EGDS: esophageal mucosa is pale pink. The dentate line is clear. Cardia closes. The anastomosis is functioning. In the area of the adductor loop, a seal up to 0.5 cm (scar?) is determined, 2 biopsy fragments are taken. Hemostasis with cold NaCl solution 10% 10.0 ml. The mucosa of the efferent loop of the small intestine is pale pink. With biopsy: 2 fragments. ***Conclusion.*** Condition after gastrectomy, a biopsy was taken. The result of the biopsy: the tumor process was not detected.

Bone scintigraphy: planar scintigraphy of the skeleton, performed in the anterior and posterior projections, 3 hours after the introduction of the radiopharmaceutical, zones of hyperfixation of the radiopharmaceutical are determined in the proximal ends of the humerus and femurs, in the ribs, in the ilium and ischial bones of the pelvis on both sides.

Conclusion. Scintigraphic signs of multiple focal lesions of the shoulder and femur bones, ribs, sternum, pelvic bones on both sides (Fig. 4).

On the basis of complaints, anamnesis and studies, the final clinical diagnosis was made: Poorly cohesive carcinoma of the stomach, carcinomatosis of the pancreatic capsule. Condition after laparotomy, gastroenteroanastamosis from 08.2020. Condition after installation of the port system from 09.2020. Condition after 4 courses of polychemotherapy (PCT). Condition after 4 courses of PCT (second line). Progression of the disease (12.2020). Condition after 3 courses of PCT (second line). Condition after gastrectomy by abdominal access with removal of gastroenteroanastamosis and enteroenteroanastamosis and planar resection of the pancreatic head, lymph node dissection D2 (03.2021). pT3N1M1. Condition after 4 adjuvant courses of PCT. Progression of the disease: multiple metastases in the pelvis, femur and shoulder bones, ribs; limited soft tissue fibrosis around the upper half of the abdominal aorta and with probable involvement of the body of the pancreas. Severe pain syndrome, poorly controlled by non-steroidal anti-inflammatory drugs (NSAIDs).

The patient received symptomatic treatment: table 5 diet, Nutriflex 40/80 intravenously. for parenteral nutrition, omeprazole with an antiulcer purpose, tramadol 2.0 ml and diclofenac 3.0 ml for pain control, vitamins B12 200 mcg per day, ketotifen 1 mg 1 time in the evening with a sedation. The condition is unchanged, the expressed pain syndrome in the hip joints and sacrum remains. The patient was discharged with recommendations and referred to the Yakutsk Republican Oncological Dispensary to an oncologist and a chemotherapist for the selection of effective analgesic drug therapy and possible local radiation therapy.

Conclusion. Poorly cohesive gastric carcinoma is often diagnosed at late stages and has a poor prognosis. Our clinical case demonstrates that this form of cancer can be a source of multiple osteoblastic metastases, which drastically worsens the quality of life and adversely affects survival rate, and requires a timely comprehensive examination of patients with this pathology for early detection of "silent" bone metastases in order to improve long-term treatment results.

Reference

1. Danilova N.V., Olejnikova N.A., Mal'kov P.G. Klassifikaciya epitelial'nyh opuholej zheludka VOZ 2019 g., 5-e izdanie [Classification of epithelial tumors of the stomach WHO 2019, 5th edition]. Arhiv patologii [Archive of Pathology. 2020; 82 (4): 58-69 (In Russ.).]

2. Zlokachestvennye novoobrazovaniya v Rossii v 2021 godu (zabolevaemost' i smertnost'). Pod red. A.D. Kaprina, V.V. Starinskogo, A.O. SHahzadovoj [Malignant neoplasms in Russia in 2021 (morbidity and mortality). Edited by A.D. Kaprin, V.V. Starinsky, A.O. Shakhzadova]. M.: Herzen Moscow State Medical Research Institute − branch of the Federal State Budgetary Institution National Medical Radiology Research Center of the Ministry of Health of Russia. 2020. 252 p. (In Russ.).]

3. Bagrova S.G., Kopp M.V., Kutukova S.I. [et al.] Ispol'zovanie osteomodificiruyushchih agentov (oma) dlya profilaktiki i lecheniya patologii kostnoj tkani pri zlokachestvennyh novoobrazovaniyah [Osteomodifying agents (oma) for the prevention and treatment of bone pathology in malignant neoplasms]. Zlokachestvennye opuholi [Malignant tumors. 2020; 10 (3s2-2): 35-44 (In Russ.).] DOI: 10.18027 / 2224- 5057-2020-10-3x2-38.

