

UDC 615.8+616.8-089

**THE POSSIBILITIES OF APPLICATION OF INNOVATIVE NEUROREHABILITATION METHODS
IN ST PETERSBURG STATE TREATMENT AND PROPHYLAXIS DEPARTMENTS**

A.Y.Sherbuk, L.L.Bashkov, V.V.Donskov, V.A.Sidorenko, I.I.Bondar

*Saint-Petersburg State University. Neurosurgery and neurology department, endos@rambler.ru
Committee Health Department. (Saint-Petersburg)*

The results of medical rehabilitation treatment of patients with neurosurgery and neurology profiles have been analyzed in St Petersburg. The necessity of innovation technologies implementation in applied medicine institutions is indicated, the results of retooling of city hospitals with modern equipment is estimated, the examples of elaboration of effective correlation methods which improve rehabilitation treatment quality are presented. Innovation technologies usage made it possible to decrease the terms of temporary incapacity of patients and reduce frequency of their disability.

Keywords: *medical rehabilitation, nervous system disease, disability, health care management*

Оценены результаты реабилитационно-восстановительного лечения больных нейрохирургического и неврологического профилей в больницах Санкт-Петербурга. Показана необходимость внедрения инновационных технологий в учреждениях практического здравоохранения, оценены результаты переоснащения стационаров города современным оборудованием, приведены примеры разработок эффективных корригирующих методик, повышающих качество восстановительного лечения. Применение инновационных технологий позволило снизить сроки временной нетрудоспособности пациентов и уменьшить частоту их инвалидизации.

Ключевые слова: *восстановительное лечение, заболевания нервной системы, инвалидизация, организация здравоохранения*

Introduction

One of the prioritized and actual directions of the advancement of modern medicine is the further improvement of rehabilitation treatments for patients who received an acute illness. A ponderable place in this direction is neuro-rehabilitation. Innovative technologies are being applied in the medical treatment practice for the achievement of bigger efficiency of rehabilitation treatments in patients with neurosurgery and neurosurgery profiles. These technologies are directed to improve the movement and mobility of such patients. The rational combination of treatment programs with these new technologies and methods allows for the remission of already developed complications and to reduce the level of disability in such patients.

Material and methods

The study of rehabilitation efficiency and safety in patient with neurosurgery and neurology profiles in Saint-Petersburg observed early and later periods after the experience of an acute pathological process.

In 2009 rehabilitation treatments were provided for 68 718 patients in the city of Saint-Petersburg. Among them were 19 000 patients with neurosurgery and neurology profiles (27.6 %). These people have a medical record of acute cerebral blood stroke, cranial or spinal injuries, high technology cranial and spinal surgeries (resection of tumors, set up clips over intracranial aneurysms, etc.).

Results

Inpatient hospitals were retooling with new modern medical equipment which helped creat a modern health treatment system for the improvement of quality of rehabilitation treatments. The rehabilitation equipment and the newly created medical treatment system is in accordance to the high quality medical standards and international medical protocols. In Saint-Petersburg two medical scientific research rehabilitation centers were created based on «City Hospital №40» (Sestroretsk city) which has 653 cots and «City Hospital №38 named N.A.Semashko» which has 145 cots.

The conversion of «City Hospital №23» to an inpatient rehabilitation center, which has 225 cots, is completely finished. In this rehabilitation center there is going to be a newly reconstructed modern surgery department. There is also a new built-in modern pool and new modern medical equipment in this medical center.

In the future, «City Hospital №28» (Maximilianovskaya) and «City Hospital №46» will be undergo-

ing conversion to a modern medical facility. Presently, «Clinical Hospital of Holy Luka» and «City Hospitals №20» have successfully operating rehabilitation departments of neurosurgery, neurology and orthopaedics.

«City Hospital №33» has departments for physical balneological treatment in Kolpino town. In this town, a surgery complex is going to be built, and one of its buildings will be a rehabilitation department for patients with different diseases.

For treatment of patients with various CNS, Peripheral Nervous System and mobility apparatus pathologies, City Hospitals №23; 37; 40 use robotized systems like «LOCOMAT» (Switzerland) and «REGOSTIM» (Germany) which were installed in «City Hospital №23». In order to recover walking and mobility skills by using virtual reality, «City Hospital №23» uses a special table with an integrated device which allows the patient body to be set up in a vertical position and to control patient vital signs during the rehabilitation after an acute cerebral stroke or hard CNS injuries. This method leads to hemodynamic and GIT peristaltic improvement. Rehabilitation complex «AMERO» (Switzerland) is used for the functional therapy of upper extremities which provides a wide feedback in real time. There is a wide use of electrical and mechanical devices for active and passive joint recovery such as «ARTROMOT» which has been set up in «City Hospitals №2; 23; 37; 38; 40» and «JAS» which has been set up in «City Hospital №23». These hospitals also use in with their rehabilitation process equipment that stimulate polyreceptors and a whole list of other high tech rehabilitation systems.

