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Article



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PECULIARITIES OF HAND BURN TREATMENT IN THE CONDITIONS OF MOIST MEDIUM

Abstract: *Hand burns take significant place in the structure of thermic injuries of different body parts. Restorative treatment of patients with hand burns is very difficult as far as the hand is anatomically complex and very important working organ and also it is an open part of the body. We analyzed the results of treatment of 31 patients with limited superficial burns of hand of II-III degree being treated in the Burn Department of the Centre of Emergency Medical Care. The aim of our research is to study and analyse peculiarities of the of the course of the hand burn wounds in the condition of artificial moist medium. In the process of observation, it was established that the pain decreased significantly or was completely eliminated after surrounding of burn injury with polyethylene pack with sodium chloride solutions. In fact, daily bandaging became painless. In patients with the II-III degree of burns the healing of wounds was noted 5 - 9 days. Not a single patient had any clinical signs of infectious complications of wound process. A perfect wound covering must be responsible for the following requirements: to create optimal microsphere for wound healing, to prevent microorganisms invasion, to have sufficient permeability for gases, to exclude dryness of the wound floor, to have elasticity and ability of modeling surface with a complex relief not to have pyrogenic, antigenic irritating and toxic activity.*

Key words: hand burn, treatment, moist medium.

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Introduction

Nowadays treatment of patients with thermic injuries is one of the most complex, labour – intensive and expensive technologies requiring theoretical knowledge and practical skill in many sections of medicine.

Hand burns take significant place in the structure of thermic injuries of different body parts [1]. It

should be noted that the hand undergoes thermic injuries more often than other anatomical lumps. Skin covering and especially dorsal surface of the hand presents uneven relief unlike other localization that require individual approach in treatment of this localization [2,3].

Restorative treatment of patients with hand burns is very difficult as far as the hand is anatomically

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complex and very important working organ and also it is an open part of the body [4].

It should be noted that of the number of patients hospitalized to the in-patient department most of them have superficial burns that need conservative treatment. Unfortunately healing of burn injuries frequently occurs with unsatisfactory aesthetic and functional results keeping rough scars [5,6].

It is known that an injury heals more quickly in definite physical conditions: constant temperature at a level of 37 °C, optimal for regeneration of injured tissues, isolation of the injury from infection, acid environment preventing bacterial multiplication.

One of the essential factors of wound healing is its moist medium that contributes to division of cells and autolysis of impaired tissues decreasing painful sensation. Wound epithelization accelerates twice in moist medium in comparison with healing under eschar. It takes place due to adequate amount of moisture to provide cell migration from the margin to the center because cells preserve vital capacity, ability to divide and provide wound repair only in moist medium.

The aim of our research is to study and analyze peculiarities of the course of the hand burn wounds in the condition of artificial moist medium

Material and Methods.

We analyzed the results of treatment of 31 patients with limited superficial burns of hand of II-III degree being treated in the Burn Department of the Centre of Emergency Medical Care. The causes of limited superficial burns of hands were flame burn – 14 (%), scald burn – 11 (%) and sandal burns – 6 (%). The area of limited burns made from 3 to 6% of the body surface.

The group (basic) included 19 patients, admitted during 24 hours from the moment of getting trauma. After primary surgical processing of hand injuries with burns of II-III degree and application of antiseptic solution to all patients there were used sterile disposable polyethylene packs of a large size with 0,9% of sodium chloride solution fastened by bandages. Thus, we achieved complete isolation of the injured by burn part of the body from external environment, provided physiological moist medium on the wound surface due to isotonic solution of sodium chloride. Visual inspection of injuries was carried out through the wall of transparent container twice during 24 hours, daily bandaging with replacement of the pack to a sterile one and a similar solution as well was performed. The terms of wound cleansing from necrotic tissues and also epithelization of burn surface was being studied. The evidence of pain syndrome was estimated daily in scores according to visual-analogue scale (VAS).

12 patients hospitalized during the first 24 hours from getting trauma and being treated traditionally were involved into (control) group. Various antiseptic

solutions (betadin, iodopyrin) and ointment (levomycol, dioxicol, ophlomyelit) were applied to their burn surface.

Results

In the process of observation, it was established that the pain decreased significantly or was completely eliminated in group I (basic) immediately after surrounding of burn injury with polyethylene pack with sodium chloride solutions. In fact, daily bandaging became painless. Assessment of pain syndrome according to VAS made 3.8 scores during the first 24 hours then decrease of indices up to 3.75 scores was observed during the next 24 hours and to 3.06 scores during the 3d 24 hours. In patients with the II degree of burns the healing of wounds was noted 5 days later on the average. In patient with the III degree of burns it required 9 days of treatment. Not a single patient had any clinical signs of infectious complications of wound process. The patients were discharged 10.8 days after hospitalization on the average.

The assessment of pain syndrome according to VAS in the II control group of patients made 4.08 scores in the first 24 hours then there was observed the decrease to 2.7 scores and 2.5 scores to the 3d day. In patients with the II degree of burns incomplete or complete wound epithelization was observed after 7 day of treatment on the average. In patients with the III degree of burns it occurred after 13 days of treatment. 2 patients had signs of infectious complications of wound process. The patients were discharged 14.3 days after hospitalization on the average.

Thus, the results of the first experience of burn injuries treatment in the conditions of moist medium produced by sodium chloride solution makes it possible to use this method and continue its further development. Analgetic effect of moist medium is of particular significance. A physician can realize constant clinical monitoring of burn injury condition due to employment of transparent polyethylene packs.

Discussion

The impact of a thermal injury to such a refined anatomical and functional system as the hand can have enormous consequences for its function and cosmetic appearance. It will have consequences concerning the patient's independence for activities of the daily living and quality of life [7].

In recent years the number of patients with cicatricial deformations and contractures has increased that is associated with improvement of quality of thermal injury treatment. Hand burns take one of the first places among other thermal localizations and among occupational traumas make up to 40%. Employment of a complex treatment of patients with deep and extensive hand burns does not always result favorably and in 35% of patients rough

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cicatricial hand deformations develop and only surgical methods of treatment can correct them [8].

The basic part of patients with hand burn consequences (according to our data 75%) is presented by able – bodied persons of 20-50 years of age. Among aetiological burn factors flame burn is on the first place (83% of cases) [9].

In Uzbekistan sandal burns are of special interest. Most patients undergo sandal burns, particularly the children aged 6 months to 3 years. Cases of sandal burns are more frequent during winter time when people in distant mountain regions use an inappropriate heating system such as the sandal. Most of the patients with sandal burns have upper- or lower-limb injuries [10-12].

During many years the tactics of thermal injuries management under dry eschar was used, however the results of contemporary investigations confirm the

increase of efficacy of burn reparation in the conditions of moist medium.

At present a large number of means that can be used depending on the phase of wound healing has been developed [13]. A perfect wound covering must be responsible for the following requirements: to create optimal microsphere for wound healing, to prevent microorganisms invasion, to have sufficient permeability for gases, to exclude dryness of the wound floor, to have elasticity and ability of modeling surface with a complex relief not to have pyrogenic, antigenic irritating and toxic activity.

Physical therapy and splinting are essential part of rehabilitation in hand burns. Physical therapy and splinting should be started immediately after the injury. According to this study, we conclude that the physical therapy and splinting in hand burn injuries play an important role in the hand function [14].

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