4. Dushyanthen S [et al.]. The osteoblastic and osteoclastic interactions in spinal metastases secondary to prostate cancer/ Cancer Growth Metastasis.6:2013

5. Goudarzi B [et al.] Detection of bone metastases using diffusion weighted magnetic resonance imaging: comparison with (11)C-methionine PET and bone scintigraphy. Magn Reson Imaging. 28(3):372-379, 2010.

6. Hyuna Sung , Jacques Ferlay, Rebecca L Siegel, Mathieu Laversanne, Isabelle Soerjomataram, Ahmedin Jemal, Freddie Bray Global Cancer Statistics. 2020. GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. CA Cancer J Clin. 2021 May;71(3):209-249. doi: 10.3322/caac.21660.

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NEUROPSYCHOLOGICAL STUDY OF PATIENTS WITH SPINOCEREBELLAR ATAXIA TYPE 1

This article describes the neuropsychological study of patients with spinocerebellar ataxia type 1 according to the clinic register YSC CMP. The purpose of the study was to identify neuropsychological features of SCA1. This study involved 34 patients, of whom 9(26,5%) were men and 25(73,5%) women. The average age of the patients is 52. As a result of the study, neuropsychological features manifested in SCA type 1 were identified.

Keywords: neuropsychological research, spinocerebellar ataxia type 1, neurodegenerative disease.

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Spinocerebellar ataxia type 1 is an inherited disorder that is transmitted through an autosomal dominant inheritance type. Autosomal Dominant Type 1 SCA is a neurodegenerative disorder caused by trinucleotide re-expansion CAG within the coding region of the gene *Ataxin1* (*ATXN1*), which is characterized by a progressive type of course, clinical polymorphism. SCA1 are considered

a rare group of cerebellar ataxias, with an average prevalence of 2.7 cases per 100,000 population. Their most common forms are polyglutamine expansion diseases (ATXN1 / SCA1, ATXN2 / SCA2, ATXN3 / SCA 3, CACNA1A /SCA 6, ATXN7 /SCA 7, TBP /SCA 17, and ATN1 /DRPLA) [4]. Yakutia is a hotbed of accumulation of SCA1 type not only in Russia, but also in the world. In 1997, the prevalence of SCA1 among the Yakut's was 35 cases per 100,000 populations, and now this figure has increased to 77.6 cases [4]. This is the most common type of SCA. One of the features of the prevalence of this disease in Russia is the uneven distribution. According to WHO, the total incidence rate is 1-2 per 100 thousand populations, but in the eastern part of Russia, SCA1 is much more common - up to 48 people per 100 thousand populations, primarily due to Yakutia [3]. The significant increase in the prevalence of SCA1 can be explained by the introduction of the system of family case registration and modern molecular genetic methods of mutation diagnosis. On the other hand, monitoring results indicate the ongoing accumulation of mutation in the Yakut population. In addition, the boundaries of known geographic foci of mutation accumulation were expanded and the population heterogeneity of mutation carriers was assumed by the number of CAG repeats [4].

The clinical pattern is characterized by cerebellar-pyramidal syndrome, which is manifested by pronounced ataxia, impaired coordination of movements, paresis, speech impairment. As a result, as the disease progresses, patients cease to serve themselves, completely depend on loved ones in their environment, lead to social maladaptation [6]. Death occurs from intercurrent diseases, most often from respiratory failure, which is the result of aspiration and congestive pneumonia.

Thus, the spread of type SCA1 disease in Republic of Sakha (Yakutia) is a medical and social problem, since the working population suffers, the number of disabilities increases, the costs of long-term therapy and rehabilitation of patients increase. Treatment of SCA1 patients remains supportive, symptomatic, as there is currently no known therapy to delay or stabilize the neurodegenerative process in this disease. At the same time, the study of cognitive sphere in this category of patients could help in the development of a personalized approach in the provision of specialized medical care.

Purpose of the research - studying the cognitive sphere and features of its impairment during neuropsychological examination of patients with SCA type 1.

