



BACTERIOLOGY OF PRIMARY PYODERMAS AND COMPARATIVE EFFICACY OF TOPICAL APPLICATION OF MUPIROCIN AND SODIUM FUSIDATE OINTMENTS IN THEIR TREATMENT

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A study to compare the efficacy of topical 2% mupirocin ointment and 2% topical sodium fusidate ointment in the treatment of primary pyodermas was done. Out of one hundred cases of primary pyodermas, fifty were randomly treated with 2% topical mupirocin ointment and fifty were given 2% topical sodium fusidate ointment. Patients were evaluated after four days and seven days of treatment. At the end of seven days, both the agents were found to be equally effective and side effects were insignificant in both the groups.

Key Words: Pyoderma, Mupirocin, Sodium fusidate

Introduction

Pyodermas, one of the commonest clinical conditions encountered in dermatological practice, can be defined¹ as "any bacterial skin disease". Skin infections can be classified as:²

- a. Primary infections eg. impetigo, folliculitis, furuncles, ecthyma etc.
- b. Secondary infections
- c. Cutaneous involvement in systemic bacterial infections.
- d. Infections due to unusual organisms.

Primary bacterial infections are produced by the invasion of possibly normal skin by a single species of a pathogenic bacteria.² In contrast secondary bacterial infections develop in areas of already damaged skin.²

The majority of primary pyodermas are due to infections with either group A Streptococci or *Staphylococcus aureus*.³ Occasionally organisms like *Bacillus*, *Proteus*, *Pseudomonas*, *Klebsiella* and *Coliform bacilli* have also been isolated.¹

Primary cutaneous infections of mild to moderate severity can be treated with topical drugs, antibiotics, or by combination of these methods. Extensive

infection of the skin, with or without systemic infection, should be vigorously treated with parenteral antibiotics in adequate dosage. Treatment is aimed at the eradication of bacteria from the skin to prevent autoinoculation, spread to others, and the rare non-infectious complications like nephritis. Various topical antimicrobials that have been used in the treatment of primary pyodermas are neosporin, oxytetracycline, framycetin, erythromycin, gentamicin, acetic acid, povidone-iodine and chlorhexidine gluconate.² Amongst the latest topical antimicrobials are sodium fusidate and mupirocin.²

Topical antimicrobials would be better than systemic therapy provided they are as effective as systemic therapy. It is because of better compliance and safety profile of topical antimicrobials.⁴ Sodium fusidate and mupirocin are the two promising topical antimicrobials that have been found to be equally effective as systemic therapy in the treatment of primary pyodermas.⁵⁻⁶ Various studies have been done in the past to compare the clinical and bacteriological efficacy and tolerance of mupirocin with sodium fusidate in patients with various skin infections.

The present study was aimed at comparing the efficacy of topical application of mupirocin and

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sodium fusidate ointments in primary pyodermas.

Materials and Methods

Aim of study was to study the bacteriology of

Table I. Type of primary pyoderma seen in two groups

Primary Pyoderma	Group-I	Group-II	Total
Impetigo contagiosa	20 (40)	15 (30)	35 (35)
Impetigo bullosa	9 (18)	9 (18)	18 (18)
Folliculitis	11 (22)	15 (30)	26 (26)
Furuncle	6 (12)	7 (14)	13 (13)
Ecthyma	4 (8)	3 (6)	7 (7)
Sycosis barbae	0 (0)	1 (2)	1 (1)

(Figures in parenthesis indicate percentage)

100 cases of primary pyodermas and to compare the efficacy of topical application of 2 percent

Table II. Bacterial isolates in two groups

Bacterial	Group-I	Group-II	Total
1. S. aureus	41	40	81
2. BHS	4	3	7
3. S.aureus + BHS	1	2	3
4. Sterile	4	4	8
5. CoNS	0	1	1

S.aureus - Staphylococcus aureus

BHS - β - haemolytic streptococcus

CoNS - Coagulase negative staphylococci

mupirocin ointment with topical application of 2 percent sodium fusidate ointment in the treatment of primary pyodermas. One hundred patients of primary pyodermas attending the out patient department

Table III. Comparative response of patients to treatment in two groups

		Group-I	Group-II
Day	Cured	9	6
	Improved	29	30
	Failure	12	14
Day 7	Cured	39	33
	Improved	6	9
	Failure	5	8

($P > 0.05$)*

(*Using Chi Square test)

of Skin & V.D of PGIMS, Rohtak constituted the study material.

