



Garamycin Schwamm-Schering Plough in Local Treatment of Burns and Infected Wounds

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Original article

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Statistic

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Summary

The aim of this study is to evaluate the wound healing process in the superficial and deep burns as well as infected wounds developing granulation tissue with and without the application collagen sponges soaked with garamycin. There were 30 patients in the examined group. Garamycin plough in the superficial burns doesn't influence on healing process. Positive effect of garamycin plough was observed in the wound healing process in the deep burns and infected wounds.

Key words: burns, wound infection, local treatment

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The wound infection affects the time of the healing process making the graft taking more difficult. Generalised infection belongs to one of the most frequent reasons of death in the course of the burn disease. Infection prevention consists on the patient's isolation, necrotic tissues removal, defects' coverage with grafts, as well as antiseptic and antibiotics local application (1, 2, 3, 4, 5).

The aim of this study was to evaluate the wound healing process in the superficial and deep burns, as well as in the case of wounds developing granulation tissue, with and without the application of collagen sponges soaked with garamycin.

MATERIAL AND METHOD

The study was conducted on 30 patients at the age of 18 – 65 years old who manifested superficial burns, as well as the deep ones of indirect skin thickness of up to 30% of the whole body surface, including 15% of the full skin sickness. The excluding criteria were: allergy to garamycin, pregnancy, lactation and serious general condition of the patient. Patients were divided into four groups, the first of which included 5 patients with superficial burns of indirect skin thickness (2a°) with 5 exploratory fields locally covered with the sponges, and 5 respective control fields in symmetrical places of the same burn depth, on which the traditional dressing was applied.

The second group included 10 patients with deep burns of indirect skin thickness (2b°) with 10 exploratory fields and 10 control ones.

The third group consisted of 10 cases of deep burns of full skin thickness (3°) with 10 exploratory and 10 control fields respectively.

In the fourth group there were 5 patients with infected wounds developing granulation tissue having been prepared for their closure with skin grafts of indirect thickness. The average surface of the exploratory and control fields was about 150cm², which constituted about 1% of the total body surface. The exploratory fields were being covered by garamycin sponges twice a week on average until total epithelialization and in deep burns until the excision of the necrotic tissues and coverage of the defect with the skin graft. In deep burns of indirect and full skin thickness necrosis was being removed with the tangential or deep excision from the very first day of the patient's hospitalization. Bacteriological examination was performed at the beginning and while wound healing process and after bacterial flora identification, antibiotic sensitivity was checked. The sick with wound and generalised infections were isolated. Garamycin sponges of the size 10 cm x 10 cm x 0,5cm contained 28mg of collagen derived from bovine tendons and 130mg of gentamycine sulfate. Collagen as the gentamycine carrier was re-absorbed in the wound within 24-48 hours. The

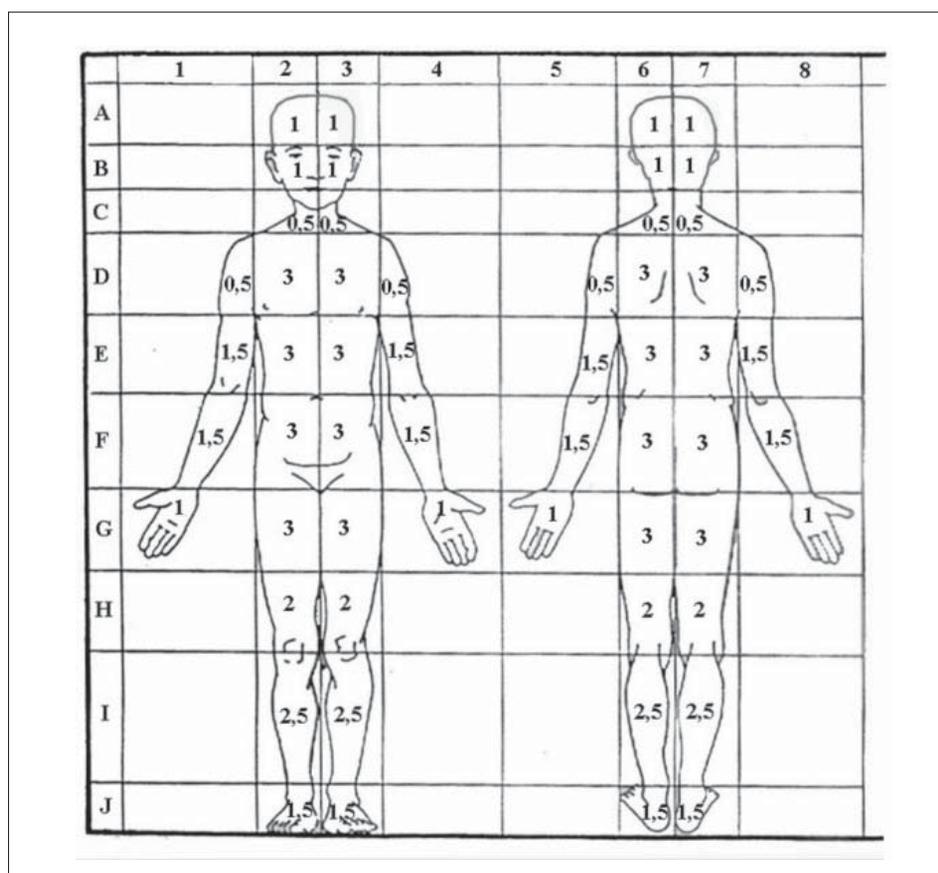


Table 1. Characteristics of the sick

n	Age	Average, general burn surface	Average, deep burn surface	Exploratory fields	Control fields	Average, exploratory field surface
30	31 (18-65)	25% (15-30)	12% (5-15)	30	30	150 cm ²

