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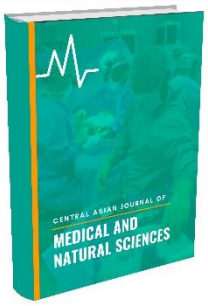

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APPLICATION OF METHODOLOGIES OF DIAGNOSTICS FOR PATIENTS WITH DIZZINESS

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ABSTRACT: Dizziness is frequent reason of address to the neurologist. The study of principal reasons of dizziness became a research aim for patients. 75 patients appealings to the neurologist and otorhinolaryngologist in connection with complaints about dizziness of system character are inspected. The stated below clinical inspections allow to educe the most widespread reasons of system dizziness and in good time to suspect the critical for life of patient damages of central departments of vestibular analyzer.

KEYWORDS: dizziness, of high quality paroxizmal posizion dizziness, illness of Mener, vestibular neironit.

INTRODUCTION

Dizziness is a frequent complaint in patients who have applied for an outpatient appointment. Thus, the last large population study conducted in Germany showed that at least once during the life of vestibular vertigo experience 7.8% of the population, and the incidence of vestibular vertigo during the year is 5.2% [1].

Systemic or vestibular dizziness is called the feeling of imaginary movement or rotation of surrounding objects or the patient himself in space [2]. This dizziness is caused by damage to the vestibular system and its numerous connections with other parts of the brain [3]. Systemic vertigo appears only in acute and asymmetric lesions of the vestibular system, such as loss of function or pathological irritation of one labyrinth, with damage to the vestibular nuclei on one side.[4,5].

The number of diseases that cause dizziness of a systemic nature is large, and their diagnosis is difficult and requires a detailed analysis of the patient's complaints and history of the disease. Thorough research requires a special otoneurological examination, laboratory and instrumental examinations. Objective and subjective difficulties in diagnosing the causes of dizziness often lead to the fact that in practice patients with complaints of dizziness are often mistakenly diagnosed with "vegetative dystonia", "vascular crisis",

"vertebral-basilar insufficiency", "hypertensive cerebral crisis" [4,6]. Meanwhile, major studies conducted in recent years show that the most common causes of dizziness may be quite different diseases: disorders of the peripheral vestibular analyzer (benign paroxysmal positional dizziness (PPDB), Meniere's disease, vestibular neuronitis) or vestibular migraine, while cerebrovascular disorders, while remaining an extremely important cause of dizziness, are relatively rare [7,8].

The aim of the study is to use diagnostic methods in patients with systemic vertigo.

MATERIALS AND METHODS

All patients who applied in 2014-2017 for an outpatient appointment to an otorhinolaryngologist and neurologist in the 1-Clinic Sammi were examined with complaints of dizziness. During the study period, 75 patients were contacted. The average age of patients was 49.8 ± 13.2 years. Among patients with systemic vertigo there were 52 (70.4%) women and 23 (29.6%) men (the ratio of women and men was 2: 4).

Dizziness was the main and in many cases the only complaint of patients. The criteria for exclusion from the study were expressed cognitive impairment (dementia), mental disorders, severe and uncorrectable visual disorders, expressed speech disorders in the form of aphasia.

When collecting anamnesis registered sex, age, profession of the patient, bad habits (Smoking, alcohol or drugs), the presence of comorbidities, drugs, specified hereditary history. The patient's use of hearing glasses, walking sticks or other to reduce the risk of falls during instability and balance disorders was recorded. Standard somatic and neurological examination was carried out. Special attention in the study of somatic status was paid to the state of the cardiovascular system (blood pressure, heart rate, the presence of edema, shortness of breath during exercise and other signs of heart failure were determined; if orthostatic hypotension was suspected, an orthostatic test was conducted).

Patients underwent specific tests to assess the state of the vestibular system: the Dix—Hallpike and McClure—Pagnini positional tests, the Halmagi test, the head shake test, the Fukuda test, the Valsalva test and the hyperventilation test. In addition, the study of spontaneous, installation and positional nystagmus, visual saccades, smooth tracking eye movements, optokinetic nystagmus, caloric nystagmus was performed with the help of Frenzel glasses.

