

Availability of rehabilitation for victims of mine-explosive injury in the conditions of territorial community

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ABSTRACT


Aim: The aim of the study was to determine the needs for long-term rehabilitation of persons with damage as a result of a mine-explosive trauma and the availability of rehabilitation for these persons in the territorial community.

Materials and Methods: Research materials included domestic and foreign scientific sources and normative legal acts on the topic. Research methods included the content analysis, bibliosemantic, data summarization, medical and statistical.

Results: The needs for long-term rehabilitation are determined by combined damage, among which damage to the limbs (34.78%-65.22%) [10], craniocerebral injuries (7.9%-12.7%) [11], the acoustic system (40.5%) [16], injuries of bones and soft tissues of the face (10.85%) [18]. In 2018, for the first time, 1.2 per 10,000 adult population of participants of the Anti-Terrorist Operation/Joint Forces Operation were recognized as persons with disabilities [7]. Permanent limitations of life activities were caused mainly by brain and limb injuries. In general, long-term rehabilitation is available to persons with injuries in the territorial community in accordance with European approaches. At the same time, the participation of the general practitioner-family doctor is limited by regulatory requirements only to refer the patient to rehabilitation specialists and other specialists.

Conclusions: High needs for long-term rehabilitation of persons brain and limb injuries as a result of mine-explosive trauma have been established. There is a need to expand the participation of general practitioners-family doctor in the organization and implementation of rehabilitation as a full-fledged member of a multidisciplinary rehabilitation team, which requires making appropriate changes to regulatory acts.

KEY WORDS: Long-term rehabilitation; head and limb injuries; regulatory support; general practitioners-family doctors

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INTRODUCTION

Starting from 1980-1990, mine-explosive weapons became widespread in numerous local wars and armed conflicts taking place in the world. The consequences of its use led to a significant increase in the frequency of mine-explosive injuries in the general structure of combat injuries [1].

In Ukraine, the frequency of mine and explosive injuries has increased significantly since 2014, when the military conflict began in the east of the country. The number of wounded people with mine-explosive injuries has increased significantly in the conditions of full-scale Russian aggression: servicemen who are directly on the front line, and the civilian population, especially residents of the front-line zones, suffer from it. This is due to numerous factors of damage due to the explosion: shock wave, mechanical trauma, high temperature, flame, toxic effect of gaseous products of the explosion [2].

A mine-explosive injury often leads to damage to several anatomical areas, which complicates the patient's condition and increases the amount of necessary medical care [3]. The consequences of mine-explosive injuries are various manifestations of post-traumatic stress: anxiety, asthenic, dysphoric, somatoform syndromes. They are found in 38.8% of servicemen who were injured [4].

Studies [5] show that the anatomical localization of lesions are most often wounds of the limbs (52.0%), head (16.8%), gunshot wounds of soft tissues of multiple body parts (14.8%). Authors' analysis data [6] showed similar results: limb injuries make up 64.1%, head and neck – 16.0%, chest – 8.9%, abdomen – 6.9%, other injuries – 4.1%.

The consequences of combat wounds often become permanent limitations of life activities. Thus, in 2018, for the first time, 3,805 participants of the Anti-Terrorist Operation/Joint Forces Operation (ATO/JFO) were recognized as persons with disabilities, which was 1.2 per 10,000

adult population, of which 2,668 persons (70.1%) were recognized as having a disability of the 3rd group, of the 2nd group – 1057 people (27.8%), 80 people (2.1%) – of the 1st group [7]. Permanent limitations of life activities were caused mainly by brain and limb injuries.

Rehabilitation is an effective means of early restoration of functions of damaged organs and parts of the body, reduction of levels of disability and improvement of the quality of life of the injured. The need for rehabilitation is constantly increasing due to the continuation of large-scale external aggression in Ukraine. The appropriate response of direct providers of medical services to the needs of the injured is determined primarily by the availability of rehabilitation, especially in the long term, after discharge from the hospital, in the conditions of the territorial community [8].

