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Results of Development of New Treatment Method Patients with Panarizations

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ABSTRACT

This study is relevant in that patients with panaritium make up up to 30% of those seeking medical help from a polyclinic surgeon and up to 60-68.5% of the number of patients with purulent diseases. Every fourth panaritium is accompanied by damage to bone tissue. Purpose: to improve the results of treatment of patients with purulent destructive surgical diseases of the fingers by using an abacterial environment on an outpatient basis. Purpose: to improve the results of treatment of patients with purulent destructive surgical diseases of the fingers by using an abacterial environment on an outpatient basis. The 1st comparison group included 45 patients who used the traditional method of treatment, which included surgical treatment of a purulent focus followed by debridement of the wound with 25% Dimexide solution. In the second (main) group, 41 patients additionally, in accordance with the objectives of the study, were exposed to an abacterial environment on the purulent focus for 8 hours, 2 times a day. Conclusion: the developed method of additional influence on a purulent wound in case of purulent destructive surgical diseases of the abacterial hand with a 25% solution of Dimexide accelerated the transition of the wound process to the 2nd phase and reduced the duration of outpatient treatment by 6 days.

KEY WORDS: panaritium, Dimexide, abacterial environment.

INTRODUCTION

Panaritium is the most common purulent disease of the hand and is observed annually in 0.4-1.3% of the population [1,5,8]. Patients with panaritium make up up to 30% of those seeking medical help from a polyclinic surgeon and up to 60-68.5% of the number of patients with purulent diseases [2,7,8]. Every fourth panaritium is accompanied by damage to bone tissue [7]. Bone panaritium is 56% among hospitalized patients with other forms of panaritium (Vorobyev VV et al., 1997) and 17.9% among patients with other purulent diseases of the fingers and hands [9, 17]. One of the ways to reduce the number of complications is to create a high concentration of antibiotic, which allows to achieve a therapeutic effect even in cases where the purulent process is caused by antibiotic-resistant strains. For example, for lincomycin-resistant staphylococcal strains, the concentration of lincomycin equal to 20 μg / ml is the minimum bacteriostatic [3, 4, 6, 7]. Such high concentrations of antibiotics are achieved by local antibiotic therapy. With the most widely used methods of local antimicrobial chemotherapy (intra-arterial, intravenous and intraosseous regional administration, intraosseous lavage with an antibiotic, lymphotropic administration), complications associated with vascular puncture, pain when using a tourniquet are possible [6, 8, 12]. Cases of skin necrosis with lymphotropic administration are described. It is not always possible to insert a needle for intraosseous lavage due to osteoporosis. The complexity of some techniques limits their implementation [9, 10, 19, 21]. Thus, the intravascular route of antibiotic administration is not very promising in pediatric practice, while about 10% of patients with bone panaritium are children under 15 years of age [6, 11, 20].

Another direction in the fight against antibiotic-resistant bacteria is the use of new types of antibiotics and substances that reduce antibiotic resistance (enzymes, clavulanic acid, dimexide).

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Dimexide (dimethyl sulfoxide DMSO), in addition to being bacteriostatic itself, and for a number of bacteria and bactericidal action, has the ability to increase the sensitivity of microorganisms to antibacterial drugs. It can carry out transcutaneous antibacterial drugs, create their depot in tissues and is used as part of local antibiotic therapy [3, 4, 10, 11, 15, 20].

About Dimexid S.W. Jacob, R. Hersehler said that "there can be significant benefits if we learn to better use a large number of existing antibiotics, rather than continue to spend large resources on the development of new drugs to overcome antibiotic resistance" [3, 4, 16, 22].

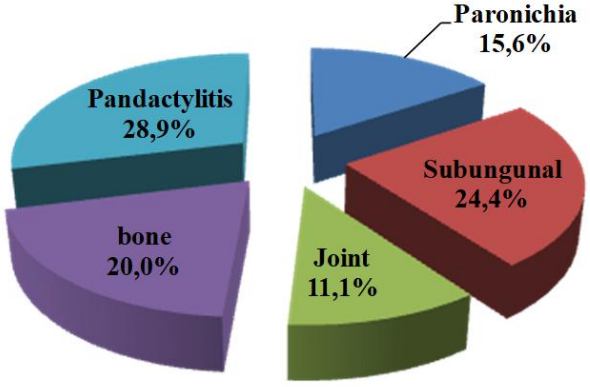
The interest in purulent finger surgery has not waned to the present day. Based on high-tech research methods (ultrasonography, thermography), the severity and prevalence of the purulent process is determined and the further course of the disease is predicted. This review provides an assessment of various authors in the formation of hand surgery. The choice of the correct tactics for treating a patient with purulent-inflammatory diseases of the fingers undoubtedly affects the outcome of the disease and the development of complications, the choice of a therapeutic algorithm allows improving the results of treatment, and, accordingly, preserving the social image and integrity of the function of the fingers.

