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BACKGROUND: Taking into account the implementation of NATO standards in the Armed Forces of Ukraine, medical support of troops in the main group during the environmental protection was carried out at four levels.

KEY WORDS: firearm defect soft tissue (FDST), combat surgical trauma (CST), debridement, external fixation device (EFD).

Original Article

General Surgery

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Introduction

In accordance with the proposed and implemented differentiated surgical tactics with a multimodal approach to the reconstruction of the FDST during the OOF, new staffs of medical companies of brigades and battalion medical units were proposed and approved.

Materials and methods of research

The first level of medical support was formed and implemented at the tactical level at the expense of the forces and means of the battalion's medical service and provided for the provision of first medical, pre-medical and first aid.

In the main group, all 128 (100%) wounded with FDST received the first level of medical care. At the first level, medical care was provided by servicemen of the Armed Forces of Ukraine in the form of self-help and mutual assistance in 87 (68.0%) cases, nurses-instructors - in 26 (20.3%), paramedics - in 12 (9.4%), doctors - in 3 (2.3%).

In the main group of 117 (91.4%) wounded with FDST first-level medical care was provided on the battlefield, in 6 (4.7%) - at the scene, in 3 (2.3%) - in the medical unit of the battalion, in 2 (1.6%) - on the landfill.

In the main group, in the presence of external bleeding, the tourniquet was applied in 28 (21.8%) patients with FDST: Esmarch's tourniquet - in 3 (2.3%), CAT - in 25 (19.5%). Aseptic dressing was applied to all 128 (100%) patients with FDST, immobilization by regular and improvised means - to 96 (75.0%), anesthesia was performed to 102 (79.7%). Infusion therapy was started at the first level of medical care in 98 (76.6%) wounded.

In the main group of 70 (54.7%) wounded with FDST first-level medical care was provided for 20 minutes, in 47 (36.7%) - for 21-30 minutes, in 11 (8.6%) - for 31-40 minutes. In the comparison group during the anti-terrorist operation, first-level medical care was mostly provided for 20 minutes to 149 (69.6%) wounded, and within 40 minutes to 176 (82.2%).

During the statistical analysis of the means of delivery of the wounded from the FDST in the comparison group from the battlefield to the first level, it was found that 178 (83.2%) wounded were delivered by vehicles not intended for their transportation. Only 36 (16.8%) were delivered by ambulance. In the following periods of the anti-terrorist operation, the delivery of the wounded by ambulance improved to 107 (50.0%) ($p < 0.05$). Based on the statistical analysis of the place of medical care for the wounded of the comparison group, it was found that care was provided mainly in AD-2 - 191 (89.3%), in medical units of battalions - in 23 (10.7%), with a further tendency to increase of the specified indicator to 21,4% in the subsequent periods of anti-terrorist operation ($p < 0,05$).

The second level of medical care provided the provision of qualified medical care. The peculiarity of the second level is the provision of qualified medical

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care to the wounded with FDST in severe and extremely severe CST on the principle of injury control.

In the main group of 128 (100%) wounded with FDST, surgical care at the second level of medical care was provided to 116 (90.6%) servicemen. They were the incoming flow of the wounded of the main group to the second level of medical care during the environmental protection.

Conservative primary surgical treatment of the wound according to the indications was performed in 116 (90.6%) patients with FDST, fasciotomy - in 40 (31.3%), the imposition of rod EFD - in 36 (28.1%), autovenous prosthetics - in 4 (3.1%), complex antishock therapy - in 98 (76.6%), limb amputation - in 9 (7.0%), laparoscopy - in 3 (2.3%), drainage of the pleural cavity - in 3 2.3%), thoracoscopy - in 3 (2.3%), diagnostic puncture under ultrasound control - in 2 (1.6%), laparocentesis, thoracotomy and stabilization of the pelvis ACE. Mortality at the second level among the wounded with FDST in the main group did not exceed 1.6%. The initial flow was 114 (89.1%) wounded, of which 55 (43.0%) had minor injuries, 50 (39.1%) severe and 9 (7.0%) extremely severe. According to the planimetric classification of the FDST, 5 (3.9%) were injured, 47 (36.7%) were injured, and 62 (48.5%) were injured in the main group. From the initial flow of the wounded were evacuated to the third level - 92 (71.9%), to the fourth - 22 (17.2%).

Of the 185 patients with FDST who accounted for the second-tier inflow in the comparison group, 24 (11.2%) were diagnosed with extremely severe injuries, 89 (41.6%) with severe injuries, and 72 (33.6%) with minor injuries.). According to the indications, primary surgical treatment of the wound was performed in 142 (66.4%) patients with FDST, fasciotomy - in 62 (29.0%), imposition of rod EFD - in 28 (15.1%), autovenous prosthetics - in 5 2.3%), limb amputation - in 17 (7.9%), laparocentesis - in 7 (3.3%), laparotomy - in 9 (4.2%), drainage of the pleural cavity - in 5 (2.3) %), thoracentesis in 5 (2.3%), thoracotomy in 3 (1.4%), and pelvic stabilization of EFD. Mortality at the second level among those injured with FDST in the comparison group was 2.3%.

