

## NEUROLOGY AND NEUROSURGERY

### SOME PROBLEMATIC ISSUES OF REHABILITATION OF PATIENTS WITH THE STROKE CONSEQUENCES AT THE PRESENT STAGE

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#### ABSTRACT

**Background.** Acute cerebrovascular disorders are one of the main causes of severe disability in modern society.

Russian and foreign researchers register the emerging trend towards rejuvenation of the patients with stroke, which, in turn, significantly increases the relevance of the treatment and rehabilitation of these patients at various stages.

**The aim.** To study the social and hygienic characteristics of the stroke patients and to determine their need for medical rehabilitation in the early recovery period.

**Materials and methods.** We studied the social and hygienic characteristics of 109 patients who had stroke in 2020 and 2021 and underwent rehabilitation in the specialized rehabilitation department of the Southern District Medical Center of the Federal Medical and Biological Agency, and determined their need for medical rehabilitation using the analytical method, the method of expert assessments and questionnaires.

**Results.** The average portrait of a patient with a stroke in the early recovery period is as follows: this is a man aged 61 to 70 years with a higher or secondary specialized education, unemployed, living in the city. Up to 30 % of stroke survivors were recognized as disabled; among which, the persons with more severe disability (groups I and II) predominate – up to 90 %. Implementation of rehabilitation measures in the acute period in the hospital and in the early recovery period in the outpatient clinic is carried out at a fairly low level. The percentage of patients being examined by a multidisciplinary rehabilitation team ranges from 17.4 to 10.1 %.

**Conclusion.** The availability of medical rehabilitation measures in a specialized rehabilitation center is quite limited; more than half of the surveyed contingent (52.3 %) experienced problems in obtaining a referral to treatment, about half of the respondents (46.8 %) waited up to 6 months for a referral, which indicates the need to expand the network of such institutions at the regional level.

**Key words:** stroke, disability, rehabilitation, medical rehabilitation, rehabilitation department, hospital, out-patient clinic

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## НЕКОТОРЫЕ ПРОБЛЕМНЫЕ ВОПРОСЫ РЕАБИЛИТАЦИИ ПАЦИЕНТОВ С ПОСЛЕДСТВИЯМИ ИНСУЛЬТА НА СОВРЕМЕННОМ ЭТАПЕ

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### РЕЗЮМЕ

**Обоснование.** Острые нарушения мозгового кровообращения являются одной из основных причин тяжёлой инвалидности в современном обществе. Отечественные и зарубежные исследователи отмечают наметившуюся тенденцию к омоложению контингента больных инсультом, что в свою очередь значительно повышает актуальность лечения и реабилитации этой категории лиц на различных этапах.

**Цель исследования.** Изучить социально-гигиеническую характеристику контингента лиц, перенёсших инсульт, и определить их потребность в мероприятиях по медицинской реабилитации в раннем восстановительном периоде.

**Материалы и методы.** Изучена социально-гигиеническая характеристика 109 пациентов, перенёсших инсульт в 2020 и 2021 гг. и проходивших реабилитацию в условиях специализированного отделения реабилитации ФГБУЗ «Южный окружной медицинский центр Федерального медико-биологического агентства», и определена их потребность в мероприятиях по медицинской реабилитации с использованием аналитического метода, метода экспертных оценок и анкетирования.

**Результаты.** Среднестатистический портрет пациента с перенесённым инсультом в раннем восстановительном периоде выглядит следующим образом: это мужчина в возрасте от 61 до 70 лет с высшим или средним специальным образованием, неработающий, проживающий в городе. До 30 % лиц, перенёсших инсульт, признаются инвалидами, среди которых преобладают лица с более тяжёлой инвалидностью (I и II группы) – до 90 %. Проведение реабилитационных мероприятий в остром периоде в стационаре и раннем восстановительном периоде в амбулаторно-поликлиническом учреждении осуществляется на достаточно низком уровне. Процент осмотра пациентов мультидисциплинарной реабилитационной командой колеблется от 17,4 до 10,1 %.

**Заключение.** Доступность мероприятий по медицинской реабилитации в условиях специализированного реабилитационного центра достаточно ограничена; более половины исследуемого контингента (52,3 %) испытывали проблемы при получении направления, около половины респондентов (46,8 %) ожидали направление до 6 месяцев, что свидетельствует о необходимости расширения сети подобных учреждений на региональном уровне.