Using robotized medical devices allowed to manage not only the duration and the intensity of treatment but also to optimize the beginning of the rehabilitation process in patients with an acute cerebral stroke, neurological trauma, cerebral and spinal surgery profiles. Full-scale implementation of innovative medical devices corrected mobile functions and improved psychological and emotional patient status. They were able to stimulate a patient's desire to achieve a better result and helped to avoid depression in such patients. Clinical research shows the evident efficiency of such treatment in patient with various pathological profiles. Extremity movement has been recovered faster and full capacity. This treatment allowed the improvement of functional sphincter control in patient with bladder and rectum disabilities. The usage of innovative technologies, at the early steps of rehabilitation, reduced patients' disability grade in three folds.

Rehabilitation departments of inpatient hospitals must accept the large majority of patients arriving from

emergency hospitals after finishing an acute treatment. Some inpatient hospitals, like Mariinskiy Hospital, accept patients directly from an internal movement procedure after they receive an acute treatment at the hospital. The quantity of such patients in the hospital was more than 80%. At the same time, other hospitals' patients who were directly transferred internally compose only 10%, the other 90% of patients they received were from outpatient medical centers.

A large amount of patients had medical records of various diseases, surgeries, injuries but they have since been in stable conditions. Many of them were hospitalized many times. Treatment of such types of patients must be provided in outpatient medical centers. A lot of outpatient medical centers have the necessary medical equipment and highly qualified personnel to implement the rehabilitation procedures.

The sanatorium is a very important phase of recovery treatment. In 2009 a new nosology profile was established in the sanatorium rehabilitation departments: neurosurgery, orthopaedics, traumatological, endoprosthesis, and extremities reimplantation.

Currently the Saint-Petersburg region has in many sanatoriums which provide rehabilitation, in total having 560 cots. Regional sanatoriums such as LLC «Duni», LLC «Sestroretskiy Kurort», LLC «Repino», LLC «North Riviera», LLC «Black river», LLC «Petrodvorez» are actively participating in the rehabilitation of a big quantity of patients. During the last three years, the federal budget covered the rehabilitation treatment of more than twenty thousand people: (in 2006 — 4800; 2007 — 6717; 2008 — 7892; 2009 — 8214; 2010 — 9523 people).

Unfortunately, the social insurance fund only covers a sanatorium treatment for employed citizens. Unemployed people are only able to obtain rehabilitation in the city inpatient hospitals. In Saint-Petersburg, inpatient hospitals currently use 36 medical — economic rehabilitation standards but outpatient medical centers currently use only 20 rehabilitation standards. Sanatorium rehabilitation standards are currently in the stage of development.

Discussion

Unfortunately, currently there is a perfect rehabilitation system in the Saint-Petersburg region is absent. There is an under-developed rehabilitation system in outpatient medical centers and in the day hospitals. Only 33 polyclinic medical centers have departments of rehabilitation treatment. Because of this, many people cannot receive a full rehabilitation treatment and very often a reha-

bilitation process is interrupted when patients are transferred between inpatient hospitals and polyclinic medical centers. In the near future, the Saint-Petersburg Health Care Department plans to inculcate new rehabilitation technologies in outpatient medical centers. It will allow the performance of a full rehabilitation in polyclinic medical centers.

In 2011, the Saint-Petersburg Health Care Department is going to develop a united system for rehabilitation for patients after performing acute and emergency neurosurgery, and to develop neurological statuses which will be based on three main rehabilitation phases: inpatient, outpatient, and sanatorium. The creation of a perfect rehabilitation treatment system requires a further discussion in the nearest future.

Conclusion

Using innovative technologies in the rehabilitation treatment of patients with neurosurgery and neurological profiles promotes a reduction of temporary disability and a decrease of financial losses because of the reduction of the duration of patient treatment. Applying these technologies decreases the severity of patient disability and helps them return to being members of society who are able to care for themselves.

1. Features of Disability in patients with pathology of the internal organs in St. Petersburg in 2005 / Zabolotnykh I.I., Kantemirova R.K., Abrosimov A.V., Dubrovskaya N.V. // The Eleventh Russian National Congress «Man and his health», orthopedics, traumatology, prosthetics, rehabilitation: Proceedings of the Congress. St.-P. 2006. P.139.
2. Maltsev S.V. Specialized neurological department for follow-up care of patients after spinal cord injury / Maltsev S.V., Sergeev S.I., Gladyshev E.S. // VI International Congress on Restorative Medicine and Rehabilitation 2009. Moscow. 2009. P.127-128.
3. Razumov A.N. Stages and prospects for restorative medicine and balneology as a new field of practical public health / Razumov A.N. // Actual problems of restorative medicine, balneology and physiotherapy: Proceedings of the International Congress on «Health Resort-2006», Sochi. M. 2006. P.7-10.
4. Chyatte D., Porterfield R. Functional outcome after repair of unruptured intracranial aneurysms / D. Chyatte, R. Porterfield // J. Neurosurg. 2001. Vol.94. P.417-421.
5. Emotional outcomes after stroke: Factors associated with poor outcome / M.Dennis, S.O'Rourke, S.Lewis, M.Sharpe, C.Warlow // J. Neurol. Neurosurg. Psychiatry. 2000. Vol.68. P.47-52.
6. Psychosocial outcomes at three and nine months after good neurological recovery from aneurismal subarachnoid haemorrhage: Predictors and prognosis / J.Powell, N.Kitchen, J.Heslin, R.Greenwood // J. Neurol. Neurosurg. Psychiatry. 2002. Vol.72. P.772-781.