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COMORBIDITY AND RISK FACTORS OF CEREBRAL VENOUS DYSCIRCULATION IN PATIENTS WITH VERTEBROBASILAR INSUFFICIENCY

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The paper presents the results of our original studies: analysis of the spectrum of comorbid diseases and risk factors in patients with vertebrobasilar insufficiency depending on the presence of cerebral venous circulatory disorders. The results obtained allow to conclude that the presence of several comorbid diseases as well as risk factors for cerebrovascular diseases (CVD) has a significant impact on the clinical picture and the prognosis of the disease.

Keywords: vertebrobasilar insufficiency, cerebral venous dyscirculation, comorbidity, risk factors for CVD

Introduction

Major advances in science and medicine in the second half of the 20th and the beginning of the current century have made it possible to increase life expectancy despite the chronic non-communicable diseases. Nowadays the WHO has identified prevention and treatment the above mentioned as one of the priority projects of the second decade of the XXI century, aiming to improve the quality of life of the world population. Along with the improvement of the situation there was to some extent an expected increase in the number of patients with several chronic diseases (comorbidity, multimorbidity, polyopathies, etc.) [1]. There is an increase in comorbidity with age. About 80% of elderly people have three or more diseases [2,3,4].

Various comorbid diseases have an impact on the development of cerebral venous circulation disorders and determine the severity of the disease.

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Predisposing factors of cerebral venous dyscirculation development are arterial hypertension or hypotension, especially in case of insufficiency of cerebral autoregulation of vascular tone. In patients with symptoms of cerebral venous dyscirculation the signs of constitutional venous insufficiency (varicose veins of the lower extremities, varicocele, hemorrhoids) are revealed simultaneously, venous dyscirculation may be one of the signs of undifferentiated connective tissue dysplasia [5,6].

Venous dyscirculation can be a consequence of cardiac (coronary heart disease, cardiomyopathies, arrhythmias, etc) or pulmonary heart failure (chronic obstructive pulmonary disease, pneumonia, etc).

Disturbances of venous outflow in the vertebrobasilar system more often caused by degenerative-dystrophic changes at the level of the cervical spine. [5,6].

Objective:

To analyze the spectrum of comorbid diseases and risk factors in patients with vertebrobasilar insufficiency depending on the presence of cerebral venous circulatory disturbance.

Methods:

We studied the medical history, somatic status, and clinical picture of 120 patients with the diagnosis chronic cerebrovascular disease and vertebrobasilar insufficiency. All patients were divided into two groups. The main group included 80 patients (51 females and 29 males) diagnosed with CVD vertebrobasilar insufficiency with clinical symptoms of cerebral venous circulatory disorders. The mean age was 59.33 ± 7.396 years. A comparison group consisted of 40 patients (29 women and 11 men) with the diagnosis of CVD vertebrobasilar insufficiency without clinical signs of cerebral venous circulatory disorders. The mean age was 53.18 ± 12.55 years. The control group consisted of 15 (11

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women and 4 men) relatively healthy individuals without signs of cerebral venous circulatory disorders.

Results and Discussion

Comorbid somatic diseases play an important role in the development of cerebrovascular disorders of both arterial and venous genesis, in this respect we have analyzed the spectrum of comorbid conditions (Table 1) in the examined patients.

84.2% of the examined patients had episodes of arterial hypertension. Cerebral atherosclerosis was detected in 78% of the examined patients. It should be noted, that in addition to cerebral localization in 21.7% and 12.5% of patients atherosclerotic lesions occurred in the aorta and in the vessels of the lower extremities, respectively. The combination of atherosclerotic lesion of cerebral vessels with hypertension occurred in 69.1% of cases.