Objective is to improve the results of treatment of patients with purulent destructive surgical diseases of the fingers by using an abacterial environment on an outpatient basis**.**

MATERIALS AND METHODS

The analysis of the results of treatment of 86 patients with acute purulent destructive surgical diseases of the fingers of various etiologies, who entered the clinical base of the Bukhara State Medical Institute, was carried out. The patients were conditionally divided into 2 groups. The first comparison group included 45 patients who used the traditional method of treatment, which included surgical treatment of a purulent focus followed by debridement of the wound with 25% Dimexide solution. Systemic antibiotic therapy was also carried out, taking into account the sensitivity of microflora released from wounds, detoxification therapy and symptomatic treatment. In the II (main) group, 41 patients additionally, in accordance with the objectives of the study, were additionally exposed to the abacterial environment of the purulent focus for 8 hours 2 times a day. In group I of 45 (52.3%) patients, there were purulent destructive diseases of the fingers in the form of paronychia 7 (15.6%), subungual 11 (24.4%), articular 5 (11.1%), bone panaritium 9 (20.0%) and pandactylitis 13 (28.9%), after various etiological factors, Figure 1.

Figure: 1. A variety of purulent surgical diseases of the fingers of patients of group I (n = 45).



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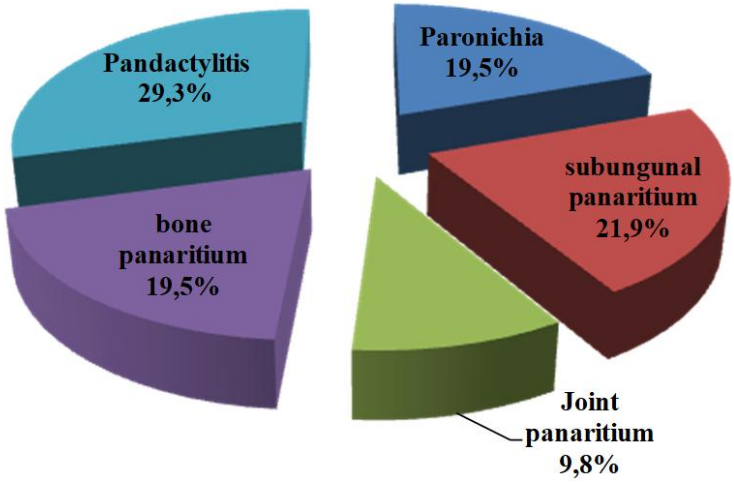
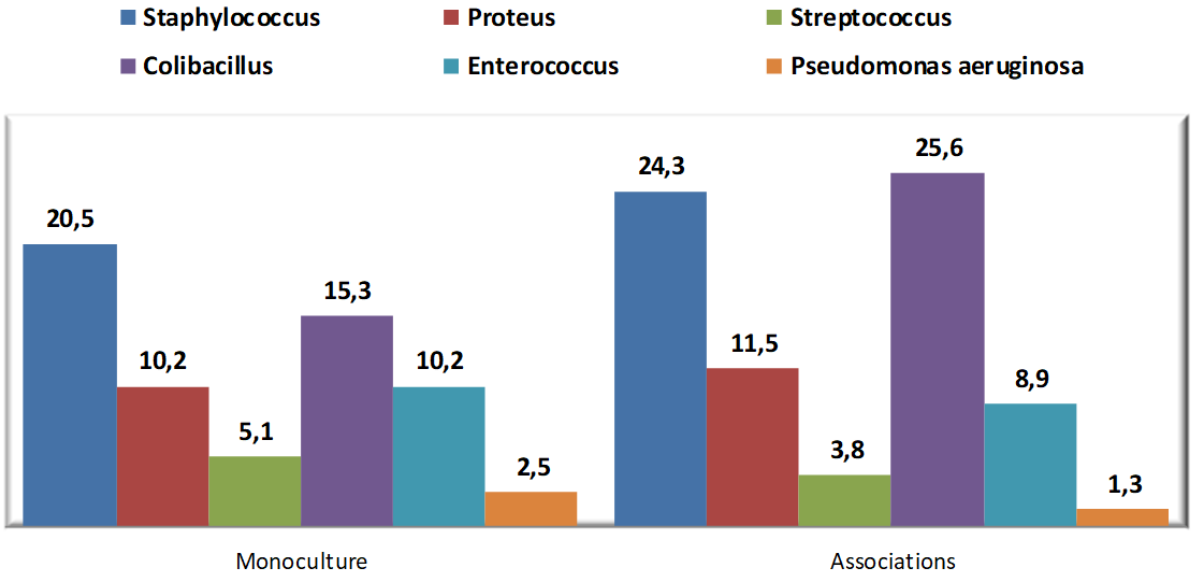
41 (47.7%) patients of group II had purulent destructive diseases of the fingers in the form of paronychia 8 (19.5%), subungual 9 (21.9%), articular 4 (9.8%), bone panaritium 8 (19.5%) and pandactylitis 12 (29.3%), after various etiological factors, Figure 2.

