THE ANALYSIS OF THE MAIN WORK DATA IN THE MOSCOW CITY BURN CENTER AFTER REMODELING

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ABSTRACT

The article reports the activity of the Burn Center of the N.V. Sklifosovsky Research Institute for Emergency Medicine. We present comparative data on changes in the structure of patients with a burn injury for the past 20 years, and indicators of clinical outcomes over time.

Keywords: burn center, remodeling.

In 2015, there was the 40th anniversary of the burn center establishment, and 20 years of its activity in the new structure after remodeling.

In observance of these anniversaries, we would like to draw the main results of its work.

The Burn Department of the N.V. Sklifosovsky Research Institute for Emergency Medicine was organized in 1966.

In 1975, the Department received the status of the City Burn Center, which consisted of an in-patient hospital department with 60 beds and a reception ward.

Patients, requiring intensive care, were hospitalized to the intensive care and resuscitation unit, located in another building. Surgeries were performed in an operating unit of the Burn Department.

In 1993-1995, we annually provided medical assistance under "old conditions" up to 820 patients with thermal burns. Of these, 660 people were averagely admitted directly to the Burn Department. The most severe patients were hospitalized to the intensive care and resuscitation unit. Their annual number averaged more than 150 people, i.e. 19% of all patients treated.

The mortality rate under resuscitation has reached 32% over these 3 years, the mortality in the hospital ward — 11%. Overall mortality in patients with burn trauma during this period was 25%.

In late 1995, after reconstruction of the building no. 3 (a historic building, which is the eastern wing of the Sheremetev Ensemble), the Burn Center moved from the unsafe building no. 7 and started working in a new environment.

Taking into account the architectural features and space of a historic building and sanitary norms, several departments were organized: reception ward, intensive care and resuscitation unit with 10 beds, in-patient hospital department with 40 beds, operating unit.

Since the full operation of the remodeled Burn Center started (1995), the organizational and technological principles of providing highly qualified and specialized medical care in burn injury have changed.

The number of patients who were initially hospitalized to the burn intensive care and resuscitation unit significantly grew: the maximum was 479 patients in 2000. The rate of initial hospitalization to the intensive care and resuscitation unit reached 55.7% in 2000 and over the last 5 years it has averaged 43%.

Despite a decline in the number of beds of the hospital department from 60 to 40, the total number of patients with burn injuries remained virtually unchanged. There has been the growth in the number of outpatient service up to 1,100 patients over the past years. At the same time, the majority of patients were brought by ambulance.

The ratio of specialized resuscitation and hospital beds organized almost accidentially due to the limited space of a historic building turned out to be optimal in this case.

Creating a specialized resuscitation unit has not only significantly increased the initial intensive care hospitalization. The re-admission to the intensive care and resuscitation unit became available for patients after major surgery. In 1993-1995, just one patient was re-admitted to the general resuscitation and intensive care unit, but since 1996, the number of such patients has steadily increased, reaching 429 people in 2001, and has averaged 300-350 people over the last 5 years. Since the number of formally treated patients in the burn intensive care and resuscitation unit exceeds the total number of patients treated in the Burn Center (taking into the account re-admissions to the intensive care and resuscitation

unit), we use the term "the number of intensive care and resuscitation admissions" for the statistical analysis.

Expanding opportunities for resuscitation allowed to increase the number of surgical interventions. The number of emergency interventions in the early stages of burn disease has already reached 42% (1994 — 20%) in 2005 and averagely 56% in recent years.

Studying mortality rates for the presented period we should mention the increase of resuscitation mortality in the first 3 years of work after remodeling, which then began to decline and eventually fell by more than 2 times. Indicators of hospital mortality began to decline in 1996 and have been 0-0.5% recently. The indicator of total mortality in patients with burn injury after a slight increase in 1996, has consistently decreased, falling by almost 2 times.

Due to increasing mortality rates for resuscitation with the beginning of use of the specialized burn intensive care and resuscitation, an additional analysis was conducted, which showed the following.

Since 1996, the contingent of admitted patients has changed not only due to the higher severity (increased area and depth of burns), but also increased amount of victims with inhalation injury, combined and multisystem injuries.

In 1991-1995, the proportion of patients with 10% area of burn surface was 52%, 20-30% area — 10% and 2% of patients with inhalation burn injury. The proportion of patients with an area of burn injuries of up to 10% decreased by 2.5 times in 1996, with a 3-fold increase in the flow of patients with burn surface area of 20-30%, which explained high resuscitation mortality rate. In the same year, the number of hospitalizations of patients with inhalation injuries grew by 3.5 times.

Patients admitted to the Burn Center in 2014:

1. Isolated burns:

10% of the body surface — 263 cases;

20-30% of the body surface — 357 cases;

50% of the body surface and more — 41 cases;

2. Inhalation burns — 135 cases;

3. Combined and multisystem trauma — 100 cases.

Thus, creation of the specialized Burn Center and the results of its work confirm the effectiveness of its organization. In our case, the ratio of intensive care and resuscitation/hospital bed capacity 1: 4 is optimum and efficient, which significantly improved the quality of medical assistance for burn trauma and the number of favourable outcomes, in spite of the increased number of serious patients.

At the same time, improved basic working data of the Burn Center in the new realities can not be fully explained only by the comfortable conditions and modern equipment. In many ways, this contributed to new medical technologies introduced over the past 20 years. Let us consider the most important of it.

It is known that one of the most common complications of burn disease is stress ulcer of the gastrointestinal tract, often accompanied by bleeding and perforation. Focused study of this issue has created the preventive management of these complications, including early enteral tube feeding and the use of proton pump blockers.

Inhalation injury or burns of the respiratory tract, often combined with burns of the skin have one of leading mortality rates in the Burn Center. The developed algorithm of management for these patients, including early respiratory support and collagen gel applications (as local treatment for tracheal errosions), significantly improved the quality of treatment.

Local treatment of burn wounds, especially in extensive surface burns (IIIa degree) still remains a great challenge. Recently developed cell therapy techniques, including bandages with fibroblasts and human collagen type I, three times allowed to shorten epithelialization.

The natural result of the last 15 years of scientific work in the Center is 5 thesis defences among its employees (one Candidate's dissertation and 4 Doctoral dissertations).

The Burn Center under reconstruction

The Burn Center after reconstruction

After remodeling

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