HEALTH ORGANIZATION

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ANALYSIS OF PATIENT ROUTING AT THE HOSPITAL STAGE TO THE NEUROLOGICAL DEPARTMENT OF THE CENTRE FOR NEURODEGENERATIVE DISEASES OF THE CLINIC OF YAKUTSK SCIENTIFIC CENTRE FOR COMPLEX MEDICAL PROBEMS

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The article analyzes the routing of patients with neurodegenerative diseases from medical organizations of the Ministry of Health of the Republic of Sakha (Yakutia) to the neurological department of the Center for Neurodegenerative Diseases (CND) of the Clinic of the Yakutsk Scientific Center for Complex Medical Problems (YSC CMP). A comparative analysis of directed and refined diagnoses was carried out. Diseases that cause difficulties in their diagnosis have been identified.

Keywords: levels of medical care, patient routing, specialized medical care, neurodegenerative diseases.

Introduction. In the constituent entities of the Russian Federation (RF), a three-tier system of medical care has been formed. Based on the Order of the Ministry of Health of Russia dated December 29, 2012 No. 1706 (as amended on February 13, 2013) in the constituent entities of the Russian Federation, structural transformations for the provision of specialized care should be carried out on the basis of standards of medical care and procedures for its provision, phased provision of specialized medical care, with routing of referral of patients in medical organizations at 3 levels of medical care (MC). In stationary conditions, the provision of medical care is possible on the basis of optimizing the structure of the hospital bed fund. Thus, the routing of patients at all levels is a phased provision of medical care, the succession of their stages. The creation of patient routing according to various profiles increases the availability and quality of specialized medical care for the population. [7]

Thanks to this Order of the Ministry of Health of the Russian Federation, it became possible in the regions to develop routing schemes for patients to receive specialized emergency and routine medical care [1,6, 9, 8]. The routing should reflect the detailed movement of patients to medical organizations at each level. In the Republic of Sakha (Yakutia), the epidemiological situation of neurodegenerative diseases has been studied only for individual diseases. The obtained epidemiological indicators indicate that the percentage of neurodegenerative diseases (NDD) among all diseases of the nervous system is relatively high [5]. The most studied are type 1 spinocerebellar ataxia (SCA), oculopharyngeal myodystrophy (OPMD) [11], Charcot-Marie-Tooth disease (CMT) [2], Parkinson's disease (PD) [12], amyotrophic lateral sclerosis (ALS) [3]. Yakutia is the territory of the greatest distribution of SCA 1 in the world - 34.4 cases per 100 thousand population [13]. The situation with Alzheimer's disease, which ranks 1st in the world among NDDs [14], as well as for various genetic and inherited diseases of the nervous system common in Yakutia, remains unexplored. Given the age-dependent nature of NDD, the incidence of cases in Russia, as well as in the world, is steadily increasing and creates a medico-social problem for the health care and social protection authorities, since the aging of society is rapidly increasing [4]. In this regard, the organization of optimal routing of persons with a suspected NDD creates conditions for timely diagnosis and the appointment of adequate treatment, and for patients with a specified diagnosis, it becomes possible to receive high-quality specialized rehabilitation treatment, which largely forms the prognosis and course of the disease. Thus, taking into account the epidemiological situation and the lack of a round-the-clock hospital in the republic for patients with NDD, and based on the Order of the Ministry of Health of Russia [7], the order of the Ministry of Health of the RS (Y) No. 01-07 / 184 dated 14.02.2019 "On the order of routing of neurological patients suffering from neurodegenerative diseases at the outpatient and hospital stages "[7]. This Order of the Ministry of Health of the Republic of Sakha (Yakutia) made it possible to open a round-the-clock neurological hospital for this category of patients as part of the Center for Neurodegenerative Diseases on the basis of the Clinic of the YSC KMP and make it possible to receive specialized care for patients with NDD. The neurological department was opened on 01.04.2019. for 30 beds, of which 15 beds are intended for patients with neurodegenerative pathology and 15 beds for patients with other diseases of the nervous system, dorsopathies and cerebrovascular diseases, with the exception of acute cerebrovascular accidents.

Aim of the study: to analyze the hospital stage of routing neurodegenerative diseases in the Republic of Sakha (Yakutia) to the neurological department of the Clinic of the YSC KMP and to identify their spectrum by nosology.