The low availability and efficiency of the rehabilitation system in Ukraine was confirmed by the conclusions of the WHO evaluation mission in 2015 [9].

This was the reason for significant changes in the organization of rehabilitation in the field of health care in 2016-2022. However, these processes were not completed before a full-scale invasion. Therefore, there is a need for further regulation of access to rehabilitation, especially in the long-term period for victims with mine-explosive injuries of the limbs and head, which determines the relevance and timeliness of the study.

AIM

The aim of the study was to determine the needs for long-term rehabilitation of persons with head and limb injuries as a result of a mine-explosive injury and the availability of rehabilitation for these persons in the territorial community. The objectives of the study were to determine the frequency and main clinical characteristics of limb and head injuries as a result of mine-explosive trauma; to conduct an analysis of the regulatory support for the organization of rehabilitation of these persons in the territorial community and the participation of a general practitioner-family doctor in rehabilitation.

MATERIALS AND METHODS

Research materials included domestic and foreign scientific sources and normative legal acts on the topic. Research methods included the content analysis, bibliosemantic, data summarization, medical and statistical.

COMPLIANCE WITH ETHICAL STANDARDS

The principles of bioethics were observed during the preparation of the article in accordance with the

requirements of the Declaration of Helsinki and the legislation of Ukraine, which was confirmed by the conclusion of the commission on bioethics dated 22.03.2024 (protocol No. 3) of State Institution of Science «Research and Practical Center of Preventive and Clinical Medicine» State Administrative Department.

RESULTS

It has been established that patients with explosive injuries most often receive complex, multisystemic injuries. The study of the frequency and nature of injuries due to mine and explosive injuries in Ukraine was conducted by scientists based on the experience of treating servicemen who took part in the ATO/JFO and who are repelling the enemy at the present time, in conditions of large-scale the invasion of Russian troops into Ukraine.

Damage to the limbs can be traumatic amputation, fractures, crushing, compartment syndrome, burns, cuts, lacerations, acute arterial occlusion, injuries caused by air embolism. As discovered by the authors [10], the lower limb is more often injured (62.22% of cases), the upper limb is injured in 37.79%. Simultaneous bilateral damage to the lower limbs accounted for 65.22%, upper – 34.78%. In the structure of limb amputations, lesions of the hip and lower leg (29.31% of cases each), and foot (15.52% of cases) occurred most often. Amputation of the hand was registered in 13.79%, at the level of the forearm – in 8.62%, of the shoulder – in 3.45% of cases.

Head lesions are most often manifested by closed and open mine-explosive craniocerebral trauma combined with extracranial injuries. The frequency of head injuries during ATO/JFO was 37.5%, of which gunshot and explosive injuries – 7.9%, closed craniocerebral injuries – 12.7% [11].

Common manifestations of craniocerebral injury, depending on the degree of severity, are general brain and focal symptoms, signs of intracranial hypertension, and impairment of vital functions. Violations of cognitive functions (decreased memory, attention, difficulty in thinking processes), emotional instability (irritability, conflict, aggressiveness, impulsivity) are observed with a mild course and in the remote period of the injury [12].

A specific feature of craniocerebral injury due to the action of a mine blast wave is its combination with damage to the auditory and vestibular apparatus, traumatic injuries of the middle and inner ear. Damage to the structures of the auditory system occurs as a result of akubarotrauma, which can lead to a rupture of the eardrum, destruction of the auditory ossicles, damage to the cochlear canal, development of sensorineural deafness or deafness. Tears in the auditory canal or along the tympanic membrane may occur in patients with temporal bone fractures. Aquabarotrauma accounted for 6.6% – 7.1% of the overall structure of com-

bat sanitary losses during ATO/JFO/ Mine-explosive injury was accompanied by aquabarotrauma in 40.5% of cases, according to military mobile hospitals [13, 14].

Damage to the facial part of the skull as a result of mine-explosive wounds directly on the battlefield is defined by experts as the most severe among combat injuries of the face in the conditions of modern war. Diagnosed large-scale destruction of soft tissue structures, in particular, the oral cavity and oropharynx, leading to impaired external breathing, and bone defects of various sizes in all civilians and 53.3% of military personnel wounded in this area [15]. Primary surgical treatment of maxillofacial wounds was performed in 10.85% of patients in dental offices of military mobile hospitals during ATO/JFO [16].