Figure: 2. A variety of purulent surgical diseases of the fingers of patients of group II (n = 41).



An important characteristic criterion for assessing the wound process was the identification of the amount of microbial contamination, the determination of the species composition of microflora. The identified species composition of the microflora sown from the exudate of infected wounds in patients with purulent destructive surgical diseases of the fingers of the hand is shown in Figure 3.

Figure: 3. Species composition of microflora, seeded from their exudate infected wounds of patients with purulent surgical diseases of the fingers (n = 86)



In patients of both groups, the indicators of the qualitative and quantitative analysis of the microflora of wounds in dynamics, the degree of intoxication, the timing of cleansing and healing of wounds were studied.

RESULTS AND DISCUSSION

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Comparison group I included 45 patients with acute purulent destructive surgical diseases of the fingers. On admission, all patients had symptoms of general intoxication - mild and moderate. In parallel with the general symptoms, local manifestations of the inflammatory process were noted - hyperemia, edema and tissue infiltration in the wound area. More than 92% of patients were admitted within 2 to 6 days after the onset of the disease.

Analysis of the results of indicators of intoxication of the body of patients with purulent destructive surgical diseases of the fingers of the first group of comparison revealed the following changes (Table 1). As can be seen from the table, on the first day of treatment, the patient's body temperature averaged 38.7±0.32 C. The content of leukocytes in the blood was on average 9.8±0.35 x 109 / l. The volume of medium molecules averaged 0.208 - 0.011 units. Similarly, an increase in LII and ESR was noted.

Table 1. Dynamics of indicators of intoxication in patients with purulent surgical diseases of fingers of the 1st comparison group (n = 45).

Indicators	Observation time				
	Admission day	3rd day	5th day	7th day	9-10th day
t^0 body	38,7±0,32	37,8±0,16*	37,3±0,22*	37,1±0,11	36,7±0,12*
L blood $\times 10^9$/l	9,8±0,35	8,6±0,34*	7,8±0,27	6,2±0,31	6,0±0,28
MSM units	0,208±0,011	0,175±0,007**	0,161±0,008	0,128±0,007**	0,103±0,005***
LII unit	2,3±0,08	1,85±0,08*	1,8±0,06	1,5±0,07	1,1±0,06***
ESR mm / h	45,4±1,77	36,3±1,48*	31,2±1,34*	26,5±1,12***	14,3±0,68***

*Note: * - differences relative to the data of the previous day are significant (* - P <0.05, ** - P <0.01, *** - P <0.001)*

On the third day of treatment, there was a slight decrease in body temperature from 38.7±0.32 to 37.8±0.16, the number of blood leukocytes decreased on average to 8.6±0.34 × 109 / l. The volume of medium molecules averaged 0.175 - 0.007 units. There was a decrease in LII and ESR indices to 1.850.08 and 36.3±1.48, respectively. By the seventh day of treatment, these figures, although they tended to further decrease, however, remained above the norm. With further treatment and observation by the tenth day, all analyzed indicators of intoxication, except for ESR of blood, were within normal limits.

The following criteria for assessing the dynamics of the wound process in patients were the pH of the wound environment, the percentage of reduction in the area of the wound surface, and PC indicators according to MF Mazurik (Table 2).

Table 2. Dynamics of biochemical parameters and rate of wound healing in patients of the 1st comparison group (n = 33).