Materials and methods. The materials for the study were:

1. Databases of patients with SCA 1 type, Parkinson's disease, dementia and muscular dystonias * of the neurological department of the YSC KMP Clinic for 2019 **;

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2. Reporting data of district neurologists for 2019;

3. Regulatory documents of the Ministry of Health of the Russian Federation, the Ministry of Health of the Chelyabinsk and Sverdlovsk regions and the Republic of Sakha (Yakutia) on the procedures for routing patients;

4. A comprehensive program for the opening of the Center for Neurodegenerative Diseases on the basis of the Clinic of the YSC KMP;

* The largest number of patients in the neurological department were patients with SCA1 type, primary dementia, Parkinson's disease and muscular dystonias. The rest of the diseases from the NDD group were diagnosed in isolated cases.

** Taking into account the epidemiological situation in the Russian Federation in connection with the new coronavirus infection in 2020-2021, and the limitation of the volume of specialized care during this period, the routing period for 2019 was studied.

Research methods:

1. Retrospective analysis of databases of patients with SCA type 1, Parkinson's disease, dementia and muscular dystonia;

2. Analysis of the reported data of district neurologists;

3. Statistical method.

The retrospective analysis included a database study (DB) of patients with type 1 SCA, Parkinson's disease, primary dementia, and muscular dystonia. The database contains personal and demographic data of patients, the results of neuroimaging: Magnetic resonance imaging (MRI) of the brain and spinal cord, electroencephalography (EEG), in patients with SCA type 1 - electroneuromyography (ENMG) and spirography (SPG) to confirm the developing anterior limb lesion in advanced and terminal stage of the disease in patients with respiratory failure. When studying the database of primary dementia, in addition, neuropsychological scales were studied: the Montreal Cognitive Scale (MoCA) and the Brief Mental Status Assessment Scale (MMSE). Annual reports of regional neurologists of the republic for 2019, for information on hospitalization in the neurological department of the Clinic of the YSC KMP, referral and clarified diagnoses as a result of hospitalization. Statistical processing of the material was carried out on a personal computer using the Statistica version 12 software package. During the statistical processing of the research results, the proportions were calculated according to the frequency table. The proportions were compared using a contingency table with the calculation of Pearson's $\chi 2$ criterion.

The critical value of the significance level (p) was taken equal to 5%.

Study inclusion criteria:

1. Patients who underwent examination and rehabilitation treatment in the round-the-clock hospital of the neurological department of the Clinic of the YSC KMP for the period from 01.04.2019 - 01.01.2020;

2. Patients with established diagnoses of SCA type 1, Parkinson's disease, primary dementia (BA, LVD, DTL, PNP) and muscular dystonias.

Exclusion criteria:

1. Patients who underwent examination and rehabilitation treatment in the round-the-clock hospital of the neurological department of the Clinic of the YSC KMP for 2020-2021;

2. The presence of a causal relationship between the development of cognitive disorders and cerebrovascular disease;

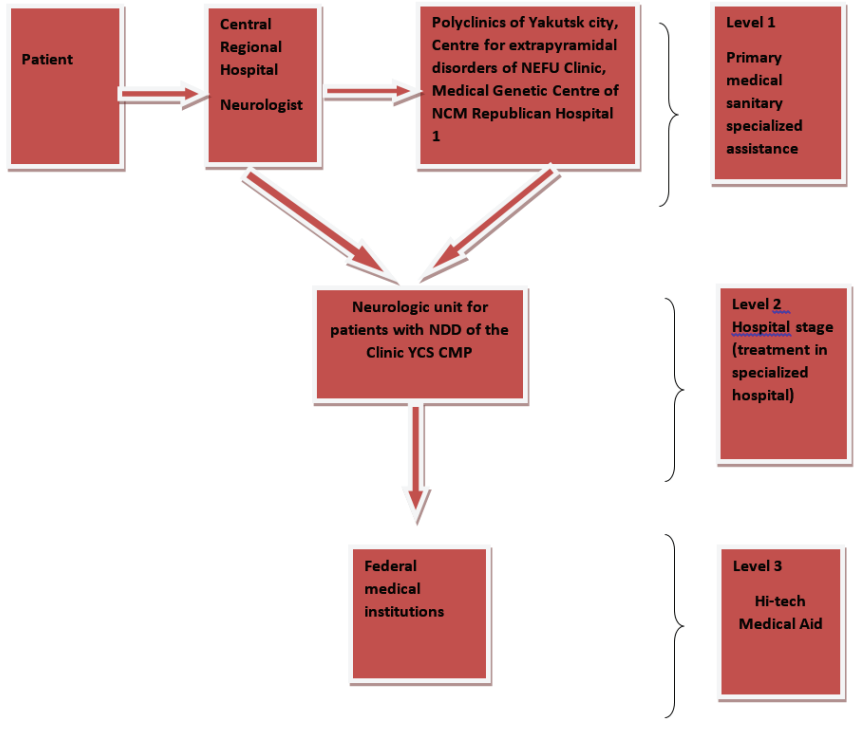
3. Patients with other neurodegenerative diseases.