Patients with history of hypersensitivity to topical mupirocin or sodium fusidate, pregnant women

and patients who had applied topical antibacterial preparation or had taken systemic antibiotic prior to the study were excluded from the study. Patients were graded on a scale of one to five according to the presence of erythema, vesiculopustular eruption, scaling and crusting, discharge and oedema due to inflammation.

Patients having all the five elements on day one were labelled as having score five. Only patients with score 4 and 5 were included in the study. Pus for culture was taken with a sterile cotton swab and other investigations like complete haemogram and urine examination were done before starting the treatment. Group-1 patients were given 2% mupirocin ointment topically, while group-II patients were given 2% sodium fusidate ointment topically. Each ointment was applied twice daily for seven days. Patients were followed up on day 4 and day 7 and were graded on a scale of 1 to 5 according to the criteria as described above. Patients with score zero and one were considered cured, while patients with score two and three were considered improved. Patients with score four and five were regarded as treatment failures. All the findings were recorded on a special proforma and results were analysed. Statistical test was applied wherever necessary.

Observations

Patients in group-I i.e. mupirocin group were in the age range from eight months to forty-five years. There were twenty-seven males and twenty-three females in this group. In group-II i.e. sodium fusidate group, age range of the patients was from ten months to fifty-five years. There were twenty-eight males and twenty-two females. Thus the two groups were similar in age range and sex of the patients ($p > 0.05$).

After four days, nine patients in group - I and six patients in group-II showed improvement in the skin condition. Twelve patients in group-I and four patients in group-II did not respond to treatment in four days. On the seventh day thirty-nine



patients in group-I and thirty-three patients in group-II were cured. Six patients in group-I and nine patients in group-II showed some improvement. Five patients in group-I and eight patients in group-II did not show any improvement even on seventh day of treatment and were considered as treatment failures. On statistical analysis on day seven difference in cure rate between two groups were not significant.

Discussion

In our study impetigo contagiosa (35%) was the commonest primary pyoderma, followed by folliculitis (26%), impetigo bullosa (18%), furuncle (13%), ecthyma (7%) and sycosis barbae (1%). This is in agreement with a study by Chopra et al¹ and Ramani and Jayakar.⁹

In the present study, on culture examination of the pus from patients of primary pyodermas, ninety-two percent specimens showed bacterial growth, while eight percent specimens were sterile. In this study, infection in the 89% of the cases was due to a single organism, while only 3% showed mixed growth of B-haemolytic streptococcus and Staphylococcus aureus. This is in agreement with a study by Khare et al¹⁰ where 84.11% patients were infected with a single organism and 12.64% cases of mixed growth were seen. Chopra et al¹ reported similar findings with 85.85% cases showing single infecting organism, while 7.07% cases showed more than one type of organism.

On seventh day in group-I, 78% patients were cured of their pyodermas and 12% had some improvement. Ten percent of the cases in this group did not show any improvement, and were labelled as treatment failures. On the other hand, in group-II, 66% cases were cured after 7 days of treatment, 18% had some improvement while 16% cases were treatment failures. These apparent differences in the cure rates in two groups were not statistically significant ($p > 0.05$). The above findings are in agreement with Gilbert¹¹, Langdon and Mahapatra¹²

and Kar et al.¹³

Side effects to treatment in both the groups were minor in the form of itching and redness and there was not much difference in side effects in both the groups.

So to conclude, both 2% topical mupirocin ointment and 2% topical sodium fusidate ointment are equally effective in the treatment of primary pyodermas. However topical treatment with both these agents should be given for at least 7 days. Side effects with both these drugs are minor and practically insignificant.

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