Positional tests were conducted to diagnose PPDB or Central positional vertigo. A positive Dix-Hallpike test indicates canalolithiasis of the posterior semicircular canal. In a much rarer variant of DPPG with damage to the anterior semicircular canal, the Dix-Hallpike test will also be positive, but the positional torsion nystagmus will have a vertical, downward-pointing component. A McClure-Pagnini test was performed to identify the second most common variant of PPDB, horizontal semicircular channel canalithiasis. The test was considered positive if dizziness and horizontal nystagmus (geotropic or apogeotropic) occur when the head is turned in one direction or another.

The appearance of atypical nystagmus during positional tests (for example, vertical, undamped, arising without a latent period, etc.) makes one suspect the so-called Central positional dizziness, which can be caused by volumetric processes in the posterior cranial fossa, damage to the brain stem and cerebellum (including ischemic or toxic) or craniovertebral anomalies [7,8].

To clarify the diagnosis according to the indications, laboratory tests were performed (General blood analysis with hemoglobin and erythrocyte levels, glucose level assessment), the study of induced vestibular myogenic potentials, tonal threshold audiometry, caloric test, impedansometry,

electrocochleography, posturography or stabilometry, ultrasound duplex scanning of brachiocephalic arteries, magnetic resonance (MRI) or x-ray computed tomography of the brain.

The diagnosis was established on the basis of the analysis of complaints, anamnesis of the disease, the results of clinical, laboratory and instrumental examination. The most common and accepted diagnostic criteria in the literature were used. In particular, the diagnosis of PPDB was established on the basis of the characteristic clinical picture, as well as the detection of typical positional nystagmus in positional tests [8].

RESULTS AND DISCUSSION

The clinical diagnoses established in 75 patients analyzed by us, who turned to an outpatient appointment with a neurologist complaining of dizziness, are presented in the table.1

Diseases that cause systemic dizziness in patients.

Diagnosis	number of patients	%	Women	Men	Average age
DPPG	37	50,3	22	15	51,2 ± 13,0
Meniere's disease or syndrome.	21	29,3	14	7	50,6 ± 12,5
Vestibular neuronitis	7	9,4	4	3	43,2 ± 11,8
Migraine-associated dizziness	3	3,5	1	2	53,0±0,8
Stroke in the vertebro-basillary system	2	1,3	1	1	43,5±7,4
Otosclerosis	5	6,2	2	3	34,0±12,8
Total	75	100	44	31	

The most common cause of systemic dizziness was diseases of the peripheral vestibular analyzer - the share of these diseases accounted for 92.6% of cases of systemic dizziness. Among the disorders of the peripheral vestibular analyzer, PPDB, Meniere's disease (syndrome) and vestibular neuronitis (labyrinthitis) were most common.

PPDB accounted for 50.3% of cases(38 patients). This disease is more than 3 times more common in women. The most common type of PPDB was canalithiasis of the right posterior semicircular canal: it was detected in 48% of cases. In 37.5% of cases DPPG was diagnosed with canalolithiasis of the left posterior semicircular canal. In 14.5% of cases, "atypical" forms of PPDB were observed: cupulolithiasis, canalolithiasis of horizontal or anterior semicircular channels, canalolithiasis of several semicircular channels.

Migraine-associated dizziness prevailed among disorders of the Central vestibular analyzer (5.5% among all cases of systemic dizziness in outpatient patients). The prevalence of the main causes of dizziness has been studied in several studies in different categories of patients. These diseases accounted for 96.8% of all cases of systemic vertigo in outpatient practice. According to the results of our study, the most common causes of systemic dizziness were PPDB, Meniere's disease (syndrome) and vestibular neuronitis (labyrinthitis). Significantly more rare, but therefore no less significant, causes of dizziness were stroke in the vertebral-basilar basin and tumors localized in the posterior cranial fossa.

