COLOR DOPPLER ULTRASONOGRAPHY DIAGNOSTICS OF MAJOR BLOOD VESSELS OF THE NECK IN PATIENTS AFTER A STROKE

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Introduction: Stroke is a sudden and an abruptly formed loss of brain functions due to the cutting off of the blood flow to the brain caused by occlusion or hemorrhage of the carotid and vertebrobasilar system of arteries and the border zones. It is classified into two groups: ischemic and hemorrhagic. Most common pathological process in the arterial network of the brain is arteriosclerosis. Color Doppler ultrasonography (CDS) diagnostics is non-invasive diagnostic procedure for the examination of blood vessels which is used to show the interior of the blood vessel wall, estimate the degree of constriction or expansion of the blood vessel, and detect changes in the structure as well as the shape and the length of the blood vessel.

Purpose: The aim of this paper is to visualize the changes on the major blood vessels of the neck (carotid and vertebral arteries) in patients after a stroke, and to make a correlation between ultrasonography findings in patients after ischemic and after hemorrhagic stroke.

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Method: This prospective study performed from January 1st 2013 till January 1st 2016 encompasses 80 patients who went on a rehabilitation after a stroke, patients of both genders, divided into two groups (of 40 patients) depending on the stroke type – ischemic or hemorrhagic. The patients had endocranial CT, and all had CDS of carotid and vertebral arteries. For statistical data processing, it was used Hi square and T test.

Results:

Statistical data processing shows us that the average age of patients after an ischemic stroke is 70.90 years and after hemorrhagic 60.65. By comparing these two groups it is discovered that there is a statistically significant age difference. Hemorrhagic stroke affects younger population of patients. Results show that in the ischemic stroke group 87.5% of the patients has arteriosclerotic changes on the carotid and 50% on the vertebral arteries, while in the hemorrhagic stroke group, pathological findings are present on carotid arteries in 36% of patients and in 23% on the vertebral. By comparative analysis, we have discovered that there are statistically significantly more patients with pathological findings on the carotid and vertebral arteries in the ischemic stroke group. By analyzing arteriosclerosis risk factors, it is determined that all patients had hypertension as a risk factor. By comparative analysis, it has determined that there is statistically significant larger number of patients with risk factors such as hypercholesterolemia and diabetes mellitus in the ischemic stroke group.

Discussion and Conclusion:

Arteriosclerotic changes that lead to significant constrictions of the blood vessels of the neck affect more patients who suffered from an ischemic stroke. Arteriosclerotic changes can be easily visualized by non-invasive diagnostic procedures. By timely execution of non-invasive diagnostic procedures (color doppler ultrasonography) in patients with high stroke risk factors (hypertension, hypercholesterolemia, diabetes mellitus and smoking) the changes on the blood vessels of the neck can be timely detected, proper treatment can be commenced and thus later complications can be prevented. It is necessary to influence significant reduction of the known stroke risk factors