

Different Methods of Treatment of Patients with Purulent Surgical Diseases of the Hand in Outpatient Settings

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Abstract: Modern technologies in medicine in the diagnosis and treatment of purulent-inflammatory diseases show positive changes in achieving the success of therapy with such methods as: vacuum treatment of a purulent wound, treatment of a purulent wound with a pulsating jet of liquid, the use of a controlled abacterial medium in the treatment, the use of new antibacterial and dressing agents. The proportion of all purulent pathologies of soft tissues and bones of the hand among those who applied for outpatient surgical practice, according to modern authors, ranges from 15% to 30%. Since such diseases are accompanied by both material and social costs, the problem acquires serious medical and social content. During the treatment of patients with purulent surgical diseases of the hand with the traditional method using a 25% solution of dimethyl sulfoxide and levomekol ointment under a gauze bandage, there is a late cleansing of the wound from infection (only by the 5th-6th day of treatment), the onset of granulation by the 7th day of treatment, the onset of epithelialization by the 10th day treatment. Biochemical parameters of wound exudate are normalized only by the 10th day of treatment..

Keywords: purulent surgical diseases, treatment, abacterial environment, inflammation, outpatient conditions, epithelialization.

Relevance: A number of measures have been carried out in Uzbekistan to systematically organize surgical care for patients with purulent surgical diseases of the hand and fingers, to improve diagnosis, treatment and prevention of wound infection (Okhunov A.O., 2015). According to the analysis of recent studies, it can be seen that the search for new simple and effective positive methods for the treatment of purulent surgical diseases of the hand tends to be actively experimentally studied, and preferential treatment results can be obtained with the use of an abacterial medium using a 25% dimethyl sulfoxide solution. However, to date, such a method has not been used, and the question of its effectiveness in the local treatment of purulent surgical diseases of the hand and fingers has not been studied. Despite the unflagging attention of surgeons to the treatment of purulent-inflammatory diseases of the hand and foot, the number of unsatisfactory results of both outpatient and inpatient treatment, especially in complicated forms of the pathological process, is alarming. It was the frivolous attention to the minor injuries of the hand and fingers received from patients and their failure to consult doctors about this that led to the development of purulent inflammation. This is evidenced by the conclusions drawn on the basis of statistical material accumulated by various authors over the past few decades. The danger of such micro-injuries lies in the rapid closure of a narrow wound canal that disrupts the drainage function of the wound, transforming them into a form of purulent pathology of various locations and complexity. However, larger micro-injuries of the soft tissues of the hand rarely lead to the manifestation of phlegmon or panaritium, since, as a rule, such wounds are treated and the drainage functions of the wound are preserved. (Babadzhanov B.D., 2018). And the reasons for the transformation of primary wounds into the form of purulent-inflammatory lesions of the

hand are their purulent infection in cases with cut, bitten, stabbed, bruised and post-injection, burn and chopped wounds, etc. In addition, non-sterile hirudotherapy can serve as the causes of purulent inflammation of soft tissues. There are cases of progression of an abscessing boil turning into purulent inflammation. Situations in the presence of chronic foci of infection in the body of the hematogenic pathway of pathogens are not excluded. So, prevention of these diseases is necessary, in order to ensure the integrity of the skin, measures can and should be taken to reduce occupational and domestic injuries. (Rutenburg D. G., Konychev A.V., Kokorin K. V., Kokorev O. V. 2011). Statistical analysis of the results indicates that the cause of disability of patients is not only the severity of the disease or their late seeking medical help, but also defects in diagnosis and treatment, primarily surgical. The most typical mistakes are inadequate choice of therapeutic tactics, inadequate anesthesia, technical errors in the performance of surgical aids, insufficient drainage of the wound and irrational management of the postoperative period. In the first phase of the wound process, in accordance with the treatment algorithm, doctors achieve rejection of necrosis, removal of wound discharge, improvement of tissue trophism, and fight infection. For this process, agents are used that meet the requirements of hydrophilic, necrolytic, and antibacterial properties. The antiseptics used should be medicines with a universal, wide or moderate spectrum of action, which are potent against mixed microflora with bacteriocidal or bacteriostatic action. For example, new complex compounds of iodine with polyvinylpyrrolidone, characterized by their active action even in the discharge of blood, pus or necrotic tissues, under various names, have been widely used: Povidone-iodine, Brownodine solution, Betadine. All microorganisms of wound infection are not resistant to iodophores. [10; pp. 69-71].