Indicators	Observation time				
	1st day	3rd day	5th day	7th day	9-10th day

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pH of the wound environment	4,5±0,17	4,8±0,14	5,6±0,12***	6,2±0,22	7,1±0,31***
Percentage reduction in wound surface area	0	1,3±0,02***	2,5±0,06***	3,3±0,11***	3,4±0,21
Wound exudate protein (g / l)	58,9±1,59	55,9±1,37	47,4±1,29***	43,7±1,17	-
Total blood protein (g / l)	64,4±2,39	67,7±1,88	69,7±1,78	72,6±1,84	76,2±3,41
PC according to M.F. Mazurik	0,9±0,04	1,2±0,03**	1,4±0,05***	1,6±0,03*	-

*Note: * - differences relative to the data of the previous day are significant (* - P <0.05, ** - P <0.01, *** - P <0.001)*

By the seventh day, PC was equal to 1.6 ± 0.03, and the wound area per day significantly decreased by 3.3 ± 0.11%. The pH of the wound environment averaged 6.2 ± 0.22. Only by the tenth day of treatment did the pH of the wound environment become neutral. The decrease in the area of the wound surface per day became equal to 3.4 ± 0.21%. The discharge of exudate from the wound has ceased, which, in our opinion, is due to the transition of the wound process from the 1st to the 2nd phase.

Dynamic control of the level of microbial contamination of purulent wounds in patients of this subgroup revealed the following: at the time of admission, the microbial contamination, on average, was 108 mt / g, on the next day, after surgical treatment of the wound with the imposition of an ointment bandage, its values were 105 mt / g. By the sixth day of complex treatment in these patients, the degree of microbial contamination was below the critical level and amounted to 102 mt / g of tissue.

Thus, in the comparison of patients group, the wound was cleared of infection only by day 5.5, the beginning of the appearance of granulations - by the 7th day, the beginning of epithelialization - by the 10th day. Biochemical parameters of wound exudate are normalized only by the 10th day of treatment.

With the traditional method of treating patients of group I with purulent destructive surgical diseases of the fingers, the average duration of outpatient treatment was 11 ± 0.5 days. Group II (main) consisted of 41 patients with acute purulent destructive surgical diseases of the fingers, who underwent surgical treatment of a purulent focus on the day of admission. Then, additional wound treatment was applied in an abacterial environment using a 25% solution of Dimexide.

The abacterial environment was created using a latex medical sterile fingertip, with a size larger than the patient's fingers.

The lumen of the sterile medical fingertip was filled with a 25% solution of Dimexide to the upper border of the finger, and then the patient's affected finger was immersed there. The upper part of the finger cot was hermetically fixed using a fixing material.

Dynamic control of the level of intoxication of the organism of patients of group II revealed a significantly accelerated rate of normalization of indicators than in patients of the comparison group. As evidenced by the data in Table 3, on 3 days of treatment, the remaining indicators of intoxication: MSM, L-blood, LII decreased almost to normal values, on the 5th day of treatment, with the exception of ESR of blood, significantly normalized. With further treatment with the use of an abacterial medium with a 25% solution of dimethyl

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sulfoxide, the ESR of the blood also had normal values by 9-10 days.

Thus, comparing the indices of intoxication of the body of patients with purulent destructive surgical diseases of the fingers of the comparison group, the previous group I revealed that the body temperature of patients, L - blood, LII and MSM in patients of group II for 3 days of treatment corresponded to 7 days of the comparison group, t .e. when using a local abacterial medium with a 25% solution of Dimexidum, intoxication indices regressed 4 days earlier than in the comparison group (Table 3).

Table 3. Dynamics of indicators of intoxication in patients with purulent surgical diseases of the fingers of the II group (n = 41)

Indicators	Observation time				
	Admission day	3rd day	5th day	7th day	10th day
t^0 body	38,9±0,08	37,3±0,07***	36,7±0,08***	36,6±0,08	36,5±0,09
L-blood·10^9/l	9,8±0,38	7,0±0,32***	6,2±0,34*	5,6±0,18	5,7±0,26
MCM unit	0,218±0,012	0,121±0,007***	0,093±0,004*	0,082±0,004***	0,072±0,005
LII unit	2,7±0,14	1,3±0,07***	0,9±0,05***	0,7±0,03	0,5±0,04***
ESR mm / h	49,8±2,24	28,5±1,4***	18,4±0,85***	11,6±0,44***	6±0,34***

*Note: * - differences relative to the data of the previous day are significant (* - P <0.05, ** - P <0.01, *** - P <0.001)*

Dynamic control of the pH of the wound environment, the percentage of reduction of the wound surface and the indicators of PK protein according to MF Mazurik revealed the following (Table 4).