Thus, injuries to the limbs and head are the most frequent and severe injuries that occur as a result of a mine-explosive injury. Their consequences can be tragic and take a person's life in the event of a serious injury. In any case, victims need emergency medical care immediately after the injury and step-by-step provision of medical care and rehabilitation, depending on the severity of the clinical condition.

It was established that the requirements for the organization of rehabilitation of the population are regulated by general and special legislative and by-laws and departmental regulatory documents. These requirements apply to the organization of rehabilitation of persons with life-limiting injuries due to mine-explosive injuries in wartime conditions [17-22].

Actual changes were made to each regulator with the start of a full-scale invasion of Russian troops into Ukraine, in accordance with the risks of mass casualties to the population and military personnel.

According to the data of the content analysis, it is shown that, in general, the organization of the rehabilitation of victims should begin in the acute period of the injury and continue in the post-acute and long-term period, if necessary. Rehabilitation is carried out by multidisciplinary rehabilitation teams consisting of specialists of various specializations according to an individual rehabilitation plan. Each team necessarily includes a doctor of physical and rehabilitation medicine, a psychologist and other specialists, depending on the nature of the pathology and the features of the patient's limitations in life. Rehabilitation takes place according to a rehabilitation route, which sequentially passes through a hospital, an outpatient health care facility, home rehabilitation and/or rehabilitation in the territorial community.

In accordance with the objectives of the research, the legislative and regulatory requirements for the organization of rehabilitation in conditions close to the place of residence of persons with the consequences of mine-explosive injuries have been identified. This is important for patients' access to rehabilitation, especially in the long term. Long-term

rehabilitation is provided with the consent of the patient and according to his needs in the territorial communities. The legislation of Ukraine assigns responsibility to territorial communities for ensuring the medical and social needs of the population living there.

Territorial communities create and maintain the appropriate infrastructure and provide it with rehabilitation specialists. The infrastructure may include rehabilitation facilities of various types: centers, departments, services, divisions, etc. The community can create conditions for the development of private rehabilitation institutions on its territory or provide rehabilitation of its citizens in neighboring communities on the basis of agreements.

The legislation of Ukraine provides for the independent activity of rehabilitation specialists in the community or their joint activity with specialists of health care institutions located on the territory of the community. These can be both outpatient multidisciplinary facilities and primary care facilities.

Such an organization of long-term rehabilitation involves the provision of rehabilitation assistance both in rehabilitation institutions and at home. In this way, the availability of rehabilitation is ensured for various contingents of the community's population with life-limiting activities: children and adults with disabilities due to congenital and chronic diseases; servicemen with the consequences of combat injuries; the civilian population, which suffered as a result of military aggression; participants in hostilities and others.

At the same time, general practitioners-family doctors have only the right to refer patients to a doctor of physical and rehabilitation medicine and rehabilitation specialists for the purpose of carrying out a rehabilitation examination, establishing a rehabilitation diagnosis and prescribing rehabilitation measures, provided that this was not done at the previous stages of rehabilitation.

It should be noted that the general practitioner-family doctor is the doctor of first contact with the attached patient and observes him for a long time. The patient can be a former military serviceman with rehabilitation needs, and an ordinary civilian who was injured during hostilities. According to the qualification characteristics, general practitioners-family doctors are obliged to perform dynamic monitoring of patients with chronic pathological conditions, which are, in particular, the consequences of injuries from mine-explosive injuries [23].

Knowledge and ability to conduct an examination of the ear, throat, nose, determine the acuity of hearing, identify clinical manifestations and draw up a patient route for acoustic ear injury, perforation of the tympanic membrane, carry out diagnostics, examination and assessment of the condition of patients with head and limb injuries, know and draw up a rehabilitation algorithm patients after surgical interventions at home and on an outpatient basis, to know

the indications for referral to specialists, to consult patients and their families on the prevention and treatment of health disorders from various organs and systems are among the competencies of a general practitioner-family doctor.

