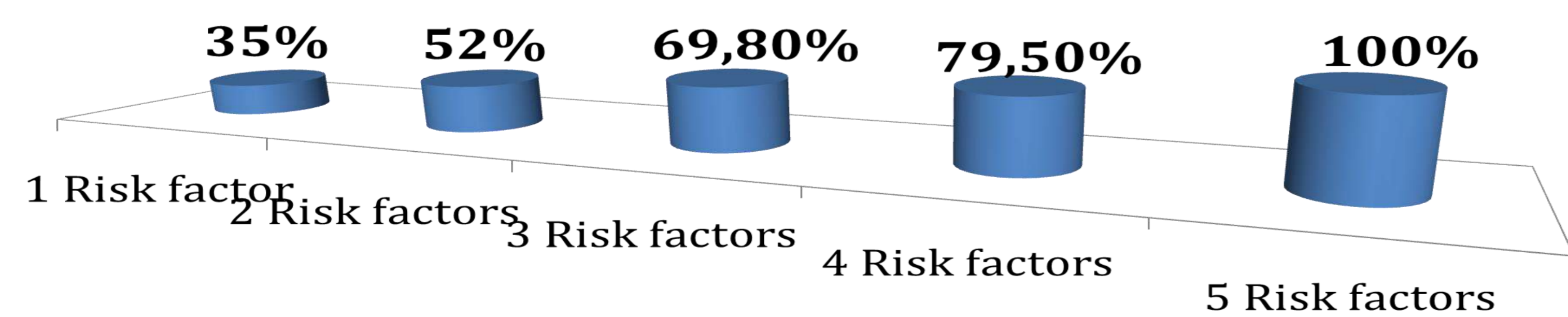


Fig. 1 Frequency of atheromas according to the number of the MS constituent risk factors, %.

Tab. 2 Biochemical characteristics

Parameter	1 st group	2 nd group	p
Basal plasma Glucose (mmol/l)	7,59±3,25	5,53±1,04	<0,001
Total Cholesterol (mmol/l)	5,71±1,33	5,09±01,09	0,0003
Triglycerides (mmol/l)	2,23±1,11	1,11±0,1	<0.001
Beta-lipoproteine (units)	57,55±17,67	44,96±11,62	<0.001
Fibrinogen (g/l)	3,5±1,045	3,72±4,15	0,61
Uric Acid (mkmol/l)	392±106,67	339±95,14	0,0062

Tab. 3 Ultrasound parameters, mm

Parameter	1 st group	2 nd group	p
IMT (mm)	1,1±0,3	0,95±0,32	<0,001
The CCA diameter (mm)	7,08±1,15	6,81±1,17	0,04