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Table 1 Frequency of comorbid conditions and risk factors

Symptom	Total		Main Group		Compare group	
	n	%	n	%	n	%
COMORBID CONDITIONS						
Hypertension	101	84,17	71	88,75	30	75
Atherosclerosis	94	78,33	69	86,25	25	62,5
Cervical osteochondrosis	89	74,17	56	70	33	82,5
Varicose veins	51	42,5	41	51,25	10	25
CHD	46	38,33	34	42,5	13	32,5
COPD	30	25	28	35	3	7,5
DM	19	15,83	17	21,25	2	5
CHF	18	15	10	12,5	1	2,5
RISK FACTORS						
CVD history	82	68,33	55	68,75	27	67,5
Sedentary lifestyle	80	66,67	49	61,25	31	77,5
Obesity	57	47,5	42	52,5	15	37,5
Smokers	39	32,5	26	32,5	13	32,5

Cervical osteochondrosis occurred in 74.2% of cases, coronary heart disease was detected in 38.3% of patients, and chronic obstructive pulmonary disease in 25% of patients. Among the examined patients, 15.8% suffered from diabetes mellitus. Apart from the above-mentioned diseases, chronic heart failure (15%) and heart rhythm disturbances (5%) were also found among the patients. Constitutional venous insufficiency plays an important role in the development of cerebral venous insufficiency, therefore, varicose veins of the lower limbs often occurred in 42,5% of our study subjects.

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As we see, hypertension was significantly more frequent in the main group than in the comparison group (Fisher's ϕ -criterion = 3.323; $p \leq 0.01$), and atherosclerotic lesion of the cerebral vessels prevailed in the main group (Fisher's ϕ -criterion = 2.883; $p \leq 0.01$). We did not find a significant predominance of patients with coronary artery disease in the main group (Fisher's ϕ -criterion = 1.069; $p = 0.14$), but patients with chronic heart failure were significantly more frequent in the main group (Fisher's ϕ -criterion = 2.092; $p \leq 0.05$). In comparison group patients, degenerative changes in the cervical region were significantly more frequent (Fisher's ϕ -criterion = 3.566; $p \leq 0.01$).

Varicose veins (Fisher's ϕ -criterion = 2.903; $p \leq 0.01$) and COPD (Fisher's ϕ -criterion = 3.262; $p \leq 0.01$) occurred significantly more frequently in the main group than in the comparison group.

In addition to comorbid conditions, we assessed risk factors for cerebrovascular disease. Cerebrovascular and cardiovascular diseases occurred in 68.33% of patients' family history. Another significant risk factor for cerebrovascular disease was obesity, which occurred in 47.5% of patients. Basically, the patients we studied were not active, sedentary (66.7%). Slightly more than 30% of patients were long-term smokers.

As for risk factors, obesity was more frequent in the main group, but the differences were statistically insignificant (Fisher's ϕ -criterion = 1.563; $p = 0.059$). Sedentary lifestyle was significantly more common in the comparison groups (Fisher's ϕ -criterion = 1.835; $p \leq 0.05$). Having a family history of CCVD did not influence the development of cerebral venous insufficiency (Fisher's ϕ -criterion = 0.139; $p = 0.44$), nor did having a history of acute cerebrovascular accident (Fisher's ϕ -criterion = 1.058; $p = 0.14$).

Conclusions.

1. Various comorbid diseases influence the development of cerebral venous circulation disorders and determine the severity of the disease. Among all comorbid

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diseases, hypertension and atherosclerosis of cerebral vessels were most frequently observed in the main group. The combination of atherosclerotic lesion of cerebral vessels with hypertension occurred in 69.1% of cases.

2. Cervical osteochondrosis found in 74.2% of cases, coronary heart disease in 38.3% of patients, and chronic obstructive pulmonary disease in 25% of patients. Among the examined patients, 15.8% suffered from diabetes mellitus.

3. Varicose vein disease of the lower extremities was also observed most frequently in the patients of the main group. Degenerative changes of the cervical spine were more frequent in the comparison group.

4. The study of risk factors for cerebrovascular diseases revealed that 68.33% of patients had cerebrovascular and cardiovascular diseases in their family history. Another significant risk factor was obesity, which occurred in 47.5% of patients. Basically, the patients we studied had an inactive, sedentary lifestyle (66.7%). Slightly more than 30% of patients were heavy smokers.

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