Diagnosis of PPDB is based on a combination of a characteristic clinical picture with positive results of positional tests [7]. To date, several positional tests have been proposed, the most common of

which are the Dix—Hallpike test for the diagnosis of canal and cupulolithiasis of the posterior and anterior semicircular canals and the McClure—Pagnini test for the diagnosis of damage to the horizontal semicircular canal. The sensitivity of the Dix— Hallpike sample according to various studies is about 80% [4,5]. Data on the sensitivity of the McClure-Pagnini sample in the diagnosis of channel-or cupulolithiasis of the horizontal semicircular channel are not available in the literature, which can be explained by the significantly lower prevalence of this type of PPDB in clinical practice and, therefore, difficulties in obtaining a sufficient number of observations for statistical processing.

In our study, the proportion of "atypical" forms of PPDB with damage to the horizontal or anterior semicircular canals, bilateral canalithiasis was 14.5% of patients. These data allow us to recommend the use of the Dix—Hallpike test as a mandatory method of examination of a patient with dizziness.

The second most common cause of systemic dizziness, according to our study, was Meniere's disease or syndrome. Modern diagnostic criteria for this disease are based solely on clinical signs, while instrumental diagnosis is of secondary importance [1]. It is important to combine attacks of systemic dizziness with progressive (at first — fluctuating) hearing loss, so it is advisable to include an approximate assessment of hearing in the algorithm of examination of a patient with complaints of dizziness. In addition, this disease manifests itself in varying degrees of severe damage to the peripheral part of the vestibular analyzer: in the acute phase of the attack of Meniere's disease, irritation of the labyrinth on the side of the lesion is noted, which is soon replaced by its oppression. In the intercostal period, signs of vestibular dysfunction may be absent, but often hidden nystagmus is detected a few days after the end of the attack, when dizziness is replaced by a small instability or not at all. To diagnose latent nystagmus, it is advisable to conduct a study with the eye fixation turned off: in Frenzel glasses. In addition, hidden nystagmus can be detected by such tests as a head-shaking test and a hyperventilation test. According to the literature, the sensitivity of these samples largely depends on the degree of damage to the peripheral vestibular analyzer and ranges from 27 to 65% [3]. Despite the fact that in our study we did not set a goal to assess the sensitivity of certain samples, in our opinion, the sample with a shake of the head was more sensitive in the diagnosis of vestibular disorders, in particular in patients with disease or Meniere's syndrome. This test is safe for the patient, does not require special equipment and takes a little time, which makes it advisable to include heralgorithm clinical examination of the patient with dizziness

The third most common cause of systemic dizziness, according to our study, was vestibular neuronitis (or labyrinthitis). Since the disease is based on acute damage to the vestibular nerve, for its timely detection it is necessary to use such clinical tests that have the greatest sensitivity to these injuries. The sensitivity of the Halmaga sample in this case, according to various studies, is 71-84%, which allows us to recommend it for the examination of patients with systemic dizziness [4]. This test is almost always negative for Central vestibular disorders, which makes it an important tool for differential diagnosis of acute peripheral and Central vertigo [5]. The inclusion of this sample in the algorithm of clinical examination of patients with dizziness allows not only to identify damage to the peripheral vestibular analyzer, but also to suspect Central vestibular disorders-a relatively rare, but therefore no less significant cause of dizziness. The combination of acute systemic vertigo, nystagmus and a negative Halmaga sample with a high probability indicates damage to the Central parts of the vestibular analyzer, that is, first of all, stroke as the cause of acute systemic vertigo [6].

CONCLUSIONS

Our study showed that the most common causes of systemic dizziness are diseases of the peripheral vestibular apparatus. In contrast, Central vestibular disorders are relatively rare. The optimal algorithm for clinical examination of patients with vertigo, which allows to identify the most common causes of dizziness and suspect life-threatening Central vestibular disorders, should include, in addition to the standard study of neurological status, the Dix—Hallpike positional test, head shaking test, halmagi test and approximate evaluation of hearing. The use of these methods of clinical examination in ambulatory patients with complaints of dizziness allows without additional instrumental research to diagnose most causes of dizziness and differentiate damage to the Central and peripheral parts of the vestibular analyzer.

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