Original Research Article

Efficacy and safety profile of topical 2% mupirocin vs topical 2% fusidic acid in the treatment of superficial bacterial infections

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Abstract

Background: Bacterial skin infections are the 28th most common diagnosis in hospitalized patients. Cellulitis, impetigo, and folliculitis are the most common bacterial skin infections. The present study was conducted to compare the efficacy and safety profile of topical 2% mupirocin vs topical 2% fusidic acid in the treatment of superficial bacterial infections. **Materials & Methods:** 50 patients diagnosed with bacterial infections of the skin were randomly divided into 2 groups of 25 each. Group I patients were prescribed topical 2% mupirocin and group II were prescribed 2% fusidic acid cream. **Results:** Group I had 12 males and 13 females and group II had 11 males and 14 females. The mean score at baseline was 7.8 in group I and 8.2 in group II, at 4th day was 5.2 in group I and 4.7 in group II and at 14th day was 2.7 in group I and 2.6 in group II. The difference was non- significant (P>0.05). No significant side effects were observed. **Conclusion:** Both topical 2% mupirocin and topical 2% fusidic acid are well-established in the treatment of uncomplicated bacterial skin infections. Topical mupirocin and topical fusidic acid are equally effective.

Keywords: Bacterial, Fusidic acid, Mupirocin.

Introduction

It is important to have a good understanding of the common clinical manifestations and pathogens involved in bacterial skin infections to be able to manage them appropriately. The type of skin infection depends on the depth and the skin compartment involved[1].Bacterial skin infections are the 28th most common diagnosis in hospitalized patients. Cellulitis, impetigo, and folliculitis are the most common bacterial skin infections[2].Dermatologists are faced with an ever-changing spectrum of bacterial infection in cutaneous diseases. Studies have stated that uncomplicated bacterial skin infections may account for up to 17–25% of clinical visits in India[3].This high incidence of bacterial infections is due to various precipitating factors such as low socioeconomic status, poor hygiene, malnutrition, overcrowding, and certain immunodeficiency syndromes. Bacterial skin infections can also complicate other skin diseases such as scabies, varicella, and atopic dermatitis. Majority of the bacterial skin infections are caused by Group A beta-hemolytic Streptococcus and Staphylococcus[4].Topical antibacterials are used to accelerate clinical cure, prevent recurrences in affected individuals, and to minimize the spread of infection. They are considered more appropriate as they target only infected area and thus avoid the side effects of the oral treatment and the associated drug interactions. Indiscriminate and universal use of topical medications including antibiotics has led to widespread resistance (molecular, group, and class) to the same[5].The present study was conducted to compare the efficacy and safety profile of topical 2% mupirocin vs topical 2% fusidic acid in the treatment of superficial bacterial infections.

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Materials & Methods

The present study comprised of 50 patients diagnosed with bacterial infections of the skin. The study was carried out in the patients attending the out-patient Department of Dermatology of Government Medical College, Bettiah, Bihar.All patients were informed regarding the study and their consent was obtained.

Data such as name, age, gender etc. was recorded. All patients were randomly divided into 2 groups of 25 each. Group I patients were prescribed topical 2% mupirocin and group II were prescribed 2% fusidic acid cream. Grading of the lesions was done with regard to parameters such as erythema, edema, vesiculation, pustulation, crusting, and scaling. Score was applied to each parameter as 0-absent, 1-mild, 2-moderate, and 3-severe. Gram staining was performed. The lesions were graded on first visit (baseline) and subsequent visits on day 4, and day 14. Analysis of data was done in Department of Pharmacology, Government Medical College, Bettiah, Bihar.The results were subjected to analysis. P value less than 0.05 was considered significant.

Results

Table 1: Distribution of patients

Groups	Group I	Group II
Drug	Topical 2% mupirocin	Topical 2% Fusidic acid
M:F	12:13	11:14

Table 1 shows that group I had 12 males and 13 females and group II had 11 males and 14 females.

Table 2: Comparison of score in both groups

Duration	Group I	Group II	P value
Baseline	7.8	8.2	0.15
4th day	5.2	4.7	0.12
14th day	2.7	2.6	0.91

Table 2, Fig 1 shows that mean score at baseline was 7.8 in group I and 8.2 in group II, at 4th day was 5.2 in group I and 4.7 in group II and at 14th day was 2.7 in group I and 2.6 in group II. The difference was non- significant (P>0.05).