Materials and methods. In total, 199 patients with various neurodegenerative diseases were included in the hospital register of the YSC CMP clinic from January to May 2023 for neuropsychological research, of which 34 patients diagnosed with SCA type 1 (17.9%). According to the hospitalization log of the neurological department of the YSC CMP clinic, in 2020 the number of patients with SCA type 1 was 40, in 2021 - 57, in 2022 - 114. The increase in hospitalizations is associated with the limitation of hospitalizations in the context of the COVID-19 pandemic in 2020 and 2021.

Criteria for inclusion of patients in the study:

1. Patients with a confirmed diagnosis of SCA type 1 by molecular genetic testing.
2. Registration on the territory of the Republic of Sakha (Yakutia).
3. Availability of a signed informational consent form for patients or their legal representative to participate in the study.

Criteria for exclusion of patients from the study:

1. Absence of a verified diagnosis of SCA type 1.
2. No registration in the territory of the Republic of Sakha (Yakutia).
3. Unwillingness of the patient or his/her legal representative to comply with the protocol of this study.

Research Methods:

1. Modified version of A.R. Luriia's neuropsychological research scheme [2].
2. Schulte Table Test - the method was used to evaluate attention.
3. The assessment of task performance was carried out according to the modified scheme of quantitative assessment by Zm.M. Glozman [1].

Table 1

Analysis of the mutual distribution of frequencies by gender and signs of neuropsychological symptoms

	Gender		Pearson's chi-squared test (p)	
	man	woman		
Praxis				
norm	23.5% (n=8)	61.8% (n=21)	0.126	0.723
light disorders	2.9% (n=1)	11.8% (n=4)		
Speech				
accuracy of pronunciation	2.9% (n=1)	14.7% (n=5)	3.56	0.168
insufficiently clear pronunciation	0% (n=0)	17.6% (n=6)		
dysarthria	23.5% (n=8)	41.2% (n=14)		
Handwriting				
norm	2.9% (n=1)	14.7% (n=5)	0.36	0.55
light disorders	23.5% (n=8)	58.8% (n=20)		
Mindset				
norm	26.5% (n=9)	70.6% (n=24)	0.371	0.543
moderate intellectual-mnestic decline	0% (n=0)	2.9% (n=1)		
Memory				
norm	8.8% (n=3)	41.2% (n=14)	1.36	0.244
reduced memory capacity	17.6% (n=6)	32.4% (n=11)		
Calculate				
norm	26.5% (n=9)	58.8% (n=20)	2.11	0.55
counting errors	0% (n=0)	2.9% (n=1)		
forgetting the interim score	0% (n=0)	5.9% (n=2)		
reducing the speed of calculations	0% (n=0)	5.9% (n=2)		
Attention				
slight decrease	14.7% (n=5)	29.4% (n=10)	1.16	0.762
moderate decline	8.8% (n=3)	29.4% (n=10)		
pronounced decrease	2.9% (n=1)	8.8% (n=3)		
significant decrease	0% (n=0)	5.9% (n=2)		

Scoring of the performance of each sample on a 6-point scale. Error-free execution - evaluated at 0 points. Slow entry into the task, or 1 error with self-correction - 0.5 points. Slow but smooth execution or single impulsive errors with self-correction followed by correct execution - 1 point. Making at least three mistakes, corrected by teaching or speaking the program with subsequent correct execution - 1.5 points. Making errors in more than half of the performed sample, with partial correction - 2 points. Inability to perform a sample - 3 points [1]. In further work, the primary scores, after coding, were translated into a percentage coefficient.

In the study of gnosis we used tests for recognition of crossed out, superimposed and underdrawn images, for preservation of simultaneous perception - when looking at story pictures. The study of acoustic gnosis and auditory-motor coordination was conducted to analyze the properties of acoustic attention and to assess the preservation of phonemic hearing and auditory-motor coordination. Optic-spatial gnosis: recognition of time on a schematic clock without numbers, copying figures, tests for letter and color gnosis.

In the study of praxis, the following samples were used: reciprocal sample; fist-rib-palm test; Head's test, as well as an oral praxis study.

Study of speech functions: analysis of spontaneous speech (analysis of fluidity, correctness and unfolding of speech); a test for naming images of objects; test for understanding words (correct ratio of words with pictures); sample for associative series.

Study of handwriting: analysis of the correctness, nature and degree of automation of writing.

Reading study: correctness and smoothness were assessed.

