

ORIGINAL ARTICLE

COMPARATIVE CLINICAL EFFICACY OF CLOXACILLIN PLUS AMPICILLIN VERSUS CO-AMOXICLAV IN CHILDREN WITH MILD IMPETIGO: A COMPARATIVE CLINICAL STUDY AT BAHAWAL VICTORIA HOSPITAL, BAHAWALPUR

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ABSTRACT:

Introduction: Impetigo is a common bacterial infection mainly affecting children. Although mild disease may be self-limiting, appropriate oral antimicrobial treatment is important in particular cases. Cloxacillin plus ampicillin and Co-amoxiclav are used as systemic antibiotic regimens, but local evidence comparing their clinical response in pediatric impetigo is limited.

Objective: This study compared the clinical efficacy of these drugs in children with mild impetigo at Bahawal Victoria Hospital, Bahawalpur.

Methods: A comparative clinical study was conducted in the Skin Outpatient Department of Bahawal Victoria Hospital. A total of 100 children aged 2–5 years with mild impetigo were included and divided into two groups with 50 children in each group. One group received cloxacillin plus ampicillin, while the other received co-amoxiclav. Clinical response was assessed at baseline and after 7 days using clinical signs via Visual Analog Scale assessment. Data were analyzed using SPSS version 25.

Results: At 7-day follow-up, 49 children in the cloxacillin plus ampicillin group and 47 in the co-amoxiclav group were assessed. Complete absence of crusting was observed in 32 (65.3%) children receiving cloxacillin plus ampicillin compared with 40 (85.1%) receiving co-amoxiclav. Clinical improvement, defined as little to complete disappearance of disease signs, occurred in 40 (81.6%) and 46 (97.9%) children, respectively.

Conclusion: Co-amoxiclav demonstrated a significantly higher short-term clinical response than cloxacillin plus ampicillin in children aged 2–5 years with mild impetigo.

Keywords: Ampicillin plus Cloxacillin, Co-amoxiclav, Impetigo

INTRODUCTION:

Impetigo is a common, highly contagious superficial bacterial infection of the skin that predominantly affects children. It involves the epidermis and is characterized by the development of vesicles, pustules, erosions, and the typical honey-colored crusts.¹ Causative organisms of impetigo include *Staph. Aureus*, the leading cause while *Streptococcus* is on the second. Although impetigo is generally a mild and self-limiting condition, appropriate treatment is important because the disease can spread to other areas of the body, transmit to close

contacts, and rarely result in complications.²

The management of impetigo depends on the extent and severity of disease. Localized mild disease may be managed with appropriate topical therapy, whereas systemic antibiotics may be considered in patients with more extensive lesions, bullous disease, systemic symptoms, or increased risk of complications. The choice of antimicrobial agent should take into consideration the likely causative organisms, and clinical severity of the disease. Evidence summarized in the systematic review indicates that topical antibiotics can be effective for limited impetigo with oral antibiotics have an important role in selected clinical situations.³ When systemic therapy is selected, the choice of antibiotic is particularly important in children. Comparative evaluation of

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commonly prescribed oral antibiotic regimens may provide useful information regarding their clinical effectiveness and support more rational treatment decisions in pediatric practice.⁴

Cloxacillin is an anti-staphylococcal penicillin with activity against susceptible strains of *S. aureus*. Ampicillin belongs to extended spectrum penicillin group and is widely active against *Staphylococcus aureus*. The combination of cloxacillin and ampicillin therefore provides exposure to two beta-lactam antibiotics with different antimicrobial characteristics.⁵ Co-amoxiclav, consisting of amoxicillin combined with a β lactamase inhibitor, clavulanic acid, It extends the activity of amoxicillin against many beta-lactamase-producing organisms. These pharmacological differences provide a clinical rationale for comparing the two regimens in children with impetigo.^{6,7}

Despite the frequent occurrence of pediatric impetigo and the widespread use of oral antibiotics in clinical practice, there is limited locally generated evidence comparing the clinical response to different systemic antibiotic regimens in children with mild impetigo in Southern Punjab. The present study was therefore designed to compare the clinical efficacy of co-amoxiclav with cloxacillin plus ampicillin in children aged 2–5 years diagnosed with mild impetigo at Bahawal Victoria Hospital, Bahawalpur. The findings may help determine whether a meaningful difference exists between the two commonly used antibiotic regimens and may contribute to more evidence-based selection of antimicrobial therapy in children of 2-5 year age suffering from impetigo.

