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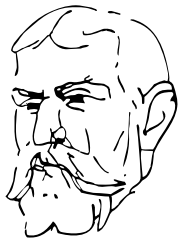

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ORIGINAL ARTICLE

MONITORING ASSESSMENT OF THE EARLY PROCESS ON THE BACKGROUND OF TES THERAPY

DOI: 10.36740/WLek202210124

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ABSTRACT

The aim: To investigate and evaluate the effect of TEC therapy on the wound process.

Materials and methods: On the models of clean, purulent and purulent-necrotic wounds in a comparative aspect, the wound process in the dynamics of wound healing in dental patients was studied in 233 patients, of which 105 were treated with TES therapy and 128 were treated with traditional treatment. A monitoring evaluation of the wound process was carried out based on the screening of the cytological picture of the wound contents, the study of the types of cytograms of smears-imprints from the wound on the 3rd, 6th and 9th days after surgical interventions.

Results: It was established that against the background of TEC therapy, compared to traditional therapy, a positive trend of reparative processes in the wound was noted starting from the 3rd day. Destructive forms of granulocytes were significantly reduced with a simultaneous increase in the quantitative and qualitative composition of macrophages and an increase in the number of fibroblasts. The transition of the inflammatory phase to the regeneration phase was observed in the smear-imprints.

Conclusions: The positive effect of TEC therapy on regenerative processes, both on clean and purulent and purulent-necrotic wounds at all stages of healing, has been established. The cytological picture of the wound contents, the type of cytogram of smears-imprints are sensitive markers of regenerative processes in the wound, regardless of its type. These criteria for evaluating the course of the wound process can be successfully used for prognostic purposes.

KEY WORDS: wounded process, tes therapy, cytograms

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INTRODUCTION

The wound process is accompanied by a complex of complex molecular and cellular changes that occur in the wound after injury and are aimed at wound regeneration and healing [1-5].

It is believed that the speed of wound healing is not only a function of time, but also a reflection of the ability of tissues to regenerate [6, 7]. This process involves both molecular and cellular components, which can be used to evaluate regenerative changes [8-12].

Given the key role of cellular elements at different phases of wound healing, the type of cytogram and the cytological picture of the wound contents can play an important role in the monitoring assessment of the course of the wound process against the background of TES therapy [14].

THE AIM

The aim of this work was to investigate and evaluate the effect of TEC therapy on the wound process.

MATERIALS AND METHODS

On the models of clean, purulent and purulent-necrotic wounds in a comparative aspect, the wound process in dynamics was studied in representative groups of dental patients in terms of age, social status and pathology in 233 patients, of which 105 were treated with TES therapy and 128 – with traditional treatment. A monitoring evaluation of the wound process was carried out based on the screening of the cytological picture of the wound contents, the study of the types of cytograms of smears-imprints from the wound on the 3rd, 6th and 9th days after surgical interventions.

Statistical analysis was carried out using the Excel program (Microsoft Office 2010, Microsoft USA) and Statistica 6.0 (Statsoft , USA).

Differences of indicators at significance level $p<0.05$ were considered statistically significant.

RESULTS

It was established that already on the third day of treatment with the use of TES therapy, positive dynamics of the course of the wound process were observed in all the studied main groups, as evidenced by the cytological picture of the wound contents (Table I).

Analysis of the cytological pattern of smears – prints from wounds from patients of the studied groups indicates a more significant decrease compared to traditional therapy in the number of neutrophil granulocytes in the second group by 1.1 times, the third – by 1.2 times,

Table I. Cytological picture of wound contents on the 3rd day after TES therapy (M ± m)

Indicators	Groups of patients					
	The main one			Comparison		
	And the group (n=27)	II group (n=37)	III group (n=41)	And the group (n=21	II group (n=56)	III group (n=51)
Neutrophil granulocytes,%	51.86 ± 1.81	86.35 ± 2.04	80.12 ± 2.25	56.43 ± 1.81	92.17 ± 2.14	92.26 ± 2.84
Destructive forms,%	4.73 ± 0.94	68.24 ± 2.11	60.23 ± 2.16	9.74 ± 0.35	74.35 ± 2.34	69.77 ± 2.24
Phagocytic forms,%	38.6 ± 1.34	31.73 ± 1.54	39.65 ± 1.82	31.12 ± 1.45	12.86 ± 1.95	14.48 ± 1.65
Macrophages,%	14.21 ± 0.26	8.72 ± 0.15	10.11 ± 0.82	1 3.85 ± 0.38	6.45 ± 0.16	7.25 ± 0.14
Fibroblasts,%	16.34 ± 0.58	3.16 ± 0.46	4.21 ± 0.81	15.72 ± 0.86	1.96 ± 0.08	2.78 ± 0.13
Lymphocytes,%	11.42 ± 0.45	6.41 ± 0.94	7.32 ± 0.87	8.91 ± 0.34	4.23 ± 0.56	5.13 ± 0.68
F,%	52.12 ± 1.53	49.18 ± 3.42	50.24 ± 3.01	51.94 ± 1.43	48.85 ± 2.42	49.1 ± 2.65
FC	8.12 ± 0.42	6.42 ± 0.53	6.12 ± 0.86	6.62 ± 0.73	5.98 ± 0.85	5.51 ± 0.46

Note: P < 0.05 – compared between the main and comparison groups.