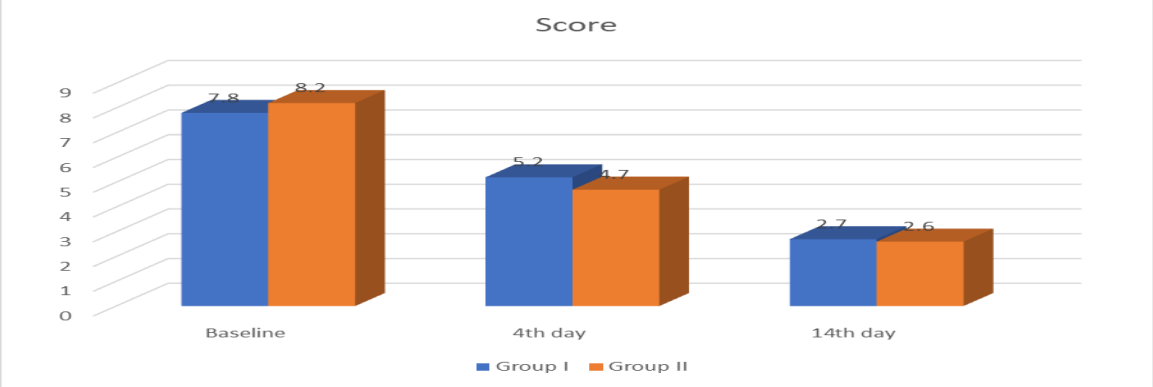

Fig 1: Comparison of score in both groups

Discussion

Impetigo is a superficial bacterial infection that can develop either through direct invasion of normal skin (primary) or infection at sites of damaged skin (secondary). It is common in children and is highly contagious. There are two formsnon-bullous or crusted impetigo – distinct yellow, crusting lesions that may be itchy. Typically involves face or extremities. Bullous impetigo is usually caused by Staphylococcus aureus. It presents as bullae that rupture to form a brown crust. Boils and carbuncles Boils and carbuncles are associated with infection of a hair follicle and extend into subcutaneous tissue[6].They are tender and painful but the patient is usually systemically well. In most cases, lesions can be treated with incision and drainage alone. Antibiotic therapy is only required if there is spreading cellulitis or systemic infection. Folliculitis This usually presents as a crop of pustules affecting areas of moist skin with hair. It is most commonly caused by S. aureus but can also be linked to other organisms like Pseudomonas aeruginosa when associated with specific exposures like hot tubs and spas.[7]The present study was conducted to compare the efficacy and safety profile of topical 2% mupirocin vs topical 2% fusidic acid in the treatment of superficial bacterial infections.In present study, group I had 12 males and 13 females and group II had 11 males and 14 females. Vasani et al[8] compared the efficacy and safety profile of 2% mupirocin versus 2% fusidic acid versus 1% nadifloxacin cream in the treatment of superficial bacterial infections. A total of 90 patients of bacterial infections of the skin were included, which were randomly allocated to three different study groups. Fusidic acid cream showed faster reduction of the scores at the end of the first visit. The differences noted in the efficacy of the three drugs were not statistically significant. No significant side effects were observed. We found that mean score at baseline was 7.8 in group I and 8.2 in group II, at 4th day was 5.2 in group I and 4.7 in group II and at 14th day was 2.7 in group I and 2.6 in group II. Studies recommend that resistance patterns against antibiotics must be taken into consideration in the choice of therapy. Nadifloxacin cream is a newer topical fluoroquinolone antibacterial compound with a benzoquinoline skeleton with fluorine at the sixth position and N-hydroxypiperidine at the eighth position. Fluoroquinolones act by inhibiting the formation of supercoiled DNA by DNA gyrase[9]. It has broad-spectrum activity against Gram-positive bacteria, including coagulase-negative Staphylococcus species and Propionibacterium acnes granulosum, as has been demonstrated in previous in vitro infections. This agent is also very effective against Gram-negative bacteria including Pseudomonas aeruginosa and Escherichia coli in in vitro assays[10].

Gilbert et al conducted a study to assess efficacy of Topical 2% mupirocin versus 2% fusidic acid ointment in the treatment of primary and secondary skin infections[11]. He enrolled Thirty-five patients who were treated with mupirocin and 35 patients were treated with fusidic acid three times a day for seven days.

The efficacy of mupirocin, in terms of resolution and improvement of clinical signs and symptoms of infection, as well as of the elimination of infecting organisms, was similar to that of fusidic acid. Of 34 patients(1 could not be evaluated) treated with mupirocin, a clinical cure was achieved in 18, and significant improvement was demonstrated in 15. Similarly, of 35 patients treated with fusidic acid, a clinical cure was achieved in 18 and improvement occurred in 15, Bacteriologie cure rates were 97% (30 of 31 patients evaluated) in the mupirocin-treated group, compared with 87% (27 of 31 patients evaluated) in the fusidic acid-treated group. No side effects were observed in either treatment group. Author concluded that topical 2% mupirocin has little or no potential for irritation, systemic side effects, or cross-resistance with other antibiotics, its efficacy is likely to make this new compound a useful agent for the treatment of superficial skin infections.

Both cellulitis and erysipelas manifest as spreading areas of skin erythema and warmth. Localised infections are often accompanied by lymphangitis and lymphadenopathy. Not infrequently, groin pain and tenderness due to inguinal lymphadenitis will precede the cellulitis. Some patients can be quite unwell with fevers and features of systemic toxicity. Bacteraemia, although uncommon (less than 5%), still occurs[12] Erysipelas involves the upper dermis and superficial lymphatic skin lesions are usually raised with a clear demarcation of infected skin. Classically, erysipelas affects the face, but it can also involve other areas such as the lower limb. It is most commonly caused by Streptococcus pyogenes (group A streptococcus). Cellulitis extends further into the deep dermis and subcutaneous tissue[13]

The limitation of the study is small sample size. Further detailed comparative studies on large number of cases are needed to substantiate these findings.

Conclusion

Authors found that topical 2% mupirocin and topical 2% fusidic acid are well-established in the treatment of uncomplicated bacterial skin infections. Topical mupirocin and topical fusidic acid are equally effective.

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