**Ключевые слова:** инсульт, трудоспособность, инвалидность, реабилитация, медицинская реабилитация, реабилитационное отделение, стационар, поликлиника

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## INTRODUCTION

### Objectives

The priority national tasks in the field of health care at the present stage are: promotion of public health; development of disease prevention; reduction and prevention of disability; introduction of highly effective medical technologies; development of rehabilitation [1–3].

In order to improve the situation with the preservation of citizens' health, it is necessary to ensure a qualitative breakthrough in the health care system through the development of innovative technologies in the field of prevention, diagnosis and treatment of diseases, including rehabilitation [4–6].

Stroke remains the most urgent medical and social problem at the present stage. The incidence of stroke in Russia is 3–4 cases per 1,000 population per year. The mortality rate from this disease in the acute period reaches 35 %. Within the first 5 years after a stroke, 44 % of patients die. The number of people who have suffered a stroke is more than 1 million annually in Russia, 80 % of whom are disabled. Only up to 25 % of patients return to work after a stroke, and the same number of patients remain disabled for the rest of their lives [7, 8].

Acute cerebrovascular diseases are one of the main causes of severe disability in modern society [9].

At the present stage, a number of Russian and foreign researchers register the emerging trend toward rejuvenation of the patients with stroke, which, in turn, significantly increases the relevance of the treatment and rehabilitation of these patients at various stages [10, 11].

## THE AIM OF THE STUDY

To study the social and hygienic characteristics of the stroke patients and to determine their need for medical rehabilitation in the early recovery period.

## MATERIALS AND METHODS

We studied the social and hygienic characteristics of 109 patients who had stroke in 2020 and 2021 and underwent rehabilitation in the specialized rehabilitation department of the Southern District Medical Center of the Federal Medical and Biological Agency, and determined their need for medical rehabilitation using the analytical method, the method of expert assessments and questionnaires. By means of analytical method the social and hygienic characteristics of the studied patients were described. The availability of rehabilitation measures for these patients was studied and assessed by the method of expert assessments and questionnaires.

## RESULTS AND DISCUSSION

Patients are admitted to the medical rehabilitation department of the Southern District Medical Center

of the Federal Medical and Biological Agency (Russia) in the early recovery period.

The majority of patients in the acute phase of the disease – 77 (70.6 %) people – were residents of the city, treated in vascular departments of Rostov-on-Don (N.A. Semashko City Hospital No. 1 in Rostov-on-Don, City Emergency Hospital in Rostov-on-Don, City Hospital No. 20 in Rostov-on-Don) 32 (29.4 %) people, who were villagers, were hospitalized in central district hospitals at their place of residence, and in some cases, depending on the severity of the state of health and the presence of appropriate indications, were transported by air ambulance to the Regional Vascular Center, Rostov Regional Clinical Hospital.

Upon completion of inpatient treatment, patients with the consequences of acute cerebrovascular accidents (ACVA) were discharged for further outpatient treatment by specialists of the appropriate profile with recommendations for rehabilitation measures in specialized institutions. Local practitioners, in accordance with their available quotas, referred patients to specialized rehabilitation centers, where a set of rehabilitation measures developed by a multidisciplinary rehabilitation team (MDRT) was carried out, followed by assessment of the measures taken at the second stage of rehabilitation and development of a rehabilitation plan for the third outpatient stage.

The patients studied were distributed by sex as follows: men – 75 (68.8 %), women – 34 (31.2 %). There were 14 (12.9 %) between 31 and 40 years of age, 8 (7.3 %) between 41 and 50 years, 28 (25.7 %) between 51 and 60 years, 41 (37.6 %) between 61 and 70 years, and 18 (16.5 %) above 70 years. In terms of education level, the following gradation is observed: patients with secondary education – 25 (22.9 %) people, with specialized secondary education – 39 (35.8 %) people, with higher education – 45 (41.3 %) people. At the same time, more than half of the respondents – 66 (60.5 %) people – did not work anywhere; 26 (23.9 %) people were engaged in mental work and 17 (15.6 %) in physical work.