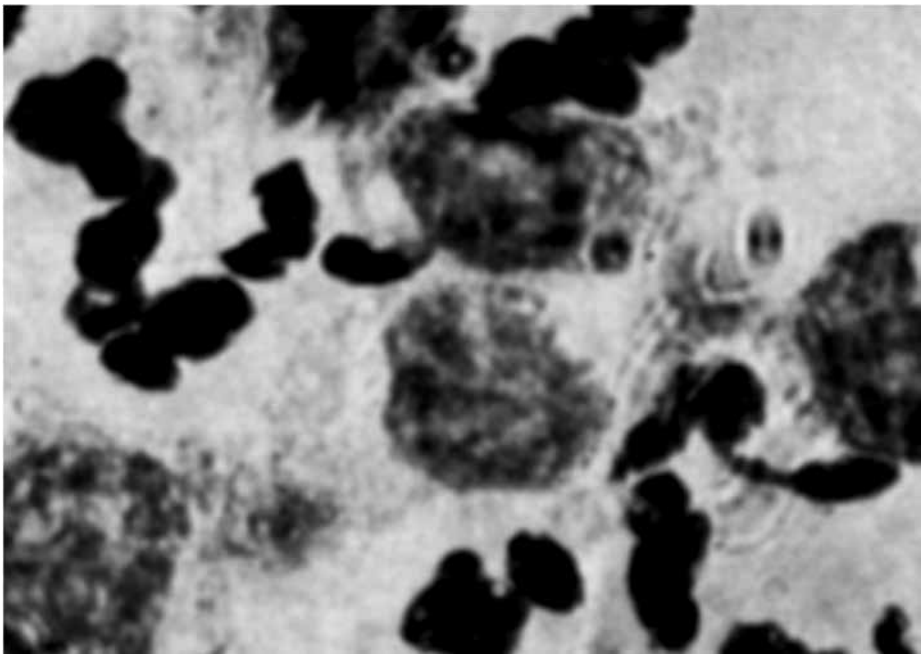

Fig. 1. Regeneration – inflammatory type of cytogram. The transition from the inflammatory phase to the regeneration phase (a group of young polyblasts is among the remnants of neutrophils). Hematoxylin eosin staining. Collection: volume x40.x10

of which the destructive forms were composed (68,24 ±2.11% and 60.23±2.16%), phagocytic – (31.73±1.54% and 39.65±1.82%). The number of macrophages increased to (8.72±0.15% and 10.11±0.82%), lymphocytes – to (6.41±0.94% and 7.32±0.87%). An increase in FA by (0.33% and 1.1%) and FC by (0.44 and 0.61) was recorded. In the patients of the first group, the studied indicators were as follows: the number of neutrophilic granulocytes decreased to (51.86±1.81%), of which phagocytic forms were (38.64±1.34%), destructive (4.73±0.94 %), which is 2.1 times less than the indicator of the comparison group.

On the sixth day of complex therapy with the use of TES – therapy, positive dynamics were observed, which are more pronounced in the main groups compared to patients on the background of traditional treatment. A decrease in the number of neutrophil granulocytes was observed in the first group to (56.41±0.34%), in the second to (78.54±2.46%) and in the third to (72.53±2.45%), with whose destructive forms accounted for (9.74±0.35%) in the first group and (56.52±2.83% and 42.36±1.83%) in the second and third. The phagocytic forms were 32.11±1.42%, 42.45±1.84% and 58.51±2.14%, respectively. The number of macrophages increased to (13.82±0.34, 10.43±0.36 and 12.83±0.96)%, fibroblasts – to (15.71±0.84, 3.17±0, 46 and 7.92±0.72)%, lymphocytes – up to (8.91±0.36%, 6.94±0.26% and 8.63±0.42%).

An increase in FA to (51.92±1.43%) in the first group and to (51.85±1.94% and 54.31±1.34%) in the second and third groups was also recorded.

The average indicators of the phagocytic number (PF) were (6.62±0.71, 6.51±0.24 and 6.96±0.21), respectively.

