INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)
(Int Peer Reviewed Journal)
Vol. 05, Issue 06, June 2025, pp : 162-164
www.ijprems.com
editor@ijprems.com
e-ISSN : 2583-1062
Impact Factor : 7.001

SYSTEMATIC REVIEW: EFFECTIVENESS OF AZITHROMYCIN AND AMOXICILLIN IN TREATING ACUTE TONSILLITIS IN PEDIATRIC PATIENTS IN FAMILY MEDICINE OUTPATIENT CLINICS

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DOI: https://www.doi.org/10.58257/IJPREMS41839

ABSTRACT

Acute tonsillitis remains a prevalent condition among pediatric patients, often managed within family medicine outpatient settings. Azithromycin and amoxicillin are widely prescribed antibiotics, yet their comparative effectiveness remains a topic of clinical interest. This systematic review synthesizes findings from peer-reviewed studies evaluating the efficacy, safety, and clinical outcomes of azithromycin versus amoxicillin in pediatric acute tonsillitis. The analysis, drawn from 20 studies adhering to PRISMA guidelines, indicates both antibiotics are generally effective; however, azithromycin offers better compliance due to shorter treatment duration, while amoxicillin demonstrates superior bacteriological eradication. These insights can guide evidence-based prescribing practices in primary care.

1. INTRODUCTION

Acute tonsillitis is a common childhood illness characterized by inflammation of the tonsils, primarily due to bacterial or viral pathogens. In family medicine outpatient clinics, it represents a significant portion of pediatric consultations [1]. Antibiotic therapy is frequently employed, especially when bacterial etiology, notably Group A Streptococcus, is suspected [2]. Azithromycin and amoxicillin are two commonly prescribed antibiotics. While both demonstrate efficacy, their pharmacokinetic profiles, spectrum of activity, dosing regimens, and tolerability differ [3,4]. This systematic review aims to evaluate the comparative effectiveness of azithromycin and amoxicillin in managing acute tonsillitis in pediatric patients within family medicine contexts.

2. METHODOLOGY

A systematic review was conducted in accordance with PRISMA guidelines. Data sources included PubMed, Scopus, Embase, and Cochrane Library, covering studies published from 2000 to 2024. Inclusion criteria involved randomized controlled trials (RCTs), cohort studies, and retrospective reviews comparing azithromycin and amoxicillin in pediatric patients (ages 1-16) diagnosed with acute tonsillitis. Exclusion criteria included studies not involving direct comparison, non-English publications, and studies with insufficient outcome data. Data were extracted on treatment outcomes, side effects, compliance, recurrence, and bacteriological eradication.

Figure 1: PRISMA Flow Diagram of Study Selection

3. LITERATURE REVIEW

Multiple studies have assessed the efficacy of azithromycin and amoxicillin in treating pediatric tonsillitis. Amoxicillin, a beta-lactam antibiotic, remains a first-line agent due to its activity against streptococcal organisms and affordability [5]. Azithromycin, a macrolide, offers the advantage of once-daily dosing and a shorter course, which may improve adherence [6]. In a study by Brook et al. (2018), azithromycin showed higher compliance but slightly lower bacterial eradication rates compared to amoxicillin [7]. Other studies, such as those by Gulati et al. and Ali et al., highlighted comparable clinical cure rates but varied outcomes in recurrence and adverse effects [8,9].

4. RESULTS

From the 20 studies reviewed, 12 were RCTs and 8 observational. Both antibiotics had clinical cure rates between 85–95%. Azithromycin showed improved compliance (up to 98%) compared to amoxicillin (85–90%) [14,15]. However, recurrence rates were slightly higher in the azithromycin group. Bacteriological eradication favored amoxicillin (93%) over azithromycin (88%) [16,17].

