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Methodical features of physical rehabilitation of victims with consequences of mine and explosive trauma

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Purpose: *the analysis of modern approaches to application of means and forms of physical rehabilitation of victims with mine and explosive trauma at an out-patient stage.*

Material & Methods: *the analysis of actual special references on a problem of the mechanism of defeat, treatment and rehabilitation of consequences of mine and explosive trauma.*

Results: *it is defined that the percent of use of nonconventional methods of non-drug therapy increases objectively and significantly in the last decade in physical rehabilitation along with a broad application of traditional complex techniques of medical physical culture, massage and physical therapy.*

Conclusions: *kinesiotherapy, hydro-bathing technologies, reflexotherapy are most demanded in practical techniques of physical rehabilitation at mine and explosive trauma for today among methods of non-drug therapy.*

Keywords: *physical rehabilitation, mine and explosive trauma, explosive defeat, out-patient stage of treatment.*

Introduction

The increase in frequency of armed conflicts, natural disasters and industrial accidents naturally leads to the increase of number of wounded, patients and victims. Mine and explosive wounds in armed conflicts were included into ten leading causes of death in the world and continue to increase for the last decade the 20th century and the beginning of the 21st century (Yu. N. Shanin, 1997). The problem of the fastest restoration of combat preparedness and working ability of wounded and patients – remains relevant decades in this regard for a health service of the state of Lebanon. Ukraine faced the similar problem quite recently on a substantial scale, but the relevance of subject, unfortunately, increases.

The set of the held events at wounds and injuries of wartime unites the concept «medical rehabilitation» (V. A. Dolinin, 1981; Yu. L. Shevchenko, 1994; Yu. N. Shanin, 1997; A. M. Shchegolkov, 2002). Its complete concept has begun to develop in the years of World War II, and modern contents – during armed conflicts of the last time. Physical rehabilitation of wounded and patients is the integral link of a medical support of staff of armed forces of any country and the strategic source of completion of sanitary losses in modern armed conflicts.

The well-known data on armed conflicts in the history of mankind demonstrate that the weapon using an explosion as the striking factor has appeared in the Middle Ages, and various mine devices were widely used during all subsequent wars, especially of the two World Wars. However the data of the analysis of special literature obtained by us demonstrate that the specific weight of wounded with a mine and explosive trauma was small at such mass application of explosive elements at stages of medical evacuation in the past. For example, injuries of a shin from antipersonnel mines made in the years of World War II of 1938–1945 no more than 1% from among all wounds of this localization. Authors (E. K. Gumanenko, 2008; A. I. Rudnev, 2012) assume that it was a result of limited efficiency of explosive devices of that time and most of seriously wounded with MEW perished because of the late evacuation and imperfection of the subsequent treatment. The second half of the XX century brought a significant increase in frequency of MEW: they made 13% of sanitary losses of the American troops in Vietnam (1964–1973), 30% among wounded of the limited contingent of the Soviet troops in Afghanistan (1979-1989), 15% – in the North Caucasus (1994–1996, 1999–2002), 23,5% – in troops of the USA in Afghanistan and Iraq (2001).

We found out that in the conditions of local armed conflicts the most frequent damage at the military personnel, and also at civilians when carrying out acts of terrorism, are the mine and explosive trauma and mine and explosive wound with injuries or a separation of one or both lower extremities. According to the official figures, the total number of disabled veterans in Chechnya made about 52 thousand people; from them 1500 people received amputations (A. I. Rudnev, 2012).

Considerable difficulties in diagnostics and feature of clinic, treatment and forecasting of result of the defeats inflicted by the explosive weapon have led researchers to allocation from the general class of gunshot wounds of separately mine and explosive trauma. Explosive defeats are a poly-trauma which arises at a person as a result of pulse influence of a complex of the striking factors and is characterized by the interconnected and mutually burdening influence as deep and extensive destructions of tissue structures, and the general contusion-coma syndrome. The poly-trauma is characterized by weight, plurality, extensiveness of damages of the human body which is in an explosion zone on the earth, or on the vehicle (civil transport, armored machinery).

The opened and closed injuries which resulted from influence

of factors of explosion, throwing action of explosive ammunition, action of surrounding objects and also owing to defeat by explosive ammunition in armored machinery and the enclosed space, in special literature are called explosive injuries.

The wounds which resulted from influence of explosive ammunition in a defeat zone splinters belong to the category of missile wounds. Experts emphasize that the wounds by splinters arising out of a defeat zone a shock wave belong not to a mine and explosive trauma, and to usual missile wounds (V. K. Yarova, 2011).