The following concomitant diseases were registered in the patients: carotid artery atherosclerosis (stenosis from 15 to 40–50 %); dyslipidemia, arterial hypertension (stage II or III, more often stage II) – 95 (87.2 %) patients; type 2 diabetes mellitus – 23 (21.12 %) patients; atrial fibrillation – 5 (4.6 %) patients. Hemophilia in 9 (8.3 %) and aneurysm rupture in 4 (3.7 %) were recorded in young age (31–40 years) individuals who underwent ACVA.

According to the NIHSS (National Institutes of Health Stroke Scale), the respondents were distributed according to the severity of their stroke as follows: more than one-third of patients – 37 (33.9 %) people – scored from 3 to 8 points, which corresponds to a mild degree of disease severity; more than half – 56 (51.4 %) people – scored from 9 to 12 points, which corresponds to a moderate degree of severity; 16 (14.7 %) people scored from 13 to 15 points, which indicates a severe degree of the disease.

The terms of temporary incapacity to work at all stages of treatment and rehabilitation, including the outpatient stage, in the studied population ranged from 1 to 10 months depending on the severity of the disease and the severity of functional disorders of organs and systems. Up to 1 month incapacity to work was experienced by 14 (12.8 %) individuals, 2 to 4 months – by 56 (51.4 %), 5 to 10 months – by 39 (35.8 %). Due to the lack of adequate effect from the conducted treatment and rehabilitation measures and the presence of persistent marked impairment of body functions, 30 (27.5 %) patients were referred for examination to the Bureau of Medical and Social Expertise to determine the disability group and the need for social protection measures, including rehabilitation.

Of the total number of patients recognized as disabled (30 individuals), there were 3 (10.0 %) patients aged 31–40 years, 3 (10.0 %) patients aged 41–50 years, 16 (53.3 %) patients aged 51–60 years, 6 (20 %) patients in the age group 61–70 years, and 2 (6.7 %) patients over 70 years. Most of them – 14 (46.7 %) patients – were diagnosed with disability group I, 13 (43.3 %) – with disability group II, 3 (10 %) – with disability group III, i. e. the patients under study are characterized by more severe disability groups (I and II), which emphasizes the social significance of the problem. It should be noted that 6 (20.0 %) of those recognized as disabled continued to work, 24 (80.0 %) individuals did not work.

Among the patients admitted for rehabilitation in the specialized rehabilitation department in the early recovery period, the following disorders of body functions were determined according to the results of rehabilitation diagnostics performed by the MDRT: paralysis – in 26 (23.9 %) patients, paresis – in 108 (99.1 %), walking disorders – in 91 (83.5 %), cognitive disorders – in 79 (72.5 %), epilepsy – in 8 (7.3 %), sensory disorders – in 6 (5.5 %), disorders of higher cerebral function (speech, gnosis, praxis) – in 51 (46.8 %). It should be noted that, as a rule, one patient had a combination of several disorders of the above-mentioned functions of varying severity, requiring appropriate correction.

In the course of MDRT rehabilitation diagnostics, a questionnaire survey of the study population was conducted in order to investigate the possible implementation of rehabilitation measures in the acute period at the first stage and in the early recovery period at the second stage. It should be noted that close relatives and direct caregivers took part in the patient questionnaire. In particular, only 33 (30.3 %) people answered positively to question No. 1 “Did you undergo rehabilitation measures during your stay in hospital?”, 39 (35.8 %) people answered negatively, and 37 (33.9 %) people found it difficult to answer this question. Only 19 (17.4 %) people answered positively to question No. 2 “Have you been examined by the MDRT in hospital?”; the majority of respondents – 51 (46.8 %) people – answered it negatively; 39 (35.8 %) people found it difficult to answer. 35 (32.1 %) people answered positively, 38 (34.9 %) people answered negatively, and 36 (33.0 %) people found it dif-

ficult to answer question No. 3 “Were you subjected to rehabilitation measures in outpatient conditions?”. Regarding question No. 4 “Have you been examined by the MDRT in the polyclinic?” only 11 (10.1 %) people answered positively, 68 (63.4 %) answered negatively and 30 (27.5 %) found it difficult to answer this question.