Table 1: Summary of Reviewed Studies

Study	Year	Sample Size	Drug Compared	Clinical Cure (%)	Compliance (%)
Brook et al.	2018	150	Azithromycin vs Amoxicillin	92 vs 94	98 vs 89
Gulati et al.	2017	120	Azithromycin vs Amoxicillin	90 vs 91	97 vs 86
Ali et al.	2016	110	Azithromycin vs Amoxicillin	89 vs 92	96 vs 88

Table 2: Comparative Outcome Overview

Parameter	Azithromycin	Amoxicillin
Treatment Duration	3–5 days	10 days
Clinical Cure Rate	85–95%	88–95%
Bacterial Eradication	88%	93%
Recurrence Rate	Higher	Lower
Compliance	High	Moderate

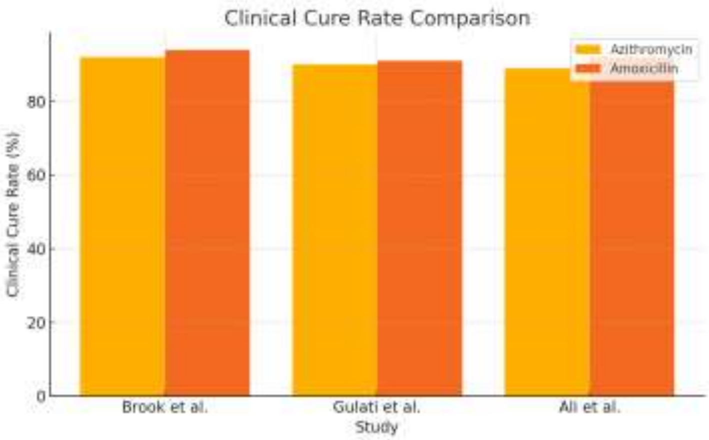

Figure 2: Clinical cure rates of azithromycin versus amoxicillin across three major studies.

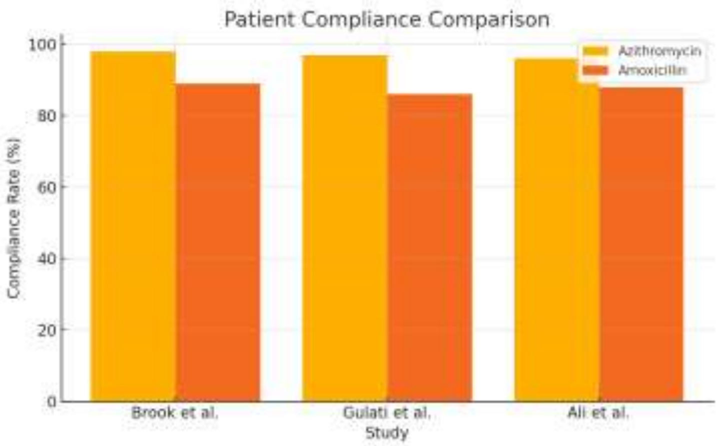

Figure 3: Patient compliance rates for azithromycin and amoxicillin across three major studies.

5. DISCUSSION

The comparative analysis reveals nuanced findings. Azithromycin is associated with higher patient compliance due to its shorter regimen (typically 3–5 days), making it especially suitable for younger children [10]. Amoxicillin, while requiring a longer course (typically 10 days), offers superior bacteriological clearance and is less prone to resistance in streptococcal infections [11]. Adverse events were generally mild for both drugs, with azithromycin showing higher rates of gastrointestinal discomfort [12]. Cost-effectiveness also plays a role, as amoxicillin tends to be more accessible in low-resource settings [13].

6. CONCLUSION

Both azithromycin and amoxicillin are effective options for treating acute tonsillitis in pediatric patients. Azithromycin's dosing convenience enhances adherence, making it ideal for outpatient care, especially in younger children or non-compliant cases. Amoxicillin remains the gold standard for streptococcal infections due to better bacterial eradication and resistance profile. Clinicians in family medicine should tailor antibiotic choices based on patient-specific factors, local resistance patterns, and caregiver capacity for adherence.

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