Peculiarities of providing qualified surgical care to the wounded at the second level in the comparison groups were an increase in the proportion of storage debridement wounds by 24.2% in the main group, the application of EFD in long bone fractures - by 13.0%, the use of minimally invasive endovideosurgery and diagnostic punctures under ultrasound control compared with the comparison group ($p < 0,05$).

The organization of advanced surgical teams on the basis of the Central District Hospitals in the ATO area was aimed at reducing the level of pre-hospital mortality among the seriously injured by providing assistance at the second level during the "golden hour".

The third level of medical care was formed and implemented at the operational level at the expense of surgical departments of the IMC of the Northern and Eastern regions, medical institutions of the Ministry of Health of Ukraine and provided specialized medical care.

Studies have shown that in the main group of 128 injured with FDST, medical care at the third level was provided to 104 (81.3%).

The data show that in the wounded with FDST of the main group, which accounted for the inflow to the third level, extremely severe injury was identified in 8 (6.3%), severe - in 42 (32.8%), mild - in 54 (42, 2%). According to the planimetric classification of FDST, 5 (3.9%) were wounded, 47 (36.7%) were injured, and 52 (40.7%) were injured in the main group.

Conservative primary surgical treatment of the wound according to the indications was performed in 12 (9.4%) wounded with FDST, repeated surgical treatments - in 56 (43.8%), fasciotomy - in 45 (35.2%), the imposition of rod EFD - in 4 (3.1%), vacuum therapy - in 52 (40.6%), autovenous prosthetics - in 2 (1.6%), complex antishock therapy - in 50 (39.1%), limb amputation - in 2 (1.6%), laparoscopy - in 2 (1.6%), laparotomy - in 1 (0.8%), thoracotomy - in 1 (0.8%).

Closure of FDST was carried out according to the multimodal approach to FDST reconstruction: at average damages in 4 cases carried out free autodermoplasty, in 6 - autodermoplasty according to Mc Gregor. Mortality at the third level among the pores.

Results

It was found that the peculiarities of providing medical care to the wounded with AMD at the first level of medical care in the comparison groups was an increase in the proportion of transport immobilization by 28.7% in the main group, anesthesia - by 14.3%, imposition of CAT tourniquets by 14.8%, infusion therapy - by 11.6% compared with the comparison group ($p < 0.05$).

It is proved that the peculiarities of providing surgical care to the wounded with FDST at the second level in the comparison groups were an increase in the proportion of storage PHO wounds by 24.2% in the main group, the use of EFD in fractures of long bones - by 13.0%, interventions and diagnostic punctures

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under ultrasound control compared with the comparison group (p <0,05). The proposed surgical tactics led to an increase in the proportion of mild BCH in the main group by 6.3%, and the use of storage PHO wounds - to a predominance of mean FDST by 12.5% compared with the comparison group (p <0.05).

It was determined that the peculiarities of providing specialized care to wounded with FDST at the third level in the comparison groups was an increase in the proportion of repeated surgical treatments of the wound by 20.4% in the main group due to storage debridment wounds, fasciotomy - by 17.9 %, vacuum therapy - by 32.2%, ultrasound - by 28.9%, the use of minimally invasive endovideosurgical surgical interventions compared with the comparison group (p <0.05). These surgical tactics led to a predominance of the proportion of secondary FDST in the main group by 7.3% and a decrease in ultra-large defects by 3.5%, ultra-large - by 6.6% compared with the control group (p <0.05).

It was found that the features of specialized treatment of wounded at the fourth level in the comparison groups was a decrease in the proportion of second look wounds in the main group by 16.8%, due to a significant decrease in suppuration, an increase in the proportion of repeated surgical treatments of the wound by 25.6 %, fasciotomy - by 10.6%, vacuum therapy - by 18.2%, ultrasound - by 11.3%, replacement of osteosynthesis in wound healing - by 12.0%, the implementation of a multimodal approach to the reconstruction of FDST in full , the use of minimally invasive endovideosurgical interventions corresponding to the comparison group (p <0,05).

Conclusion

The method of medical sorting of wounded with FDST was scientifically substantiated and implemented on the basis of development of complex assessment of BHT severity - planimetric characteristic of damage, anatomical-functional scale (AdTS - Admission trauma score) and perfusion index (PI) at enlistment of servicemen. The following sorting groups were established: wounded with a minor injury - FDST of medium size, AdTS <5 points, PI> 4%; with severe trauma - FDST large size, AdTS 5-9 points, PI 2-4%; with extremely severe trauma - ultra-high BMD, AdTS> 9 points, PI <2%.

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