This is also confirmed by the analysis of the cytological pattern of smears – prints from the wounds of patients of the examined groups, which indicates the favorable effect of TES – therapy on the dynamics of regeneration

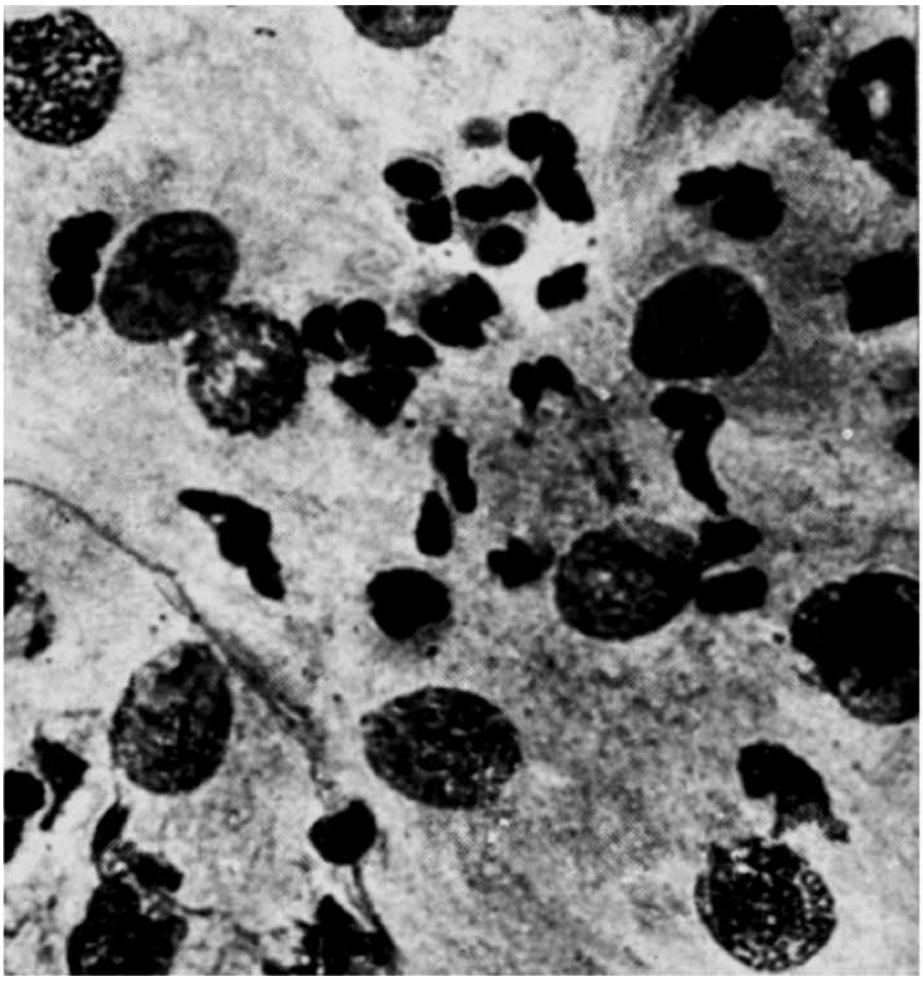

Fig. 2. Wound after wisdom tooth extraction. Epithelialization (V-th type of cytogram – layers of flat non-healing young epithelium)

processes. In smears – impressions, a regenerative – inflammatory (Fig. 1) or regenerative type of cytogram (Fig. 2) was observed.

We found this type of smear-imprints in 70.4% of the 1st main group and in 46.7% of the similar comparison group. In the second and third groups, this indicator was 35.1% and 46.3%, respectively, against 26.7% and 40% in the comparison group.

It should be noted that with chronic periodontitis, the course of the wound process was delayed by an average of 3.5±1.3 days, despite the positive trend towards changes in cytological smears – imprints in dynamics.

DISCUSSION

The results of complex studies of the wound process against the background of the use of TES therapy [14] in the complex treatment of wounds show that it is more effective than traditional therapy. According to the conducted studies, it was established that already on the 3rd day of the postoperative period, with clean wounds in smears-prints, 55.6% of the IV type of cytogram is noted, against 40.0% in the comparison group. In the 2nd main group, this indicator was 24.3% against 20.0% and the third, respectively, 41.5% and 33.3%, which is 4.3% and 8.2% higher than the comparison group. On the 9th day, the V – th type of cytogram in patients of the 1st main group was 7.6% higher than in the comparison group. A similar regularity was observed in the 2nd and 3rd main groups, which indicates a greater effectiveness of TES therapy compared to traditional therapy [14].

In this regard, it should be noted that, since it is observed in patients during the wound process that the cytomorphological picture of one phase of wound healing is superimposed on another, it is advisable to determine the cytological picture in dynamics in a comparative aspect.

So, as our research shows, starting from the third day against the background of the use of TES – therapy in the complex treatment of the wound process in dental patients, more pronounced positive trends in reparation processes are observed. A more significant decrease in the number of destructive forms of neutrophil granulocytes, an increase in their phagocytic forms, lymphocytes, macrophages, fibroblasts, FA and PF compared to groups of patients against the background of traditional therapy is noted.

CONCLUSIONS

1. The positive effect of TEC therapy on regenerative processes, both on clean and purulent and purulent-necrotic wounds at all stages of healing, has been established.

2. The cytological picture of the wound contents, the type of cytogram of smears-imprints are sensitive markers of regenerative processes in the wound, regardless of its type.
3. These criteria for evaluating the course of the wound process can be successfully used for prognostic purposes.

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Conflict of interest:

The authors declare no conflict of interest.

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