METHODS

A comparative clinical study was conducted in the Skin Outpatient Department of Bahawal Victoria Hospital (BVH), Bahawalpur, to compare the clinical

response of two commonly used antibiotic regimens in children with mild impetigo. The study included pediatric patients aged 2–5 years (as it is more common in this age group) who presented to the dermatology outpatient department with clinically diagnosed mild impetigo.⁸ Informed consent was taken from the parents or guardian of the children before enrolling them in the project. Children fulfilling the eligibility criteria were enrolled after appropriate clinical assessment. The study population consisted of 100 children, who were divided into two equal treatment groups, with 50 children in each group.⁹

Clinical assessment was performed before initiation of treatment and again at the 7-day follow-up visit.¹⁰ The primary clinical parameters assessed were the presence or absence of crusting and the overall severity of skin lesions. Disease severity was assessed using a Visual Analog Scale (VAS) before and after treatment. The change in clinical appearance, particularly reduction or disappearance of crusting and other visible signs of impetigo, was also recorded at follow-up. The clinical response was categorized according to the observed improvement in disease manifestations.¹¹ The data was presented in percentages and findings were compared between the cloxacillin plus ampicillin and co-amoxiclav groups using Fisher's exact test in SPSS version 25.

RESULT

A total of 100 children aged 2–5 years with mild impetigo were included in the study. The participants were divided equally into two treatment groups, with 50 children receiving cloxacillin plus ampicillin and 50 receiving co-amoxiclav. In the cloxacillin plus ampicillin group, 7 (14.0%) children were 2 years old, 21 (42.0%) were 3 years old,

15 (30.0%) were 4 years old, and 7 (14.0%) were 5 years old. In comparison, the co-amoxiclav group comprised 20 (40.0%) children aged 2 years, 12 (24.0%) aged 3 years, 7 (14.0%) aged 4 years, and 11 (22.0%) aged 5 years.

At the 7-day follow-up assessment, clinical outcome data were available for 49 children in the cloxacillin plus ampicillin group and 47 children in the co-amoxiclav group. Therefore, one child from the cloxacillin plus ampicillin group and three children from the co-amoxiclav group didn't visit for follow-up assessment. In the cloxacillin plus ampicillin group, 32 of 49 children (65.3%) had complete absence of crusting at the 7-day reassessment. A total of 40 children (81.6%) demonstrated little to complete disappearance of the clinical signs of impetigo, indicating substantial clinical improvement following treatment. However, 7 children (14.3%) showed no satisfactory response to treatment at follow-up. A greater proportion of children receiving co-amoxiclav demonstrated resolution of crusting. Among the 47 children assessed at follow-up, 40 (85.1%) had no further crusting after 7 days of treat

ment. Overall, 46 children (97.9%) showed little to complete disappearance of the clinical signs of impetigo, suggesting marked improvement in the majority of children receiving co-amoxiclav. Only 1 child (2.1%) failed to show an adequate response to treatment. Comparison of the clinical outcomes demonstrated that the proportion of children with complete absence of crusting was higher in the co-amoxiclav group (85.1%) than in the cloxacillin plus ampicillin group (65.3%). Similarly, the proportion showing little to complete disappearance of the signs of impetigo was higher among children treated with co-amoxiclav (97.9%) compared with those receiving cloxacillin plus ampicillin (81.6%). Conversely, treatment failure or lack of satisfactory response was more frequent in the cloxacillin plus ampicillin group (14.3%) than in the co-amoxiclav group (2.1%). At 7 days, clinical response was significantly higher in the co-amoxiclav group than in the cloxacillin plus ampicillin group (97.9% vs. 81.6%; $p=0.0157$), while treatment failure was significantly lower (2.1% vs. 18.4%; $p=0.0157$), as illustrated in Figure 1 and Table 01