An article by Chinese authors on the treatment of complex wounds of the hands after burns and injuries is of considerable interest [95; pp. 602-608], to study the methods of treatment and consequences of complex wounds on the hands after burns or injuries. From January 2008 to December 2017, 45 patients (28 men and 17 women, ages 8 to 58) with severe hand injuries after burns or injuries combined with deep tissue damage were admitted to our hospital. Two patients had entire finger detachment, 27 patients had injuries to the back of the hand and 16 patients had palm injuries. After treatment, the area of soft tissue defects ranged from 7 cm × 6 cm to 19 cm × 12 cm in combination with 0.5 cm × 0.4 cm to 10.0 cm × 4.0 cm of single exposure to deep tissues. Depending on the area and location of the deep impact on the tissues, various recovery methods were used. Five patients with a small area of exposure underwent artificial dermis + vacuum drainage (VSD) + autogenous skin grafting. Thirty-eight patients with unilateral exposure of a large area on the palm or back side were treated with segmental ligation of thin abdominal flaps (with an area of 8 cm × 7 cm to 15 cm × 9 cm). Two patients with bilateral exposure of a large area on the back and palm sides of the hand were treated with modified abdominal sac-like deposited thin flaps (with an area of 12 cm × 5 cm to 12 cm × 9 cm and from 12 cm × 6 cm to 14 cm × 9 cm). The donor areas were directly sutured or repaired using medium split thickness skin or an adjacent flap. The survival rate of grafts and flaps was observed, the number of operations, the time of wound healing and subsequent observations were recorded. Two patients with bilateral exposure of a large area on the back and palm sides of the hand were treated with modified abdominal sac-like deposited thin flaps (with an area of 12 cm × 5 cm to 12 cm × 9 cm and from 12 cm × 6 cm to 14 cm × 9 cm). The donor areas were directly sutured or repaired using medium split thickness skin or an adjacent flap. Among the patients who received artificial dermis + FGM + autogenous skin grafting, wounds in 3 patients healed after 2 operations, and 2 patients had artificial dermis, lysis and tendon necrosis, which healed after 3 operations. Wound healing time in 5 patients ranged from 14 to 33 days after injury. During 3 months of follow-up, the affected hands were in good shape, with a soft texture and fewer scars, the functional assessment of the hand was good in 3 cases and moderate in 2 cases. (2) Patients who underwent segmental ligation of thin abdominal flaps underwent 2 operations without flap necrosis. The healing time of wounds ranged from 2 to 3 weeks after the injury. The authors recommend: for complex wounds on the hands after burns or injuries, if the area of impact on

deep tissues is small, artificial dermis + FGM + autogenous skin grafting should be used, which gives good effects. If the area of unilateral exposure of deep tissues is large, segmented ligation of a thin flap of the abdominal cavity should be used. If the area of bilateral exposure of deep tissues is large, a modified delayed thin flap of the abdominal cavity should be used.

Such approaches make it possible to reduce the number of operations, reduce the healing time of wounds and get a good shape and functionality of the hands.

The air in the operating room with a low concentration of viable bacteria has long been known as one of the key factors in preventing infections in the field of deep surgery (SSI). With the increase in the number of antibiotic-resistant bacteria that cause IOHV, antibiotic prophylaxis cannot continue to be used. Thus, other measures, such as ventilation of the operating room, should be as effective as possible. New developments have significantly improved microbiological air quality by introducing low turbulence displacement airflow devices, which has led to a decrease in the incidence of infections from 8.9% to 1.3% in orthopedic surgeries. The ventilation air entering the room is filtered and does not contain bacteria. This means that the main sources of airborne bacteria in the operating room are particles released by the surgical team and external air entering when the doors are opened.

