

ASSESSMENT OF ORTHOPEDIC TREATMENT EFFECT ON CEREBRAL HEMODYNAMICS IN PATIENTS WITH DISCIRCULATORY ENCEPHALOPATHY

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The aim of the investigation was to study the interrelation between cerebral circulation and stomatopathy in patients with discirculatory encephalopathy.

Materials and Methods. We examined 75 orthopedic patients in three groups: group 1 — 30 patients with initial cerebral vascular lesions (I–II stage encephalopathy); group 2 — 25 patients with marked cerebral vascular lesions (III stage encephalopathy); and control group consisted of 20 virtually healthy people.

Results. We determined the interrelation between vascular diseases of nervous system and stomatopathy: the higher the degree of vascular disorders, the worse the oral health status of the patients.

Orthopedic treatment of complete and partial tooth loss contributes to the normalization of cerebral circulation indices in patients with both initial (I–II stages), and marked (II–III stage encephalopathy) anencephalemia.

Key words: cerebrovascular pathology; cerebral hemodynamics; orthopedic treatment.

A large part of orthopedic patients have cerebral pathology, and most of them are elderly. There is the interaction between the vascular diseases of nervous system and stomatopathy: the higher the degree of vascular disorders, the worse the oral health status of these patients [1–4]. However, the characteristics of orthopedic treatment of this group of patients are still unstudied [5, 6].

The aim of the investigation was to assess cerebral hemodynamic condition in orthopedic treatment of patients with discirculatory encephalopathy.

Materials and Methods. 75 patients divided into three groups underwent orthopedic treatment. Group 1 consisted of 30 patients with initial cerebral vascular lesions (I–II stage encephalopathy); group 2 included 25 patients with marked cerebral vascular lesions (III stage encephalopathy); and 20 virtually healthy people composed a control group. All the patients received treatment by partial removable dentures.

Neurological diagnosis was made based on a case history, a neurological examination, and cranial dopplerography. Dental diagnosis was made based on the dental examination and a panoramic film radiograph. More than half of the patients were over 55 years, female patients predominating in all age groups.

We interviewed all the patients taking their past and present histories, complaints, determined their neurological, somatic, and dental status, and analyzed transcranial

dopplerography findings one month before and after the orthopedic treatment.

Results and Discussion. Group 1 patients with I and II stage discirculatory encephalopathy included 18 female and 12 male, mean age being 46.30 ± 6.03 years (from 35 to 55 years). The guiding subjective symptoms were cephalgic, vestibular-ataxic, and asthenoneurotic syndromes. Most patients had the combination of 2–3 syndromes. In 100% of cases there were neurodynamic disorders of various degrees of manifestations in the form of performance impairment, slow completion rate, fatigue, attention distraction, which were assessed as slight cognitive disorders. The great majority of patients had favorable discirculatory encephalopathy course. 10 patients had two or more concomitant diseases. None in this group was disabled.

All group 1 patients had partial tooth loss, and 5 cases were diagnosed as total tooth loss. 13 patients had partial removable dentures requiring replacement. Missing dentition was described according to E.N. Zhulev classification [7]. 12 patients had bounded edentulous teeth, unilateral and bilateral, 8 patients — free-end saddle, unilateral and bilateral. Mild periodontal disease was revealed in 9 patients, moderate disease — in 5 patients, and severe disease — in 1 patient.

Group 2 patients with III stage discirculatory encephalopathy included 17 female and 8 male, mean

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age being 48.1 ± 5.2 years (from 35 to 55 years). Chief complaints were headaches, dizziness and unsteady gait, arm and leg weakness due to hemiparesis. All patients had hypomnesia and mental impairment. Except neurodynamic disorders found in all patients, the study of cognitive status revealed such cortical dysfunctions as speech, gnosis, praxis in 3 patients. 7 patients had unfavorable discirculatory encephalopathy course (with transitory ischemic attacks and/or strokes in past medical history). The great majority of patients (23 out of 25) had comorbidity, and more than half of the patients (15.64%) had 2–3 concomitant diseases.

All group 2 patients had partial tooth loss. 14 cases were diagnosed as total tooth loss, and 5 patients used partial removable dentures requiring replacement. 11 patients had never used partial removable dentures, though had long-standing (from 2 to 7 years) indications for their use. Missing dentition was described according to E.N. Zhulev classification. 8 patients had bounded edentulous teeth, unilateral and bilateral, 16 patients — free-end saddle, unilateral and bilateral. Moderate periodontal disease was found in 12 patients, and severe disease — in 5 patients.

Control patients had no complaints and counted themselves to be virtually healthy people, their mean age being 20–25 years. 75% of the total number of patients were women. Oral health status was assessed by CFE index, its mean value being 2–3. Oral hygiene was estimated as good using hygienic criterion OHI-S (Greene J., Vermillion J., 1969). There was no cerebrovascular pathology in the control group.