Figure 1. Comparison of Clinical Response and Treatment Failure Between the Two Treatment Groups at 7 Days

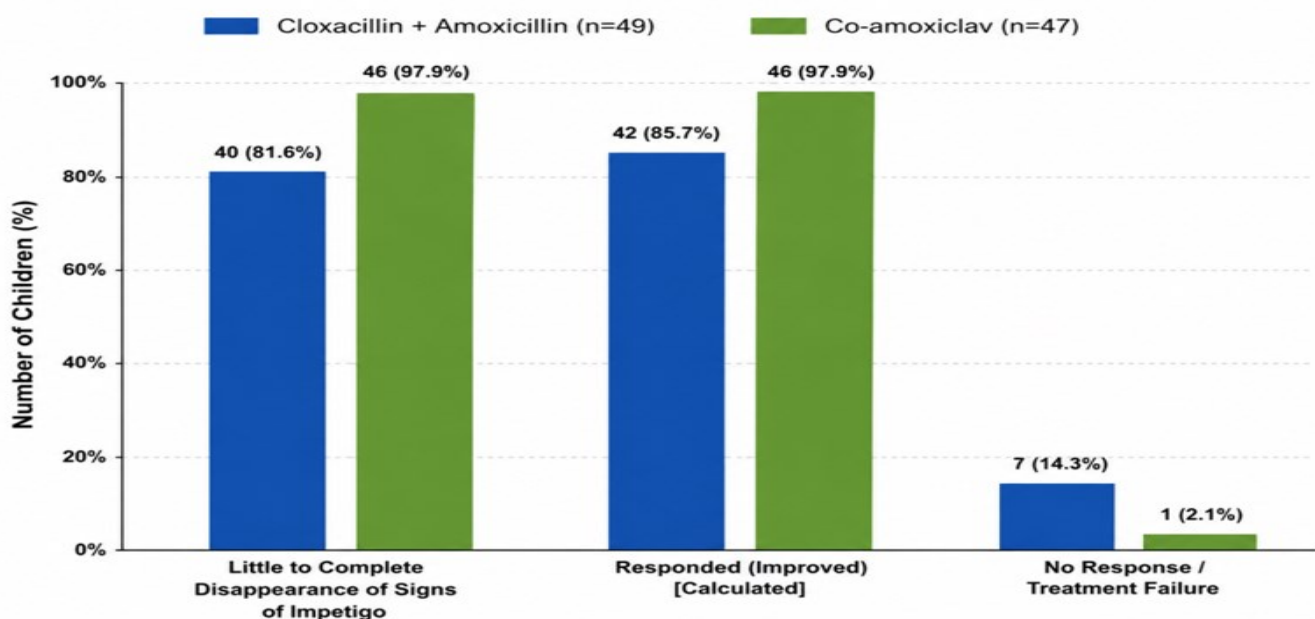


Table 01 Comparison of Clinical Response and Treatment Failure at 7 Days Between the Two Treatment Groups

Outcome at 7 days	Cloxacillin + Ampicillin (n=49)	Co-amoxiclav (n=47)	Fisher's exact p-value
Clinical response	40 (81.6%)	46 (97.9%)	0.0157
No response / treatment failure	9 (18.4%)	1 (2.1%)	0.0157