The intellectual sphere was studied using the following tests: to understand the meaning of plot paintings; serial account "100-7" - to assess the safety of accounting transactions; definition of an unnecessary subject; level of generalization in sample "fourth extra". The study of abstraction was carried out by means of the proverbs and sayings meaning interpretation test.

The study of memory functions was carried out by means of auditory-verbal and visual memory tests - memorization of 10 unrelated words for 5 presentations, memorization of visual stimuli, and memorization of a story. In each test, immediate and delayed reproduction was analyzed.

Statistical processing of the data was performed using Microsoft Office Excel 2010 and Jamovi. Quantitative data were described using mean, standard deviation. Qualitative data were presented as frequencies and percentages. The Mann Whitney U test was used to compare the two independent groups. To assess the association of qualitative features, the criterion was used Pearson's chi-squared

Table 2

Analysis of the mutual distribution of frequencies by level of education and signs of neuropsychological symptoms

	Education level		Pearson's chi-squared test (p)	
	Higher education	Secondary education		
Praxis			5.86	0.015
norm	50% (n=17)	35.3% (n=12)		
light disorders	0% (n=0)	14.7% (n=5)		
Speech			0.848	0.654
accuracy of pronunciation	11.8% (n=4)	5.9% (n=2)		
insufficiently clear pronunciation	8.8% (n=3)	8.8% (n=3)		
dysarthria	29.4% (n=10)	35.3% (n=12)		
Handwriting			0.0	1.00
norm	8.8% (n=3)	8.8% (n=3)		
light disorders	41.2% (n=14)	41.2% (n=14)		
Mindset			1.03	0.31
norm	50% (n=17)	47.1% (n=16)		
moderate intellectual-mnestic decline	0% (n=0)	2.9% (n=1)		
Memory			0.118	0.732
norm	23.5% (n=8)	26.5% (n=9)		
reduced memory capacity	26.5% (n=9)	23.5% (n=8)		
Calculate			5.86	0.119
norm	50% (n=17)	35.3% (n=12)		
counting errors	0% (n=0)	2.9% (n=1)		
forgetting the interim score	0% (n=0)	5.9% (n=2)		
reducing the speed of calculations	0% (n=0)	5.9% (n=2)		
Attention			6.59	0.086
slight decrease	29.4% (n=10)	14.7% (n=5)		
moderate decline	11.8% (n=4)	26.5% (n=9)		
pronounced decrease	8.8% (n=3)	2.9% (n=1)		
significant decrease	0% (n=0)	5.9% (n=2)		

Table 3

Correlation matrix of «Calculate» and «Praxis» by variable «Education level»

		Education level
Calculate	Spearman correlation coefficient ρ(rho)	0.414*
	p- value	0.015
Praxis	Spearman correlation coefficient ρ(rho)	0.415*
	p- value	0.015

note. * p < 0.05

test. Correlation analysis was performed using Spearman's Rank Correlation Coefficient. Differences with bilateral p < 0.05 were considered statistically significant.

Results and discussion. The study included 34 patients aged 30 to 84 years (M age =52, SD = 10.6), of whom 9 (26.5%) were men and 25 (73.5%) were women. Patients were divided into 2 groups according to gender.

Frequency analysis of the obtained neuropsychological examination data showed that visual and visual-spatial gnosis in patients with SCA1 is generally preserved, patients have access to independent recognition of images without prompts, correct determination of images from neuropsychological samples (crossed out, overlaid and unordered objects), preservation of phonemic hearing and auditory motor coordination. No significant gnostic disorders were identified.

In women patients, in contrast to men patients, predominance of praxis disorders is observed. This is probably due to the predominance of women in the study group. At the same time, minor errors in the sequence and dynamics of movement execution were noted; the errors were quickly noticed by the patient and self-corrected. (Table 1).

With the preservation of the meaningful and communicative side of speech in patients of both groups, a predominance of the percentage of speech disorders such as dysarthria was observed. Patients with dysarthria are characterized by a normal beginning of speech expression with a quiet ending. Disorders of prosodics are expressed in the inability to subordinate the speech stream to intonational accents, speech becomes syllabic, "the chanted nature of the speech ". [5] (Table 1).

Most patients experienced fatigue of various intensities during the testing process, but didn't refuse to complete tasks.