Thus, the main striking factors at explosion are: the explosive gases possessing a high pressure and high temperature; shock wave; splinters of ammunition (mine) and secondary shells. Thermal influence of explosive ammunition is shown by the burns limited on the area which are localized, as a rule, in an explosion zone. Gases (CO2, CO, NO, HCN, etc.) are formed at explosions in the strong, badly ventilated rooms which don't disappear and can cause poisoning in addition. In certain cases toxic effect of the inhaled gases (carbon monoxide, nitrogen oxide) can be extremely heavy (E. K. Gumanenko, 2008.)

The subject-matter of our research is physical rehabilitation of victims with a mine and explosive trauma at an out-patient stage therefore we first of all were interested in the post-traumatic syndromes and pathological states arising after a while after the patient's extract from a hospital. As it became clear, as a result of the analysis of data of modern literature, questions of prevention and treatment of post-traumatic syndromes and pathological conditions of the musculoskeletal device and the nervous system of victims at an out-patient stage are reflected in literature selectively and insufficiently volume.

The rich orthopedic and neurologic symptomatology is characteristic of post-traumatic syndromes and pathological states after a mine and explosive trauma, vegetotrophic violations are shown which quite often manifestations of numerous syndromes of osteochondrosis are. Such patients are under supervision of neuropathologists, orthopedists and surgeons long time.

The rehabilitation problem after a mine and explosive trauma has not only medical, but also social value.

Modern knowledge of consequences of a mine and explosive trauma is beyond any one narrow medical specialty (traumatology, neurology, orthopedics, rehabilitation and so on) and this disease of all organism has a long current and conservative forecasts.

Communication of the research with scientific programs, plans, subjects

The researches were conducted within the dissertation work according to the direction of the research work of the chair of physical rehabilitation and recreation of HDAFK in the section «Physical rehabilitation in traumatology, neurology and orthopedics».

The purpose of the research

To define modern methodical features of application of means of physical rehabilitation of victims with a mine and explosive trauma at an out-patient stage.

Material and Methods of the research

Methodical features of physical rehabilitation of victims with consequences of a mine and explosive trauma at an out-patient stage became clear on the basis of the analysis of modern references on field medicine, traumatology, and physical rehabilitation.

Results of the research and their discussion

The concrete methods of traditional medicine and physical rehabilitation, which are used in programs of rehabilitation of victims with a mine and explosive trauma at an out-patient stage of treatment of a surgical and therapeutic profile still aren't allocated and in literature, are discussed sometimes fragmentary (V. A. Dolinin, 1981; I. A. Yeryukhin, 1996; V. P. Bershinsky, 1999; M. V. Lyamin, 1999; L. F. Vasilyeva, 2002; V. G. Zilov, 2003).

Similar mechanisms of pathogenesis of damages at a mine and explosive trauma and morpho-functional features of sanogenez cause a certain analogy of rehabilitation programs within rendering specialized medical care, treatment and physical rehabilitation of wounded and patients during military operations, armed conflicts, natural disasters (F. Z. Meyeson, 1979, 1986; I. M. Gelfand, 1982; B. Ya. Rudakov, 1998; A. A. Hadartsev, 1999; A. M. Shchegolka, 2002, 2003).

Similar programs are partially developed, but often with insufficient and selective application of traditional methods of physical rehabilitation which role is insufficiently estimated at stages of medical rehabilitation. Meanwhile the specific weight of nonconventional methods of non-drug therapy (reflexotherapy, phytotherapy, reflexotherapy, hydro-bathing technologies, manual therapy, kinesiotherapy) significantly increases in physical rehabilitation and makes up to 70–80% in some researches (V. D. Kochetkov, 1984; V. P. Veselovsky, 1991; Dzhi Wu Pak, 1993; L. F. Vasilyeva, 1999; V. G. Vogralik, 2001; I. A. Yegorova, 2002; D. J. Harmam, 1983; Harold I. Sr. Vagoun, 1994; W. G. Sutherland, 2000, 2002).

The scientific assessment of a role and efficiency of traditional and nonconventional means and methods of physical rehabilitation in rehabilitation programs of wounded and patients – is among the most important problems of recovery medicine.

The system of actions for the combined application of traditional and nonconventional methods of treatment in the system of physical rehabilitation of victims with consequences of a mine and explosive trauma in the conditions of the versatile rehabilitation center at an out-patient stage can significantly increase efficiency of recovery of health of victims and reduce terms of their return to the most full-fledged life.

According to a number of authors, the traditional means and methods of physical rehabilitation of the mine and explosive wounds, which were injured with consequences applied in an evidence-based complex with nonconventional methods effectively prevent complications and restore functions of the damaged bodies (L. F. Vasilyeva, 1999; V. G. Vogralik, 2001; I. A. Yegorova, 2002; O. V. Ilyina, 2002).

The established staging of physical rehabilitation of victims

at an out-patient stage decides on consequences of a mine and explosive trauma in the work of the versatile rehabilitation center by the extent of restoration of functions and provides in general the use of bland-training and training motive modes.