Table 4. Dynamics of biochemical parameters and rate of wound healing in patients of group II (n = 41).

Indicators	Observation time				
	Admission date	3rd day	5th day	7th day	10th day
pH of the wound environment	4,1±0,24	5,6±0,28***	6,7±0,34*	7,1±0,38	7,1±0,38
% reduction of the wound surface	0	2,4±0,14***	3,2±0,16***	3,3±0,12	3,9±0,21
Wound exudate protein (g / l)	54,7±2,62	43,6±2,28**	38,8±1,39**	-	-
Total blood protein	64,7±1,32	69,7±3,64	71,8±3,25	72,1±2,28	76,2±3,35
PC according to M.F. Mazuriku	0,9±0,04	1,4±0,07***	1,6±0,06***	-	-

*Note: * - differences relative to the data of the previous day are significant (* - P <0.05, ** - P <0.01, *** - P <0.001)*

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By the 6th day, the pH of the wound environment was reliably neutral. The daily decrease in the area of the wound surface was 3.9 ± 0.15%. It should be noted that the normalization of these indicators of the wound process in patients of the comparison group was observed only on the 10th day of treatment. As our study shows, when using a local abacterial medium with a 25% solution of dimethyl sulfoxide, by the 6th day of treatment, all pH values of the wound environment and the rate of wound healing were normalized. In our opinion, this is mainly due to the positive effect of complex treatment using a local abacterial environment with a 25% Dimexide solution.

The study of the dynamics of contamination of wounds against the background of complex treatment and the use of a local abacterial environment with a 25% solution of Dimexide showed that at the time of admission the degree of contamination was the same as in patients of the comparison group, i.e. quite high, averaging 108 mt / y.

But in dynamics against the background of complex treatment after surgical treatment, the use of a local abacterial medium with a 25% solution of dimethyl sulfoxide, the next day the microbial contamination of wounds decreased to 103 mt / g and already on the 3rd day of treatment these figures were below the critical level and corresponded to 102 mt / g of fabric. It should be noted that similar phenomena in patients of the comparison group were achieved only on the 5th day of treatment. Against the background of complex treatment of purulent destructive surgical diseases of the fingers using a local abacterial environment with a 25% solution of dimethyl sulfoxide, the time for clearing wounds from infection was reduced to 2.5 ± 0.5 days, which in patients of the comparison group was noted only by 5.0 ± 0.5 days.

Resorption of the infiltrate was noted after 2.0 ± 0.3 days. The appearance of granulations was observed, on average, by 3.0 ± 0.5 days, epithelialization by 5.3 ± 0.3 days.

Comparison of these indicators revealed that with the combined use of a local abacterial medium with a 25% solution of Dimexide, the time of resorption of the infiltrate in patients of group II is reliably ahead of the data of the comparison group by 2 days, the appearance of granulation by 3 days, the beginning of the appearance of epithelization by 4 days.

The use of a local abacterial environment with a 25% solution of Dimexide of wounds in the complex treatment of patients with purulent destructive surgical diseases of the fingers of the hand contributed to the complete cleansing of wounds from infection by 3 days of treatment. By the 2nd day, active resorption of the infiltrate around the wounds was observed.

The average duration of outpatient treatment for patients in group II was 5.5 ± 0.7 days.

The proposed method improves the biochemical and cytological parameters of wound exudate, makes it possible to accelerate the time of wound cleansing by 2 ± 0.3 days and to reduce the duration of stay in outpatient treatment of patients in the main group by 6.0 ± 0.4 days compared with the comparison group.

CONCLUSION

1. The use of an abacterial medium with a 25% solution of Dimexidum in patients with acute purulent destructive surgical diseases of the fingers of the hand is the most optimal, because it promotes faster and better cleaning of the wound surface from purulent-necrotic tissues and microbial bodies, a decrease in intoxication indicators and an acceleration of regenerative processes, which together can reduce the time of their treatment and rehabilitation.

2. Taking into account the results of a comparative analysis, an optimal method of treatment of patients with purulent destructive surgical diseases of the fingers of the hand on an outpatient basis has been developed by local application of an abacterial medium with a 25% solution of Dimexide.

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CONFLICT OF INTEREST

The authors declare that they have no competing interests.

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