When studying the neurodynamic parameters of mental activity in male patients, it was noted that the concentration and stability of attention in patients of this group were slightly reduced on average (M = 1,56; SD = 0,72). At the same time, in some patients there is a pronounced decrease in concentration of attention with a tendency to depletion (n=3). In the study of the cognitive sphere it is possible to note the preservation of flexibility of thinking, preservation of calculation operations. In the study of long-term memory using the method "Memorization of 10 words", fluctuations in the productivity of memorization are noted.

Table 2 shows the neuropsychological symptomatology data, according to the level of education. This table shows that patients who have secondary vocational education, compared to patients who have higher education, are dominated by statistically insignificant more pronounced impairments in counting operations when the neurodynamic component is examined *(p =0,019)*. Also, in patients with secondary education, there is a significant decrease in pace and forgetting the intermediate result at the score *(p=0,002)*. In the study of the cognitive sphere, this group has more pronounced difficulties of inclusion in the tasks, there is a pronounced cognitive-mnestic decline. At the same time, a more pronounced decrease in memorization productivity was revealed. The statistically insignificant study results obtained may probably be associated with a small sample of patients for statistical processing.

Spearman's correlation analysis also revealed no significant correlations between the signs of neuropsychological symptomatology according to the variable "Gender". A number of significant positive correlations are observed for the traits "Calculate" and "Praxis" on the variable "Education" (Table 3). Thus, the attribute "Calculate" is positively related to the variable "Education" (Ro=0.414, p <0.015), and the attribute "Praxis" is also positively related to the variable "Education" (Ro=0.415, p <0.015).

Conclusion. Thus, the neuropsychological study of patients with SCA type 1 allowed to reveal slowing of the rate of thinking in counting, decreased attention depending on the level of education, thus a correlation dependence of cognitive disorders was found: the higher the level of education, the less pronounced are these cognitive disorders. This suggests a slower destruction of neural connections in the field of higher nervous activity due to the neurodegenerative process in patients with higher professional education. The observed prosodic disorders or "the chanted nature of the speech" in most patients are the result of a neurodegenerative process in the cerebellar region. This study will continue to develop a further personalized approach in the provision of specialized medical care and the prevention of cognitive impairment in carriers of the mutant gene in the preclinical stage of SCA type 1.

Reference

1. Glozman Zh.M. Kolichestvennaia otsenka v neiropsikhologii [Quantitative neuropsychological assessment criteria. M., 1995 (In Russ.).]
2. Luriia A. R. Skhema neiropsikhologicheskogo issledovaniia [Scheme of neuropsychological research]. Moscow: Lomonosov Moscow State University,1973 [In Russ.).]
3. Kliushnikov S.A., Prikhodko D.A., Abramycheva N.Y. [et al.]Spinotserebelliarnaia ataksiia 17-go tipa: pervye nabliudeniia v rossiiskoi populiatsii [Spinocerebellar ataxia of the 17th type: the first observations in the Russian population. In the collection of materials of the conference: All-Russian scientific and practical conference "Degenerative and vascular diseases of the nervous system," dedicated to the 180th anniversary of teaching neurology at the Kirov Military Medical Academy (edited by I.V. Litvinenko). Saint Petersburg. 2016: 37-39 (In Russ.).]
4. Fedorov A.I., Sukhomyasova A.L., Golikova P.I., Ivanov A.V., Nikolaeva I.A., Stepanova S.K., Grigorieva T.P., Maksimova N.R. Rasprostranennost spinotserebelliarnoi ataksii 1 tipa v lakutii: sovremennoe sostoianie [The prevalence of type 1 spinocerebellar ataxia in Yakutia: current status]. Medical Genetics. 2020, 19(7):29-30 (In Russ.).] https://doi.org/10.25557/2073-7998.2020.07.29-30
5. Shelgunova, N. B. Osobennosti proiavleniia dizartrii pri razlichnykh porazheniiakh zon golovnogo mozga [Features of the manifestation of dysarthria in various lesions of the brain zones]. Moscow. Publishing house 'Young Scientist'. 2017: 20(154): 209-211. https://moluch.ru/archive/154/43482/
6. Platonov F.A., Tyryshkin K, Tikhonov D.G. [et al.] Genetic fitness and selection intensity in a population affected with high-incidence spinocerebellar ataxia type 1. Neurogenetics. 2016;17(3): 179-185. doi: 10.1007/s10048-016-0481-5.