Table 2. Results

Group	N	Depth	Exploratory fields N	Epithelialization in days	Control fields N	Epithelialization in days	P
1	5	2a°	5	9 ± 2.1	5	10 ± 3.2	n.s.
2	10	2b°	10	24 ± 3.1	10	31 ± 3.3	p < 0.05
3	10	3°	10	25 ± 3.4	10	32 ± 4.1	p < 0.05
4	5	infected wounds developed granulation tissue	5	15 ± 3.2	5	26 ± 2.7	p < 0.01

control fields placed symmetrically on the same patient and showing the same burn depth were treated locally with 1% cream Sulfadiazinum argentum until total epithelialization or necrectomy and the coverage of the defects with grafts of indirect skin thickness. Garamycin sponges were placed directly on the cleaned wound in sterile conditions and fixed by means of the net dressing.

RESULTS AND DISCUSSION

Group 1. Superficial burns 2a°

Five exploratory fields and five control counterparts placed symmetrically treated with 1% Sulfadiazinum argentum were subjected to evaluation. The time of wound epithelialization in the exploratory fields with the help of garamycin sponges was 9 ± 2.1 days, whereas in the control group 10 ± 3.2 days. The difference is not statistically significant.

Group 2. Deep burns of indirect skin thickness 2b°

10 exploratory and the same number of control fields were evaluated in this group where total epithelialization was achieved within 24 ± 3.1 days compared to 31 ± 3.3 days compared to the control group, which makes the difference statistically significant.

Group 3. Deep burns of full skin thickness 3°

10 exploratory and 10 control fields were taken under observation. Since the necrosis excision with the help of garamycin sponges' application, the wound was maintained in sterile conditions. The graft taking and total epithelialization was running without any complications hence without wound infection, whereas in the control fields group the same process took 32 ± 4.1 days and was significantly different from the exploratory fields.

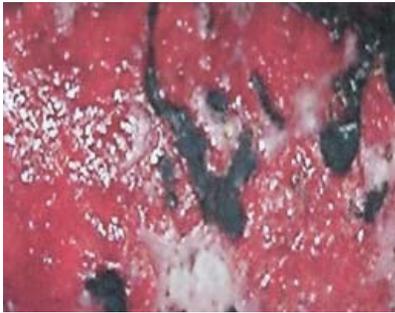
Group 4. Infected wounds developing granulation tissue This type of wounds, not covered by epithelium are generally very troublesome for doctors, being at the same

time extremely inconvenient for the patients. The subsequent skin grafts are rejected, which requires additional surgeries until total wound closure. The preparation of the infected wounds to garamycin sponges transplantation compared with the control fields shortened significantly the time of the epithelialization process, which in the group under consideration was 15 ± 3.2, whereas in the control one 26 ± 3.7 days.

While garamycin plough we did not observe any side effects, allergic reactions, creatinine or urea levels increase, renal insufficiency or hearing impairment.

CONCLUSIONS

1. Garamycin Schwamm-Schering Plough in superficial skin burns 2a° does not shorten significantly the time of the wound healing process in comparison with the application of the traditional methods.
2. Garamycin Schwamm-Schering Plough in the preparation of the necrosis field excision and skin transplantation in deep burns of indirect and full skin thickness (2b° and 3°) significantly shortens the wound healing process.
3. Garamycin Schwamm-Schering Plough seems to be particularly applicable in the preparatory process aiming at the closure of the infected wounds developing granulation tissue with the skin graft. This application significantly shortens the time of the healing process.
4. Strong, bactericidal effect of garamycin plough on Enterobacteriaceae, Pseudomonas aeruginosa and Staphylococcus spp. Coagulopositive and coagulonegative together with metycilinoresistant strains was observed.
5. While Garamycin Schwamm-Schering Plough no side effects of the allergic type or urea and creatinine levels increase were spotted.
6. Lengthening of the collagen re-absorption up to 7-10 days is indicated.



Picture 1. The wound developing granulation tissue infected with *Pseudomonas aeruginosa*



Picture 2. Skin graft of indirect thickness after 7 days of treatment with garamycin plough



Picture 3. After 14 days the graft taken without any complications



Picture 4. Posttraumatic skin defect. The wound developing granulation tissue infected with methicillin-resistant *Staphylococcus aureus*



Picture 5. Garamycin plough



Picture 6. The wound healed with no complications after 14 days

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