

**COMPARISON BETWEEN THE EFFICACY OF 9 %
HYPERTONIC SODIUM CHLORIDE SOLUTION,
PENTOSTAM AND SILVER NITRATE FOR TREATMENT OF
CUTANEOUS LEISHMANIASIS**

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Summary

The study was conducted on 107 patients of cutaneous leishmaniasis, from Dour town, Salahadeen province attending the Dermatology Department of Saddam General Hospital, Tikrit.

Patients were divided to 4 groups for purpose of treatment and comparison, followed up for two months duration.

Group A: treated with intralesional hypertonic sodium chloride solution (9 % HSCS).

Group B: treated with intralesional pentostam injection, 1 cc. per day for 6 consecutive days.

Group C: treated with silver nitrate cauterization one to two doses of three days interval.

Group D: left without treatment as a control group.

It was found that the efficacy of 9% hypertonic sodium chloride solution and pentostam were 94% and silver nitrate was 78%. No patient cured among untreated control group.

It was concluded that the efficacy of sodium chloride solution and pentostam was greater than silver nitrate solution.

مقارنة بين كفاءة 9% من محلول ملحي مفرط التوتر، وبيتنوسام و نترات الفضة لمعالجة الشمانيا الجلدية

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الخلاصة

اجريت الدراسة على 107 مرضى مصابين بالشمانيا الجلدية من قضاء الدور/ محافظة صلاح الدين. الذين كانوا يراجعون شعبة الامراض الجلدية في مستشفى صدام العام / تكريت. تم تقسيم المرضى الى اربع مجموعات لغرض المعالجة والمقارنة:

مجموعة أ : عولجت بمحلول ملحي مفرط التوتر بتركيز 9 % على شكل زرق موضعي.

مجموعة ب : عولجت بعقار البننوستام على شكل زرق موضعي 1 مل يومياً لمدة ستة ايام متتالية.

مجموعة ج : عولجت بالكوي بمادة نترات الفضة على شكل جرعة الى جرعتين (بين كل جرعة واخرى 3 ايام).

مجموعة د : تركت بدون علاج كمجموعة سيطرة .

وجدت بان فاعلية المحلول الملحي المفرط التوتر (9%) هي 94% وبيتنوستام 94% ونترات الفضة 78%. بينما لم يشفى احد من مرضى مجموعة الضبط.

استنتج ان كفاءة المحلول الملحي وبيتنوستام اعلى من محلول نترات الفضة .

INTRODUCTION

Cutaneous leishmaniasis is agranulomatous lesion of the skin caused By Leishmania tropica which ulcerate but may heal spontaneously, leaving depressed scars. It is transmitted by sand flies belong to genus Phlebotomus (1).

Several studies have been established for treatment of cutaneous leishmaniasis by local infiltration of drugs. Sodium stibogluconate (Pentostam) (2& 3), 2-amphotericine B (4), 3-livamisole (5), 4-Emetine hydrochloride (6), Bleomycin 1 %

concentration solution ⁽⁷⁾, Mepacrine ⁽⁸⁾, Hypertonic sodium chloride solution HSCS 7 % concentration ⁽⁹⁾ and Mannitol ⁽¹⁰⁾.

This study was carried out to compare the efficacy of the local therapy of HSCS (9%) with pentostam and silver nitrate in treatment of cutaneous leishmaniasis.

Materials and methods

The study was carried out on 107 patients from Dour town, Salahadeen province, attending Saddam General Hospital Tikrit from October 1995 to March 1996.

The patients were from both urban and rural areas. The duration of lesions ranged from 2-16 weeks.

Diagnosis of positive cases was based on direct smear examination and culture on N.N.N. media ⁽¹¹⁾ in Tikrit University, College of Medicine.

Three drugs were used for treatment of leishmaniasis and the patients were divided into 4 groups according to the type of the therapy as follows:

Group A: 54 patients were treated with sterile preparation of HSCS 9%, injected intralesionally. The amount of solution used were depending upon the size and the severity of the lesion (mean 2 cc), then patients were examined after 10-14 days to be given second dose according to the response of the lesion, followed up for two months.

Group B: 16 patients were treated with local infiltration of pentostam. The lesions were injected with 1cc of pentostam every day for 6 consecutive days and examined between 10-14 days for two months follow up.