In total, in 2019, 444 patients were hospitalized in the neurological department, 281 patients with diseases of the nervous system, including 210 patients with SCA type 1, PD, MD and PD.

Results and discussion. Hospitalization in the neurological department for patients with neurodegenerative pathology is one of the stages in the provision of specialized medical care and refers to the 2nd level of medical care [10]. The opening of this department took place on 01.04.2019. on the basis of the Clinic of the Yakutsk Scientific Center for Complex Medical Problems by re-profiling unprofitable beds of the cardiological and gynecological departments. The severe course of diseases of patients with NDD is an undoubted obstacle to visiting polyclinics, and the lack of round-the-clock hospitals for rehabilitation or rehabilitation treatment and examination deprives them of receiving these types of MP. Therefore, the predominant and comfortable type of MP for such patients is treatment in a round-the-clock hospital. Timely verification of the diagnosis and the appointment of adequate restorative treatment at the same time determines the prognosis of the disease and improves the quality of life of patients.

From Figure it follows that the patient can be admitted to the neurological department for patients with neurodegenerative diseases both from the central regional hospital and from the polyclinics of the city of Yakutsk. Admission to the department is carried out in a planned manner after a preliminary consultation of a neurologist with the head of the neurological department, which makes it possible to cover patients with specialized care from all uluses of the republic.

Specialized medical care was



Routing scheme for patients with neurodegenerative diseases at the hospital stage

Discrepancies between directional and specified clinical diagnoses (%)

The main diagnosis (n=210)	Divergence of directional and refined diagnoses. %
Spinocerebellar ataxia of type I (n=68)	0
Parkinson's disease (n=55)	1.8
Muscle dystonia (n=51)	5.88
Neurodegenerative disease plus (n=3)	100
Alzheimer's disease (n=21)	90.48
Dementia with Levi's corpuscles (n=3)	100
Frontotemporal degeneration (n=6)	-«-
Progressive supranuclear paralysis (n=3)	-«-

provided to patients who were sent from all the uluses of the republic, but were significantly more often sent from the Arctic (39%) and central (33%) zones, compared with the southern (16%) and Vilyuisk (12%) ($\chi2=36.95$; $p<0.0001$) regions.

The total number of hospitalized patients in the neurological department for 2019 made up 444 cases, of which 281 cases were associated with diseases of the nervous system (BNS)(63,3%), 40 (9%) patients with dorsopathies and 123 (27.7%) with cerebrovascular diseases.

Of all the diseases of the nervous system, neurodegenerative diseases prevailed, which accounted for 75%, and other diseases of the nervous system accounted for only 25%.

The main share of VAT falls on type 1 SCA (n=68) - 24%, Parkinson's disease (n= 55) - 20%, muscular dystonia (n=51) - 51% and primary dementia (n=32) - 11%. The share of other NDZ (n =75) is 27%.

The table shows that there were no discrepancies in the directional and refined diagnoses in patients with SCA1, which can be explained by the fact that the diagnosis was previously confirmed by molecular genetic diagnostics in all patients. A low percentage of the discrepancy in the diagnosis was also found in Parkinson's disease (1.8%) and muscle dystonia (94.1%), which can be explained by the fact that these patients were examined on an outpatient basis earlier at the Center for Extrapyramidal Disorders and Botulinum Therapy at the Clinic of the North-Eastern Federal University. At the same time, doctors have great difficulties in diagnosing primary dementias (Alzheimer's disease, dementia with Levi's corpuscles, frontotemporal degeneration) and neurodegenerative disease accompanied by dementia-progressive supranuclear paralysis. In addition, NDZ with atypical additional neurological symptoms also cause difficulties, which can be explained by the rarity of these clinical cases and uncharacteristic symptoms.

Most often, patients were referred with a diagnosis of dyscirculatory encephalopathy, which was not confirmed in 55% of cases, with a diagnosis of unspecified NDZ - in 21% of cases, Parkinson's disease in 16% of cases, essential tremor in 5% of cases and cervical osteochondrosis-in 3% of cases.

The list of established clinical diagnoses has expanded; in comparison with the directional diagnoses, it includes BA (50%), DTL (8%), LVD (13%) and PNP (8%).