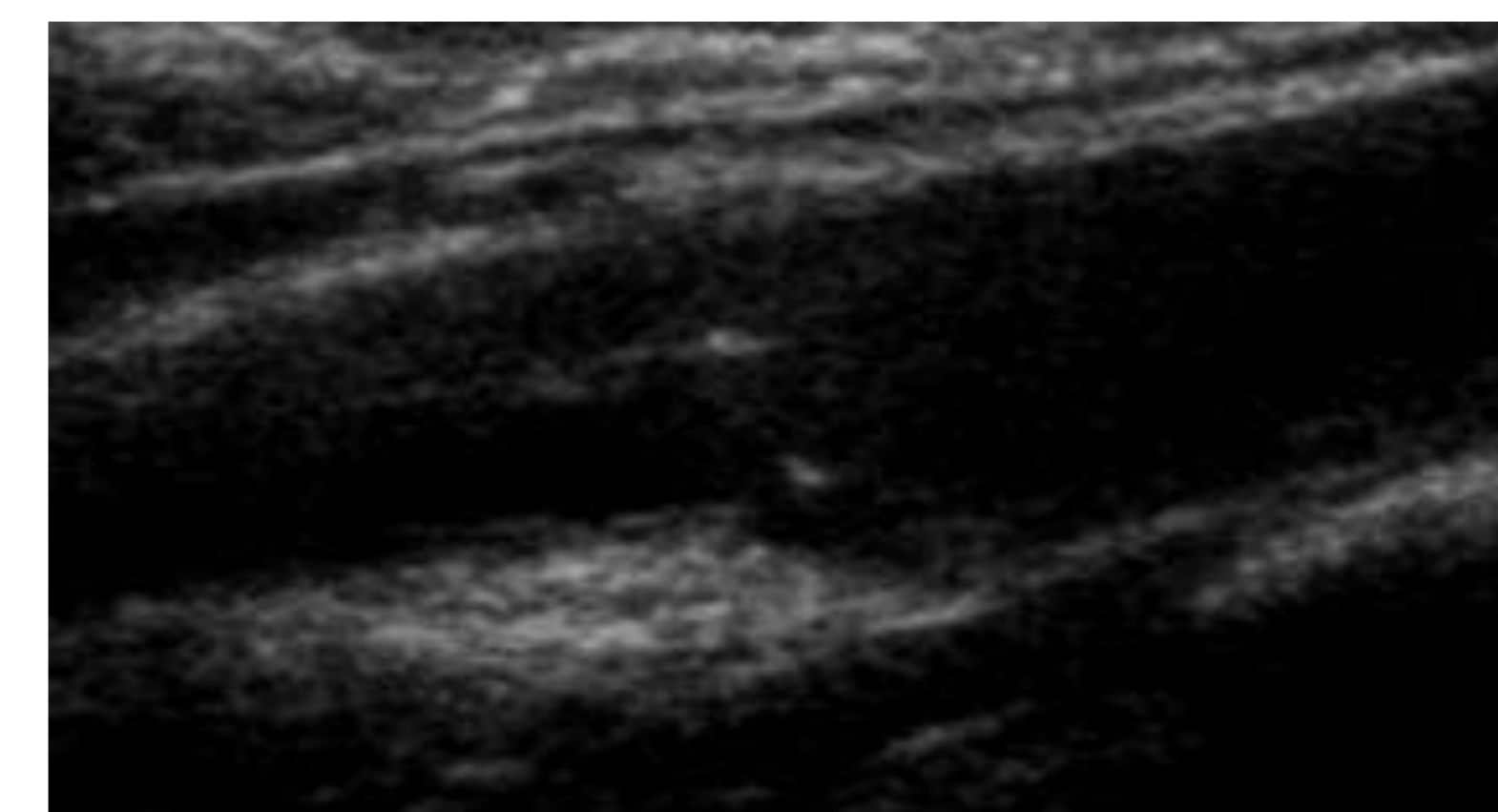


Fig 2. B mode ultrasound examination in a patient with SM revealed the presence of atheromatous plaque at the level of the right carotid bulb extending to the internal carotid artery and stenosis up to 70%.

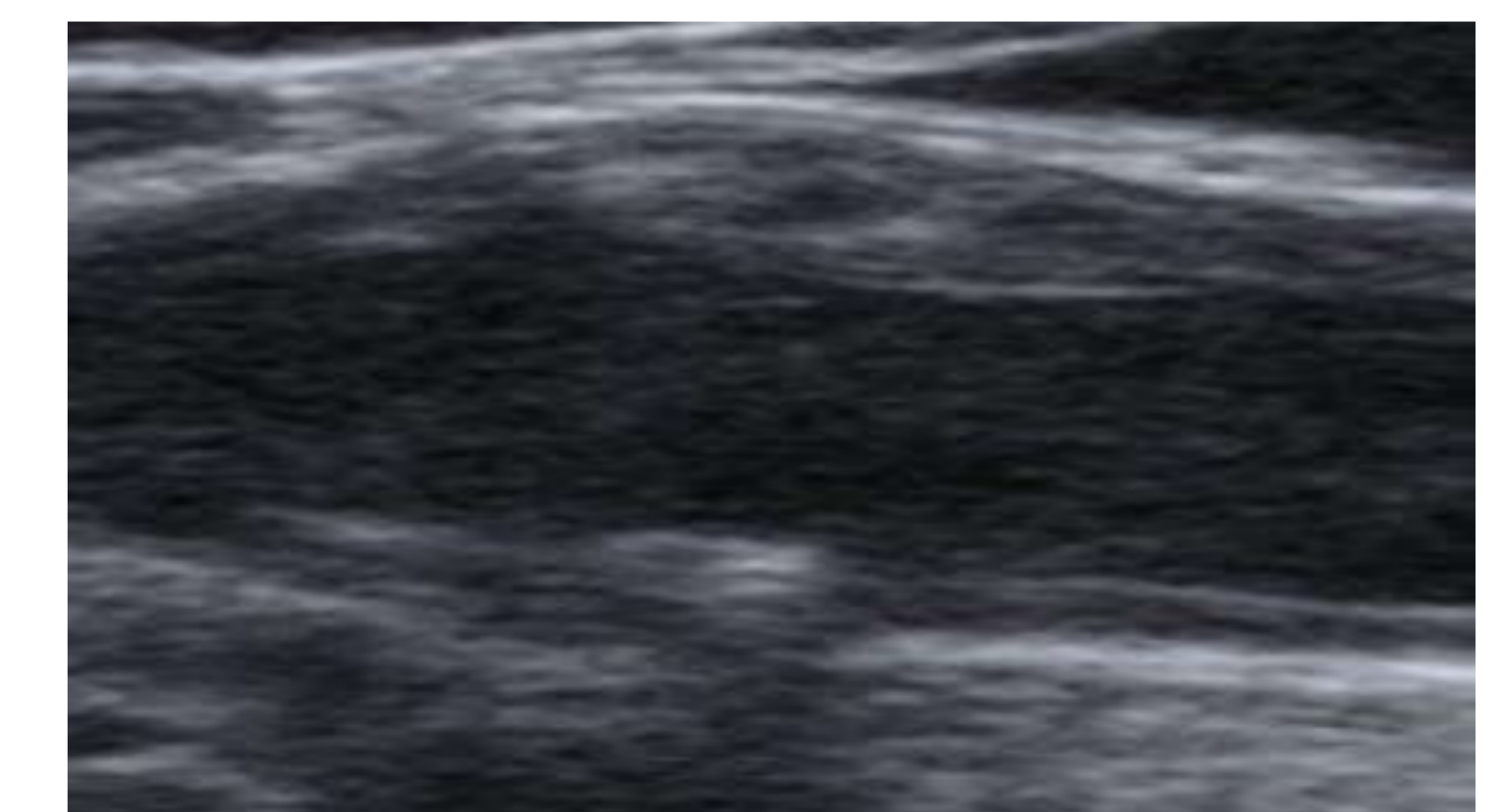


Fig. 3. B mode ultrasound examination in a patient with SM revealed the presence of biparietal plaques at the level of the left common carotid artery and carotid bifurcation with stenosis up to 50%.

Conclusions. MS has a major prevalence in population, this syndrome is linked to a high risk of carotid atheromatosis and ischemic stroke, it is recommended to screen MS in the population, especially in the group of obese, diabetic and hypertensive patients for the early prevention measures activities of vascular complications.