The purpose of the study: To improve the results of treatment of patients with purulent surgical diseases of the hand by using an abacillary environment in an outpatient setting.

Materials and methods: To compile a reasonable picture of the selected methods and algorithm of surgical therapy, data from the examination and treatment of 148 patients with GVHD of various etiologies who were on outpatient treatment at the family polyclinic of the Bukhara City Medical Association for the period 2016-2020 were analyzed.

Results and discussion: As indicated in Chapter II, group I consisted of 78 patients with GVH and fingers. Of these, 45 (57.7%) had purulent inflammation of the fingers of various etiologies, and 33 (42.3%) patients had purulent surgical diseases of the hand. During treatment, all patients had wounds in the first phase of the wound process. All patients underwent an autopsy of a purulent lesion on the day of treatment

In most cases, pathogenic staphylococcus was sifted in 33 patients, of which 16 (20.5%) in the form of monoculture and 19 (24.3%) in associations. In 29 observations, *E. coli* was sifted, which was present in 12 (15.3%) cases as a monoculture and in 20 (25.6%) as part of microbial associations.

Proteus was also detected in 18 cases, in 8 (10.2%) cases in the form of monoculture and in 9 (11.5%) as part of microbial associations and enterococci in 15 cases, in 8 (10.2%) cases in the form of monoculture and associations, respectively, streptococci in 7 cases, 4 (5.1%) - monocultures and 3 (3.8%) in the association. *Pseudomonas aeruginosa* was sown in 2 (2.5%) patients as a monoculture and in 1 (1.3%) as part of microbial associations.

The general condition of the patients during treatment, in most cases, was of moderate severity. According to clinical and laboratory data, patients most often experienced phenomena characteristic of the description of general intoxication: hyperthermia of the body or stable subfebrility, tachycardia, barely palpable pulse, pallor of the skin, inactivity, an increase in blood ESR, leukocytosis and a shift of the formula to the left. Locally: hyperemia, infiltration and swelling of the wound tissues and around it. Deep painful infiltration was determined by palpation.

Of the 33 patients diagnosed with purulent inflammation of the hand, 14 (42.4%) patients were admitted from various other primary medical institutions in the city of Bukhara and districts of the Bukhara region. The remaining 19 (57.6%) patients were admitted within two days to 5 days after the onset of the disease, for which surgical intervention was performed in our institution.

On the day of treatment, all patients underwent an operation to open a purulent focus on an emergency basis after appropriate premedication. The purulent cavity was sanitized with an antiseptic 3% solution of hydrogen peroxide, and levomekol ointment was applied under aseptic gauze bandages with a 25% dimethyl sulfoxide solution daily 1 time a day, upon completion of the basic actions for the treatment of purulent wounds and systemic antibiotic therapy, taking into account the sensitivity of the wound microflora. Over 60% of surgical interventions were performed under local anesthesia.

It should be pointed out that the subsequent therapeutic tactics of patients with both purulent inflammatory diseases of the fingers and purulent diseases of the hand were identical.

The method of treating extensive purulent wounds in a controlled air environment, otherwise called a controlled abacterial environment (UAS), shows its effectiveness. This method involves isolating the wound area in a plastic box (insulator) with sterile air and temperature controlled. At the same time, the healing of a wound lesion is influenced by both the temperature in the insulator and the flow rate of sterile air. This method ensures wound healing without the need for a bandage. However, this requires adhering to certain air parameters in the insulator: air sterility, air temperature in the range of 26-32 ° C, pressure of 10-15 mmHg and relative humidity level of 50-65% are maintained. The nature of the course of the wound process may require a revision of these parameters.