With a directional diagnosis of dyscirculatory encephalopathy, Alzheimer's disease, dementia with Levi's corpuscles and muscle dystonia were established in 61% (n=14) of cases, and frontotemporal degeneration in 17% (n=4) of cases.

In the vast majority of cases (82%), the directional diagnoses coincided significantly more with the final ones ($\chi2=171.01$; $p<0.0001$), and the differences in diagnoses were 18%.

Thus, despite the large number of coincidences of directional and refined diagnoses, the greatest difficulties in conducting a differential diagnosis in neurologists are caused by primary dementia, and patients are more often diagnosed with dyscirculatory encephalopathy.

Conclusion. Analysis of the hospital stage 2 of the routing level of patients with neurodegenerative pathology confirmed that:

1. The provision of specialized care is an urgent problem in the Republic of Sakha (Yakutia) and the creation of a regional routing procedure for this category of patients to provide them with specialized care in the republic has become a timely step on the part of the FGBNU YSC KMP and the Ministry of Health of the Republic of Sakha (Yakutia);

2. An analysis of the routing of the hospital stage of patients with neurodegenerative pathology showed that it is necessary to train neurologists during the improvement cycles in neurodegenerative pathology;

3. The opening of a neurological department for patients of the republic on the basis of the Clinic of a federal scientific institution is an example of the consolidation of a scientific medical institution and regional health care.

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HEALTHY LIFESTYLE. PREVENTION

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PREDICTION OF NEGATIVE CLINICAL OUTCOME OF CRITICAL CONDITION USING THE APACHE-II, SOFA, NRS-2002 SCALES

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During the first 24 hrs of patient's admission to ICU, it is essential to perform a negative outcome screening, which can be done using acute physiology severity scales - APACHE-II and SOFA. It is known that these scales do not include nutritional insufficiency assessment, which itself affects survivability of critically ill patients. The model that uses three scales: assessment of pathophysiological changes - APACHE-II, intensity of multiple organ failure – SOFA, and assessment of nutritional insufficiency risk - NRS-2002, reliably improves the accuracy of the negative outcome prognosis in an ICU patient compared to their individual application.

Keywords: APACHE II, SOFA, NRS-2002, critically ill patients, predictors, mortality.

Introduction. Evaluation of patient's condition severity in an intensive care unit (ICU) is an essential task in the work of a resuscitator. Identification of patients with a high risk of developing a negative outcome at early stages of intensive care provides an opportunity for timely adjustment of the diagnostic and treatment process. Different comprehensive prognostic scales are used to address this issue. The most popular scales are APACHE-II that reflects pathophysiological changes in the patient's organism at admission and serves to predict a disease outcome, and SOFA that allows tracing the dynamics of the multiple organ dysfunction syndrome [1,2]. Numerous studies have proven that critically ill patients with nutritional insufficiency (NI) stay longer in ICU and hospital, and demonstrate a higher mortality rate [3]. The drawbacks of these scales include the fact that they do not consider patient's protein-energy metabolism and nutritional status – the risk of NI. One of the most convenient and frequently used, in the world practice, scale assessing the risk of NI is Nutritional Risk Screening 2002 (NRS-2002), which is recommended by the European Society for Clinical Nutrition and Metabolism (ESPEN) [4]. It can be applied to all inpatients including those treated in ICU [4]. The NRS-2002 score helps identifying NI patients and serves a lethal outcome predictor in critically ill patients [5]. The meta-analysis assessing usefulness of NRS 2002 as a predictor of postoperative outcomes in the abdominal surgery included 11 studies in total. Postoperative complications developed much more frequently in the risk-group patients (the odds ratio (OR) - 3.13, p <0.00001). Mortality was also significantly higher in patients having a higher risk score according to NRS 2002 (OR – 3.61, p <0.009) [6].

Absence, in the available literature, of information on how the prognostic value of APACHE-II and SOFA scores will change if the risk of developing NI assessed by the NRS-2002 score will be taken into account, makes our study relevant.

Purpose of the study: to assess the informative value of the model predicting a negative outcome in ICU patients through combined application of APACHE-II, SOFA, and NRS-2002 scores.

Materials and methods. A prospective single-center study was carried out in ICU of JSC Neftyanik Hospital, Tyumen, in 2012-2017. The inclusion criteria were over 24hrs. in ICU and age between 18 and 80 years. The exclusion criteria were coma and/or impossibility to get answers to questions, shock, moribund state, age older than 80 years of age, pregnancy; moderately ill patients staying in ICU for less than 24 hrs. During the first 24 hours

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