Therefore, a general practitioner-family doctor can be a full-fledged member of a multidisciplinary rehabilitation team, next to a doctor of physical and rehabilitation medicine, a physical therapist, an occupational therapist, a speech and language therapist, a psychologist, who provide rehabilitation assistance in the community to persons with the consequences of a mine-explosive injury.

Such activity requires strengthening the information and communication component in the work of a general practitioner-family doctor. It concerns the interaction with other members of the multidisciplinary rehabilitation team, social workers of the territorial community, public health specialists, specialist doctors of outpatient and inpatient facilities where rehabilitation assistance is provided, on issues of information exchange about the current state of the patient and implementation of an individual rehabilitation program.

Close contact should also be established with the patient in order to involve him directly in rehabilitation under the conditions of a full-fledged partnership, fostering loyalty to the optimization of the lifestyle and implementation of rehabilitation measures. It is important to work with the patient's family to provide support and help restore health.

DISCUSSION

According to the results of the study, it was found that in Ukraine, most often during the period of anti-terrorist operation and full-scale invasion of the aggressor country, military personnel and the civilian population receive injuries to the limbs and head as a result of mine and explosive injuries. This determines the high needs of the victims in rehabilitation. The obtained results are confirmed by the data of foreign researchers regarding the consequences of mine-explosive trauma of the specified body parts and generalize and supplement information about their frequency and localization during other large-scale and local military conflicts in the world, which is the originality of the conducted research [23-26].

The severity and combination of injuries require rehabilitation of victims in the acute, post-acute and long-term period. It was established that long-term rehabilitation is available to persons with injuries in the territorial community in accordance with European approaches. [27]. They envisage a variety of infrastructural components of rehabilitation in inpatient and outpatient settings, primary medical care and in the conditions of territorial communities and the provision of rehabilitation assistance by rehabilitation specialists.

However, the role of general practitioners-family doctors in Ukraine in the organization and implementation of rehabilitation is somewhat limited, as the regulations only allow them to refer patients to rehabilitation specialists and other specialists.

At the same time, a general practitioner-family doctor possesses a sufficient volume and range of competences, determined by qualification characteristics, in order to be a full-fledged member of a multidisciplinary rehabilitation team. His information and communication interaction with other members of the multidisciplinary rehabilitation team and the patient and his family needs strengthening. These recommendations can be enshrined in legal documents regulating the activity of a general practitioner-family doctor and the organization of long-term rehabilitation.

METHODOLOGICAL LIMITATIONS

The methodological limitations of this study should be considered its theoretical orientation, which does not allow to establish to what extent the regulatory requirements for the organization of long-term rehabilitation in the conditions of the territorial community are fulfilled.

The prospects are to conduct further research in the conditions of the territorial community, which will show the actual picture of the organization of long-term rehabilitation, in particular, of persons affected by mine-explosive injuries, and the use of recommendations for the improvement of regulatory requirements based on the topic and results of this study.

CONCLUSIONS

1. High needs for long-term rehabilitation of persons injured as a result of mine-explosive trauma have been established. The needs are determined by combined damage, among which damage to the limbs (34.78%-65.22% of cases), craniocerebral injuries (7.9%-12.7% of cases), damage to the acoustic system (40.5% of cases) occurs most often, injuries of bones and soft tissues of the face (10.85% of cases).
2. Ukraine has developed a powerful legislative framework and legal regulation of the availability of rehabilitation, in particular, for victims of mine-explosive trauma in the conditions of the territorial community. However, the participation of a general practitioner-family doctor in the organization and provision of rehabilitation is limited only to the right to refer a person for consultation to rehabilitation specialists and other outpatient and inpatient care specialists.
3. The spectrum and scope of competencies of a general practitioner allows him to be a full-fledged member of a multidisciplinary rehabilitation team, which requires making appropriate changes to regulatory acts.

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CONFLICT OF INTEREST

The Authors declare no conflict of interest

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