

Dopplerographic assessment of blood flow parameters of vertebral arteries in patients with instability of atlanto-axial junction

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Introduction: Instability atlanto-axial junction is one of the common causes of Cervicogenic headache in young adults. In the formation of headaches, the leading role is played by irritation of the vegetative plexus of the vertebral arteries.

Objective: Dopplerographic evaluation of blood flow parameters in vertebral arteries in patients with instability of the atlanto-axial junction.

Materials and methods: A retrospective analysis of the results of Doppler ultrasound in the 2nd and 3rd segments of the Vertebral Artery (VA) was performed in 36 patients aged 21-35 years, who had X-ray diagnosed instability of the atlanto-axial junction; among the examined were 15 men and 21 women. The maximum Systolic Velocity (Vs), the end Diastolic Velocity (Vd), the Resistance Index (RI) in second and third segments of VA in the neutral spine and flexion position of the neck. The control group consisted of 27 people aged 19-34 years without chronic headache, absence of arthrosis and instability of the atlanto-axial junction according to the results of X-ray and MRI. Dopplerography was conducted on a Philips HD 11XE device using a linear and microconvex transducers in the frequency range 5-10MHz and 4-9 MHz; MRI - General Electric, Signa HDI, 1.5T.

Results: In the control group in the second segment of the VA, Vs was 51.4 ± 5.2 cm/s, RI - 0.59 ± 0.03 ; at the level of 3rd segment - 48.9 ± 5.1 cm/s, RI - 0.58 ± 0.03 ; at the rotation of the head - Vs 43.9 ± 4.6 cm/s, RI - 0.62 ± 0.03 , respectively. In patients with atlanto-axial instability at the level of C5-C6, Vs amounted to 49.2 ± 4.8 cm/s, RI - 0.61 ± 0.03 ; at the level of 3-d segment of VA - Vs was 47.2 ± 4.5 cm/s, RI - 0.60 ± 0.03 . When the head was turned to the side in patients with instability of the atlanto-axial junction, at the level of 3-d segment of VA - Vs was 34.1 ± 4.2 cm/s, RI - 0.69 ± 0.02 ($P < 0.05$).

Conclusion: Instability of atlanto-axial junction is one of the common causes of cervicogenic headache in young people. The main pathogenetic mechanism of the onset of pain is changes in blood flow in the third segment of the vertebral arteries, especially during rotational movements.

Speaker Biography

Abdullaev Ruslan Rizvan Ogly, graduated from Kharkiv National Medical University on June 24, 2016. He studied at the internship at the Kharkov Medical Academy of Postgraduate Education from 1.08.2016 to 04/27/2018. Entered in graduate school 1.09.2018. Printed works: 42

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