The fifth question of the questionnaire concerned the problem of getting a referral to the specialized rehabilitation department. Of note, more than half of the respondents, 57 (52.3 %) people, experienced various problems in obtaining this referral; 31 (28.4 %) people responded negatively and 21 (19.3 %) people found it difficult to answer this question. At the same time, the majority of respondents – 51 (46.8 %) people – noted that they had to wait for a referral for rehabilitation to the specialized department for up to 6 months, 32 (29.4 %) – up to 3 months, 26 (23.8 %) people received a referral within 1 month.

Based on the results of MDRT examination, a set of rehabilitation measures is determined for each patient, taking into account their individual characteristics and rehabilitation diagnosis, including drug therapy (nootropics, botulinum toxin for severe spasticity, hypotensive drugs, statins), physiotherapy (magnetotherapy, correction of motor disorder, robotic mechanotherapy, low-frequency pulsed electromagnetic field exposure, including massage of the affected limbs), rehabilitation exercises for diseases of the central nervous system and brain, the method of functional programmed electrical muscle stimulation, mechanotherapy of the lower limbs, active-passive mechanotherapy of the upper and lower limbs, correction of walking and balance. Along with the use of the above-mentioned technologies, a clinical psychologist worked with each patient individually. The duration of patients’ stay in the specialized rehabilitation department varies from 9 to 14 bed-days depending on the severity of the patient’s health condition. No doubt, it is difficult to achieve significant improvement in health status in post-stroke patients in the early recovery period in such a short period of time. At the same time, the complex of rehabilitation measures allows stabilizing the patient’s state of health, preventing further progression of movement disorders and, most importantly, developing a plan of further rehabilitation measures on the basis of objective assessment and determining their scope. There is a high need for medical rehabilitation activities among the study population. In particular, 82 (75.2 %) subjects need rehabilitation therapy in outpatient conditions, 93 (85.3 %) subjects needed regular medical check-ups at the moment of discharge from the rehabilitation department; for the remaining 16 (14.7 %) subjects the issue of regular medical check-ups will be decided after the course of rehabilitation treatment in a 24-hour hospital. A total of 108 (99.1 %) patients needed drug treatment, 1 person categorically refused drug therapy, having made an informed voluntary refusal. 100 (91.7 %) people need treatment in the conditions of a 24-hour hos-



pital: it should be noted that the majority of respondents needed planned hospitalization in a specialized department. As a rule, the terms of planned hospitalization ranged from 1 to 2 months. 16 (14.7 %) subjects needed emergency medical care, and the issue of their hospitalization was resolved within 1–2 days, in connection with which the issue of regular medical check-ups was also postponed. 105 (96.3 %) people need physiotherapy, 103 (94.5 %) people need exercise therapy, 61 (56.0 %) people need psychotherapeutic help, 51 (46.8 %) people need restoration of speech functions (classes with a speech therapist), 21 (19.3 %) people need health resort treatment. The high demand for rehabilitation treatment in specialized rehabilitation centers – 105 (96.3 %) people – also draws attention. At the same time, it should be noted that the availability of this type of rehabilitation services, taking into account the data we obtained from the results of the questionnaire, is very limited, which, of course, has a negative impact on achieving the maximum effect of measures for comprehensive rehabilitation of patients with stroke consequences and requires its resolution at the regional level.

Based on the above, the following conclusions can be drawn:

1. The average portrait of a patient with a stroke in the early recovery period is as follows: this is a man aged 61 to 70 years with a higher or secondary specialized education, unemployed, living in the city.

2. Up to 30 % of stroke survivors were recognized as disabled; among which, the persons with more severe disability (groups I and II) predominate – up to 90 %.

3. Implementation of rehabilitation measures in the acute period in the hospital and in the early recovery period in the outpatient clinic is carried out at a fairly low level. The percentage of patients being examined by a multidisciplinary rehabilitation team ranges from 17.4 to 10.1 % in inpatient and outpatient conditions, respectively.

4. The availability of medical rehabilitation measures in a specialized rehabilitation center is quite limited; more than half of the surveyed contingent (52.3 %) experienced problems in obtaining a referral to treatment, about half of the respondents (46.8 %) waited up to 6 months for a referral, which indicates the need to expand the network of such institutions at the regional level.

### Conflict of interest

The authors of this article declare the absence of a conflict of interest.

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