DIAGNOSTICS OF SENSORY ATAXIA IN PATIENTS WITH SENSORY PREDOMINANT CHRONIC INFLAMMATORY DEMYELINATING POLYNEUROPATHY

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BACKGROUND

Motor disturbances and coordination disorders take a predominant place among the causes of restriction of patients' vital activity chronic peripheral polyneuropathies, including sensory predominant chronic inflammatory demyelinating polyneuropathy (SP-CIDP). A leading symptom of motor SP-CIDP disorders is sensory ataxia, which is displayed by instability strengthening at eyes close position. Due to various sensitive systems (vestibular, proprioceptive and visual) brain receives the information about the process deviation from the vertical. Stabilometry is the most exact method, allowing to make an assessment of body balance, to investigate quality of balance function, to study the contribution of various systems to maintenance of vertical position: vestibular mechanisms of deduction of balance and motor activity, function of proprioceptive system, visual evaluator and other systems of organism expressly or by implication influencing on postural reaction. Research aim: to estimate expressiveness of sensory ataxia in patients with sensory predominant chronic inflammatory demyelinating polyneuropathy in two regions of the Russian Federation: Republic of Sakha (Yakutia) and Krasnoyarsk region.

MATERIALS AND METHODS

A group of healthy volunteers (24 people, median age 33 [23.5; 47] years) and patients with SP-CIDP from Republic of Sakha (Yakutia) (42 people, median age 43 [30; 48] years) and Krasnoyarsk region (87 people, median age 28 [22; 35] years). Diagnostics methods: neurological examination and stabilometry had been conducted in all patients.

Criteria of inclusion: verified SP-CIDP diagnosis, male and female gender, age of patients from 18 years and older, constant residence registration on the territory of the Republic of Sakha (Yakutia) and Krasnoyarsk region. Criteria of exception: peripheral neuropathy of other genesis.

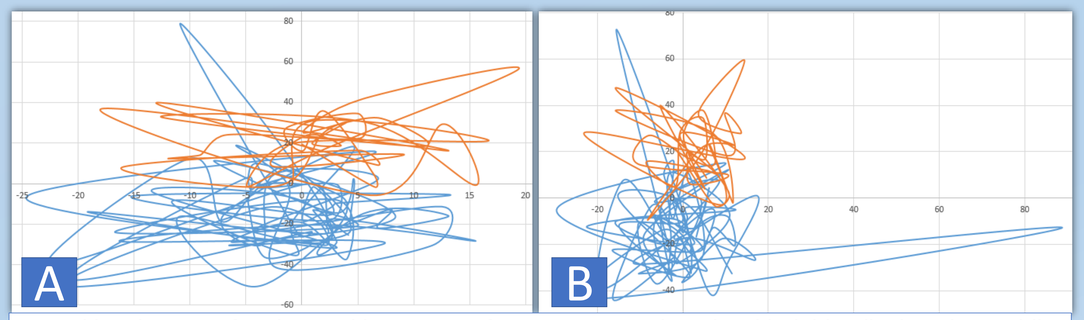
Stabilometry was carried all surveyed persons. We calculated the average position of the center of pressure (CP) in the frontal and sagittal plane, the velocity of CP, area of statokineziogramm and quotient of Romberg.

RESULTS

The analyzed parametre	Control group, N = 24, Me [P_{25}; P_{75}]	Republic of Sakha (Yakutia), N = 42, Me [P_{25}; P_{75}]	Krasnoyarsk region, N = 84, Me [P_{25}; P_{75}]	p-value, Mann-Whitney U-test *	p-value, Mann-Whitney U-test **	p-value, Mann-Whitney U-test ***
S, EO (mm^2)	70.15 [42.2; 114.6]	167.8 [109.7; 330.5]	83.17 [54.95; 125.42]	<0.0001	0.104	<0.0001
S, EC (mm^2)	75.14 [37.9; 115]	198.4 [117; 352.7]	105.03 [66.3; 159.3]	<0.0001	0.038	<0.0001
V, EO (mm/s)	8.7 [6.6; 10.6]	6.9 [5.5; 9.3]	8.74 [7.52; 9.86]	0.046	0.693	0.0009
V, EC (mm/s)	10.9 [9.15; 14.4]	9.7 [7; 13.3]	11.97 [10.14; 14.7]	0.14	0.41	0.0083
Y, EO (mm)	-19.43 [-31.0;-5.2]	19.8 [12.3; 30.3]	-16.12 [-25.38;-3.33]	<0.0001	0.369	<0.0001
Y, EC (mm)	-13.3 [-24.9;-5.9]	19.8 [1.6; 27.9]	-12.99 [-25.27;-4.94]	<0.0001	0.994	<0.0001
X, EO (mm)	-0.79 [-8.9; 4.0]	2 [-1.4; 6.5]	0.63 [-4.68; 3.13]	0.27	0.833	0.057
X, EC (mm)	-1.87 [-8.88; 8.08]	4.7 [-0.6; 7.9]	-0.715 [-5.03; 4.16]	0.197	0.906	0.0095
QR, %	112.18 [65.22; 159]	103 [71; 164]	137.25 [82.43; 193.85]	0.886	0.182	0.31

Notes: X – position of CP in frontal plane; Y – average position of CP in sagittal plane; S – sway area; V – sway velocity; QR – Romberg quotient; EO – data is resulted for a phase with eyes open; EC – data is resulted for a phase with eyes close.
* Comparison values between Republic of Sakha (Yakutia) and control group,
** Comparison value between Krasnoyarsk region and control group,
*** Comparison of values between Republic of Sakha (Yakutia) and Krasnoyarsk region

The results of stabilometry in patients with SP-CIDP have revealed area expansion of pressure centre in phases "eyes open" and "eyes close" with deflection the pressure center forward by anteropulsion type among patients with SP-CIDP from Republic of Sakha (Yakutia). Also in the Yakut group has been noted to have severer clinical course in comparison with inhabitants of Krasnoyarsk region.



Statokineziogram of patients with SP-CIDP from Krasnoyarsk region (dark blue line) and Republic of Sakha (Yakutia) (orange line): A) in phase "eyes open"; B) in phase "eyes close".

CONCLUSION

The method of computer stabilometry allows estimating objectively presence and degree of manifestation of postural disorders among patients with SP-CIDP. Instability of the basic position among patients with SP-CIDP, revealed during research, could be explained by involving of proprioceptive systems.

Dynamic supervision of stabilometric indexes can be used as control of efficacy of treatment and course.

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