The creation of a sterile environment and microclimate in a controlled abacterial environment, optimal for active surgical intervention and wound healing, affects the quality of treatment of generalized forms of soft tissue infection [8; pp. 24-28]. Maintenance of the parameters of the abacterial controlled environment during treatment is provided by the PELICAN aseptic laminar tent (BOV-V-001-AMC) and a special arotherapy unit. The sterility of the air is ensured by running it through special fine filters. In the operating room, dressing and intensive care wards, aseptic conditions of the abacterial environment are also provided throughout the treatment of patients. The use of UAS allows to prevent the spread of the pathological process and systemic inflammatory reaction, protects against the possibility of sepsis, reduces the time of elimination of pathogenic flora in the wound discharge. At the same time, the healing time is reduced by 1.4 times.

The technique of vacuum drainage as a preoperative supplement to the treatment of complex (open) hand injuries: a report on 17 cases is presented in another work by Chinese scientists. The authors state: careful wound treatment after vacuum drainage in the treatment of purulent tendovaginitis of the hand gives a satisfactory therapeutic effect.

Despite the unflagging attention of surgeons to the treatment of purulent-inflammatory diseases of the hand, the number of unsatisfactory results of both outpatient and outpatient treatment, especially in complicated forms of the pathological process, is alarming. Statistical analysis of the results indicates that the cause of disability of patients is not only the severity of the disease or their late seeking medical help, but also defects in diagnosis and treatment, primarily surgical. The most typical mistakes are inadequate choice of therapeutic tactics, inadequate anesthesia, technical errors in the performance of surgical aids, insufficient drainage of the wound and irrational management of the postoperative period. In phase I of the wound process, in accordance with the treatment algorithm, doctors achieve rejection of necrosis, removal of wound discharge, improvement of tissue trophism, fight infection. For this process, agents are used that meet the requirements of hydrophilic, necrolytic, and antibacterial properties. The antiseptics used should be medicines with a universal, wide or moderate spectrum of action, which are potent against mixed microflora with bacteriocidal or bacteriostatic action. For example, new complex compounds of iodine with polyvinylpyrrolidone, characterized by their active action even in the discharge of blood, pus or necrotic tissues, under various names, have been widely used: Povidone-iodine, Brownodine solution, Betadine. All pathogens of wound infection are not resistant to iodophores.

External factors in the operating room, including the behavior and methods of medical workers that alter air movement, the physical environment, equipment or surgical instruments, can increase microbial contamination. Microbes can be transferred to the surgical incision by air or contact and contribute to infection of the surgical site. Simple infection prevention methods such as minimizing airborne particles and contaminants, maintaining equipment according to manufacturer's recommendations, cleaning and disinfecting the environment and surgical instruments, and maintaining proper hand hygiene can reduce microbial contamination.

Conclusion: Among other inflammatory lesions of the hand, the proportion of their acute purulent-inflammatory forms has been considered quite high over the past 50 years. Accordingly, according to the frequency of treatment with such a disease, the length of time of disability of patients, as well as the consequences of surgical interventions, the search for ways to improve the effectiveness of treatment of these diseases is attributed to a number of urgent problems today. It cannot be argued that worldwide in-depth scientific and medical research is aimed at finding versatile methods to reduce purulent-septic complications of such ailments. The proportion of all purulent pathologies of soft tissues and bones of the hand among those who applied for outpatient surgical practice, according to modern authors, ranges from 15% to 30%. Since such diseases are accompanied by both material and social costs, the problem acquires serious medical and social content. During the treatment of patients with purulent surgical diseases of the hand with the traditional method using a 25% solution of dimethyl sulfoxide and levomekol ointment under a gauze bandage, there is a late cleansing of the wound from infection (only by the 5th-6th day of treatment), the onset of granulation by the 7th day of treatment, the onset of epithelialization by the 10th day treatment. Biochemical parameters of wound exudate are normalized only by the 10th day of treatment. At the same time, the average duration of outpatient treatment of patients is 13.5 ± 0.8 days, which requires the development of additional measures aimed at improving treatment methods.

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