DISCUSSION

Impetigo is a common skin disorder affecting children. Ampicillin with cloxacillin is one of the commonly used penicillin combination to treat many skin conditions including impetigo.¹² Likewise Coamoxiclav is also a popular choice to treat impetigo approved by multiple guidelines.¹³ The present study compared the short-term clinical efficacy of co-amoxiclav with cloxacillin plus ampicillin in children aged 2–5 years with mild impetigo attending the Skin Outpatient Department of Bahawal Victoria Hospital, Bahawalpur. The main finding was that children receiving co-amoxiclav demonstrated a higher proportion of clinical response at 7 days than those receiving cloxacillin plus ampicillin. Clinical improvement, defined as little to complete disappearance of the clinical signs of impetigo, was observed in 46 of 47 children (97.9%) in the co-amoxiclav group compared with 40 of 49 children (81.6%) in the cloxacillin plus ampicillin group. The difference was statistically significant ($p=0.0157$), suggesting a greater short-term clinical response with co-amoxiclav in the studied population. Our findings are further supported by the study of S. Thangavelu et al., who reported that ampicillin–sulbactam and cloxacillin–gentamicin were effective antibiotic combinations for the treatment of impetigo. Their findings are consistent with our re-

sults, highlighting the effectiveness of appropriate antimicrobial therapy against the common bacterial pathogens responsible for impetigo. This agreement strengthens the evidence supporting rational antibiotic selection for achieving favorable clinical outcomes in impetigo.¹⁴ Research work of Nosheen S also favors that our study drugs are good choices for treating impetigo.¹⁵ But while comparing we found coamoxiclave is better as compared to Ampicillin plus cloxacillin. comparison of ampicillin plus cloxacillin with co-amoxiclave to treat impetigo is relatively uncommon scenario that we found not a single study which compares both two in patients of impetigo that opens the door for further researches to strengthen our findings. However comparison of flucoxacillin with Coamoxiclav also proved s of both parallel effect, a findings that is somewhat not matching our findings and emphasize to initiate further researches on it.¹⁶

Nine of 49 children (18.4%) in the cloxacillin plus ampicillin group were categorized as having no satisfactory response, compared with only 1 of 47 children (2.1%) in the co-amoxiclav group. The difference in treatment response was statistically significant ($p=0.0157$). These findings suggest that, within the limitations of the present study, co-amoxiclav was associated with a lower proportion of children showing inadequate clinical response during the first

t 7 days of treatment. These findings are further supported by the review of K. Jeet, which discussed the antibacterial effects of various antibiotics and emphasized their appropriate selection in accordance with WHO guidelines for antibiotic use.¹⁷

The study also has limitations related to its comparative clinical design. There is no indication in the provided methodology that treatment allocation was randomized or that investigators were blinded to the treatment received. Consequently, differences between groups other than the antibiotic regimen could potentially contribute to the observed outcomes. In addition, the study was conducted at a single tertiary-care hospital, and therefore the findings may not necessarily be generalizable to children attending primary-care facilities or other geographical regions.

Despite these limitations, the study provides useful local clinical evidence regarding the short-term response of pediatric impetigo to the two evaluated regimens. The statistically significant difference in clinical response, together with the higher proportion of complete crusting resolution and lower treatment-failure rate, favors co-amoxiclav within the population studied. Nevertheless, antibiotic selection should remain individualized according to disease severity, clinical indication, antimicrobial susceptibility patterns, and principles of antimicrobial stewardship. Further studies with larger samples, randomized treatment allocation, standardized VAS measurements, microbiological assessment, adverse-effect monitoring, and longer follow-up are recommended to confirm these findings and establish the comparative effectiveness of the two regimens more reliably.

CONCLUSION

Co-amoxiclav demonstrated a significantly higher

clinical response rate than cloxacillin plus ampicillin in children aged 2-5 with mild impetigo at 7 days

DECLARATION OF INTEREST: The authors declare no conflict of interest.

AUTHOR'S CONTRIBUTIONS:

M.F.A: conceptualization of original scientific idea for this project and proofreading of final draft.

M.I.K: Data collection, literature review, and references.

S.N: Data collection, data analysis, and write-up

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