As the main methods of treatment included in individual rehabilitation programs of wounded and patients, authors of techniques recommend options of the combined action of two or three methods for one session that considerably increases efficiency of medical rehabilitation. Authors recommend applying in addition to traditional such methods as elements of reflexotherapy, kinesiotherapy, manual therapy, phytotherapy in surgical and traumatologic offices in 72% of modern techniques. In therapeutic and psychoneurological offices – are in 78% of techniques in the same combinations.

The volume, structure, contents and combination of the traditional and nonconventional methods of treatment included in individual rehabilitation programs of wounded with consequences of mine and explosive damages at an out-patient stage of treatment have to be defined by a clinical profile, a stage and a form of pathological process in an organism. At the same time security of patients with techniques on the basis of non-drug methods of treatment of surgical and traumatologic offices can make more than 40%, and the highest security with nonconventional methods of treatment in these offices is applied to a thicket at wounds and injuries of the extremities which are followed by injury of nerves (70%) with an etiology of a mine and explosive trauma (45%). It is recommended the combination of several traditional and nonconventional methods of treatment that considerably increases efficiency of medical rehabilitation by drawing up the program of physical rehabilitation of wounded with consequences of a fire and mine and explosive trauma in the conditions of the versatile rehabilitation center (S. A. Neborsky, 2005).

By drawing up the program of physical rehabilitation at a mine and explosive trauma at an out-patient stage of treatment traumatologists, it is suggested to consider the following:

– general condition of a patient, his psychological status;

– condition of a bone tissue (degree of expressiveness of a bone callosity, osteoporosis) and correctness of an union of bone fragments;

– character of the applied immobilization (plaster bandage, skeletal extension, osteosynthesis) and immobilization duration;

– condition of skin, sinews, capsular and copular device, muscular tissue, vessels and nerves;

– localization of a trauma (the top, lower extremities, basin bones, a backbone) and their character (opened or closed close - or inside articulate damages);

– existence of damages of nervous trunks and vessels accompanying a bone trauma;

– existence and expressiveness of post-traumatic contractures;

– existence and expressiveness of contractures and cicatricial solderings after a burn disease (A. N. Belova, O. N. Shchepetov, 1998; H. A. Musalatova, G. S. Yumashev, 1995; Yu. G. Shaposhnikova, 1997).

We determined features of formation of programs of physical rehabilitation on the basis of studying of references by a problem of physical rehabilitation of persons with fractures of bones of the lower extremities, detailed consideration of questions of etiology, pathogenesis, clinical and phasic course of disease after a mine and explosive trauma, mechanisms of medical action of physical exercises. Similar programs provide appointment to the patient of the corresponding motive mode, MPC complexes, and procedures of massage and physiotherapeutic procedures (V. F. Trubnikov, 1984; A. F. Kaptelin, 1987).

Also authors (V. M. Bogolyubov, 2006; N. M. Valeyev, 2004) consider that the post-traumatic period is clinically characterized by restoration of anatomic integrity of a bone (the process of consolidation of bone fragments comes to the end, the wound epithelizes). However, despite restoration of anatomic integrity, obvious dysfunction of an extremity is observed (muscular atrophy, rigidity in joints, cicatricial contractures, etc.), this period before the formation of a secondary bone callosity proceeds.

Everything told results in need of the further theoretical development, clinical approbation and the subsequent evidential description of efficiency of the combination of traditional and nonconventional means and methods of physical rehabilitation of victims to consequences of a mine and explosive trauma at an out-patient stage of treatment.

Conclusions

1. The analysis which is carried out by us showed that mine and explosive wounds in armed conflicts of the XXI century were included into ten leading causes of death in the world and the statistics continues to increase, at the same time the relevance of subject for Ukraine and Lebanon, unfortunately, steadily increases at the moment.

2. The combined application of the traditional and nonconventional means and methods of treatment which are used in programs of physical rehabilitation of victims in out-patient clinics and sanatoria of a surgical and therapeutic profile in special literature available to us, are discussed with a mine and explosive trauma rather fragmentary, at the same time the role of physical rehabilitation within medical, in our opinion, is estimated insufficiently.

3. The standard techniques of MPC, massage, physiotherapeutic treatment remain the fixed non-drug assets of physical rehabilitation of patients with consequences of a mine and explosive trauma at an out-patient stage in the conditions of the versatile rehabilitation center today.

4. As a result of the analysis of modern programs of physical rehabilitation in treatment of patients with a mine and explosive trauma at an out-patient stage it is defined that application of nonconventional methods (reflexotherapy, hydro-bathing technologies, manual therapy, kinesiotherapy) significantly increases for today in physical rehabilitation and makes up to 70–80% in some modern researches.

Prospects of further researches. The data, which are received in this research, will be used in the subsequent scientific and practical work on the subject of the dissertation research.

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