Group C: 18 patients were treated with silver nitrate, used locally on the surface of the lesion and examined after three days due to its rapid action. The patients were followed up for two months.

Group D: 19 patients were left without treatment, examined every two weeks and followed up for months.

The lesions in all treated groups were cleaned with cotton. The response to treatment was graded as marked improvement where reduction on the size of the lesion was more than 60 %.

Slight improvements were reduction in the size of the lesion by up to (30%) or only decreased erythema or the edema of the lesion.

The clearance of the lesions was confirmed by negative cultures.

Results

Comparison of patients in four treated groups, it is shown that:

In group A: from 54 patients treated with (9%) HSCS, 44 patients (81%) showed marked improvement within 2-4 weeks from the first dose, the remaining 10 patients who had severe lesions, showed slight improvement. They were given second dose (after 14 days from the first dose) and reexamined after 2-4 weeks

were patients (13%) cured within two months follow up and 3 patients had weak response. So from 54 patients treated with (9%) HSCS, 51 patients cured within two months therefore the efficacy was (94%) see (Table 1).

In group B: From 16 patients treated with pentostam , there were marked improvement on 12 patients (75%) within one month follow up and 3 patients also showed marked improvement within two months follow up, only one patient did not cure, so the efficacy of pentostam was (94%) see (Table 2).

In group C: which were treated with silver nitrate, from 18 patients, 8 (45%) got marked improvement within 3 days, the rest treated with second dose, 6 more patients showed marked improvement 33% within two months follow up, while 4 patients 22% showed weak response, therefore the efficacy of silver nitrate was 78% (Table 3).

In group D: In the control group, 14 patients did not cure within two months follow up; only 5 patients got self healing within 4 months, all of which got dry lesions.

Table 1. The outcome of 54 patients treated with first and second dose of 9% HSCS within one-two months follow up.

Response	1 st. dose	%	2 nd. Dose	%
Marked improvement	44	81	51	94
Weak improvement	10	19	3	6

The efficacy of 9% HSCS is 94%

Table 2. The outcomes of 16 patients treated with pentostam within one-two months follow-up in dose 1 cc. daily for 6 days.

Response	One month	%	Two months	%
Marked improvement	12	75	15	94
Weak improvement	4	25	1	6

The efficacy of pentostam is 94%

Table 3. The outcomes of 18 patients treated with 1st and 2nd doses of silver nitrate.

Response	1 st dose	%	2 nd dose	%
Marked improvement	8	45	14	78
Weak improvement	10	55	4	22

Discussion

The effect of the local therapy against cutaneous leishmaniasis, depend upon severity of the lesion, doses of the drug and the technique of administration.

Comparing the efficacy of the treatment, it was found that the efficacy of 9% HSCS was 94% which was higher than shown by Hussein ⁽¹²⁾, who found that the efficacy of 7% HSCS was 88.2% and than Kadir et al. ⁽¹⁰⁾ who found the efficacy of 7% HSCS was 87.5%. This might be due to increasing the concentration of HSCS solution with increased its effect on cutaneous leishmaniasis. The effect of hypertonic sodium chloride solution on the parasite might be due to immediate paralysis, shrinkage and death of amastigotes, which act through changing in osmotic pressure ⁽¹²⁾.

In agreement with the study of Sharquie et al. ⁽³⁾, it was found that the efficacy of pentostam was (94%), who carried on their study on 60 patients with 130 lesions, giving the injections at 8 day intervals. The result of this study was almost identical to that reported by Kadir et al. ⁽¹⁰⁾, (96.20%), but was higher than that reported by Hussein ⁽¹²⁾, who showed 88.9%. This might be due to difference in dose of the drug administered, as in this study pentostam used daily for 6 days consecutively, while Hussein ⁽¹²⁾ used only 1-3 injection between 10 day intervals.

Regarding the efficacy of silver nitrate, 78% was less effective than 9% HSCS and pentostam and this might be related to its administration, which was used superficially on the skin surface.

It is concluded that the efficacy of 9% HSCS and pentostam was 94% and silver nitrate was 78%.

It is advisable to use 9% HSCS because it is cheap, locally available, safe and less number of injections are required.

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