All patients underwent cranial dopplerography. To interpret dopplerographic findings we used two characteristics that reflected hemodynamic condition: resistivity index (RI) and pulsation index (PI).

RI does not depend on artery location angle, and its increase indicates the increase of peripheral resistance to blood flow (stenosis, angiospasm, thrombosis), and its decrease indicates resistance decrease (arteriovenous malformation).

PI is the most sensitive to peripheral resistance level change, and reflects the state of capillary network vascular tone, blood viscosity, and intracranial pressure.

Before orthopedic treatment

mean PI in group 1 patients was 27 that was higher in comparison with group 2 patients and control group (16 and 13, respectively).

After orthopedic treatment, masticating pressure became well-balanced and increased due to maximum number of opposing teeth occluded. After mastication load regulation in group 1 there was the decrease of mean PI, it being about 20. In the second group, on the contrary, it increased significantly — from 16 to 27. In the control group PI decreased up to 11 (Fig. 1).

Mean RI in group 1 patients was 22 before orthopedic treatment; in group 2 patients it was close to 12. After the treatment RI in group 1 went down to 15, in group 2 — increased up to 20.

In group 1 patients after the treatment there was the tendency of PI and RI to reach the values of the control group. In group 2 after the treatment PI and RI indices increased, and differed significantly from those in the control group.

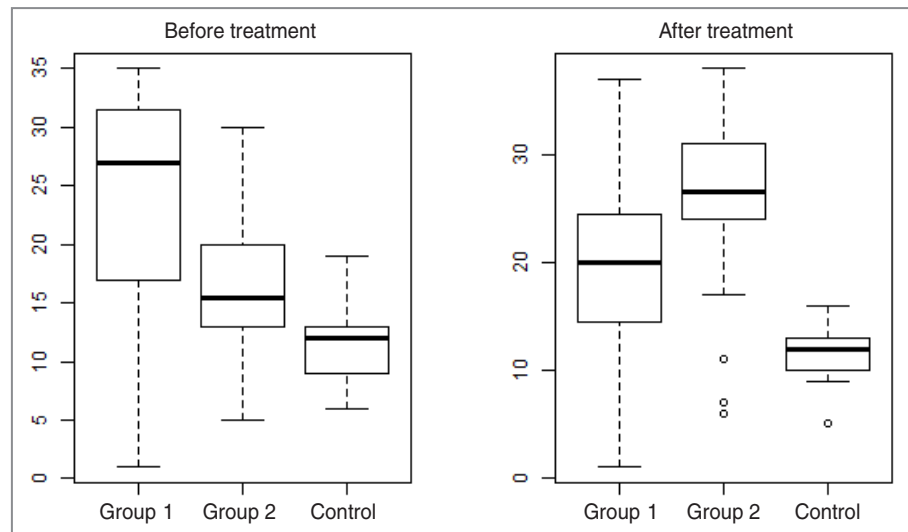


Fig. 1. PI sign distribution

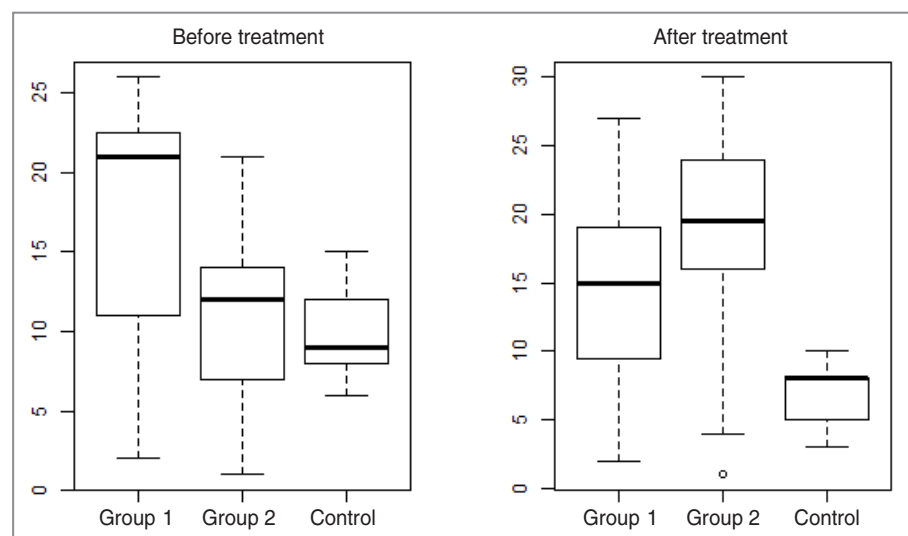


Fig. 2. RI sign distribution

So, PI and RI changes after orthopedic treatment indicate the interaction between the described treatment and cerebral hemodynamic condition.

Conclusion. Orthopedic treatment of complete and partial tooth loss contributes to the normalization of cerebral circulation indices in patients with both initial (I–II stage encephalopathy), and marked anencephalemia (II–III stage encephalopathy).

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