



A global comparative study : Tympanostomy tube placement versus medical management in pediatric recurrent acute otitis media

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ABSTRACT

Objective:

To compare the efficacy of treatment in children diagnosed with recurrent acute otitis media (AOM) with medical management in Thailand versus tympanostomy tube placement (TT) in the United States.

Methods:

A retrospective cohort study was conducted to identify children (0-18 years old) diagnosed with recurrent AOM (> 3 episodes of AOM in 6 months or > 4 episodes in 12 months with at least 1 episode within the last 6 months) who received medical management in Thailand versus those who underwent TT placement in the United States. The primary outcome was the rate of AOM per year post-intervention. Additional outcomes measured included the number of episodes of AOM requiring oral antibiotics and the failure rate of treatment.

Results:

Data from a total of 40 Thai patients and 32 American patients with similar ages (median 3.83 vs 2.46, p-value 0.262) were reviewed from January 2012 to December 2023. The median follow-up period was 21 months. The median (interquartile range/IQR) rate of AOM per year and the number of episodes of AOM in the two groups were similar. In particular, the rate of AOM per year was 0.6(0-1.05) and 0.6(0-1.15) (p-value 0.831) and the number of episodes of AOM that required oral antibiotics was 1 (0-2) and 1 (0-1) (p-value 0.239) in the medical management and TT group respectively. The failure rate was lower in the TT group but not statistically significant (6.25 vs 20 %, p-value 0.169). Separate subgroup analyses based on age groups (above and below three years old) and treatment types in the medical group (amoxicillin and amoxicillin-clavulanic acid) were also completed. Our findings indicate that there are no statistically significant differences in the parameters of AOM rate per year, the number of AOM episodes, or the failure rate for either treatment within each age group.

INTRODUCTION

Otitis media remains a common ailment in the pediatric population, causing an expenditure of over five billion dollars in the United States alone. [1] Recurrent otitis media is defined as more than three episodes of acute otitis media (AOM) in six months or four episodes of AOM in 12 months with at least one episode in the last six months.

The current official recommendation guidelines for TT placement in case of recurrent AOM lack uniformity across the globe [2-5], which may potentially cause confusion among physicians when determining the necessity of this treatment option. Tympanostomy tubes remain the most common surgical procedure in children in the United States, while in Thailand there is no guideline recommending its use for recurrent acute otitis media nor is the a high volume of tympanostomy tubes generally down. [3]

This study aims to compare the outcome of recurrent acute otitis media in children in those who underwent tympanostomy tube placement versus those with similar clinical and demographic characteristics treated with continued medical management.

MATERIAL AND METHOD

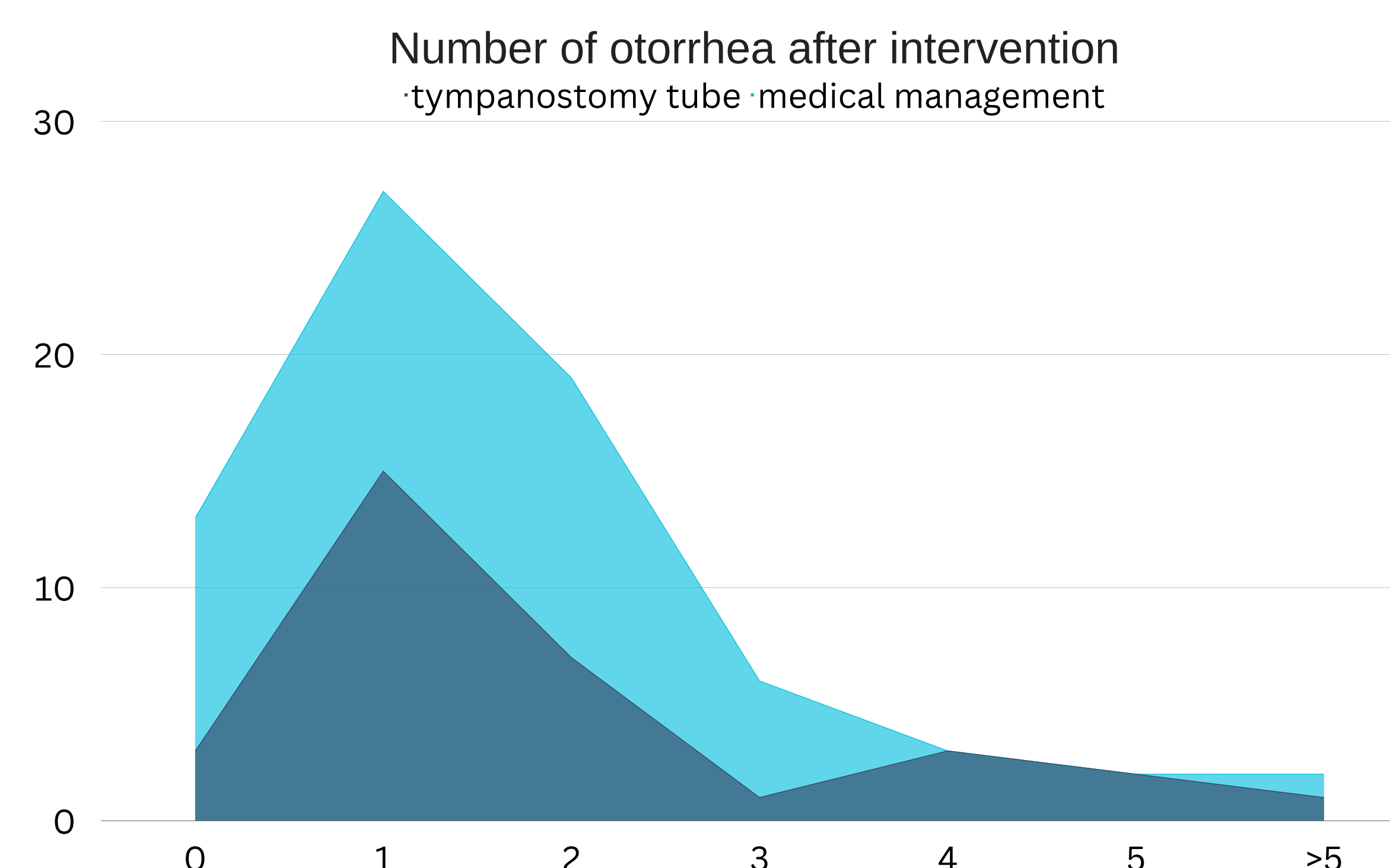
International retrospective cohort study was conducted in Thailand and US.

The study was included children whom diagnosed recurrent AOM between January 1, 2012 to December 31, 2023 40 of which were treated by antibiotics (medical management) in Thammasat University Hospital, Thailand, and 32 of which were treated by tympanostomy tube placement in University of California-Davis, United States of America.

The demographic data of patients were obtained from electronic medical records.

Fisher's exact test was used for nominal variables. Mann-Whitney U test were used to compare non-normally distributed ordinal data, using p-value < 0.05 as level of statistical significance.

RESULTS

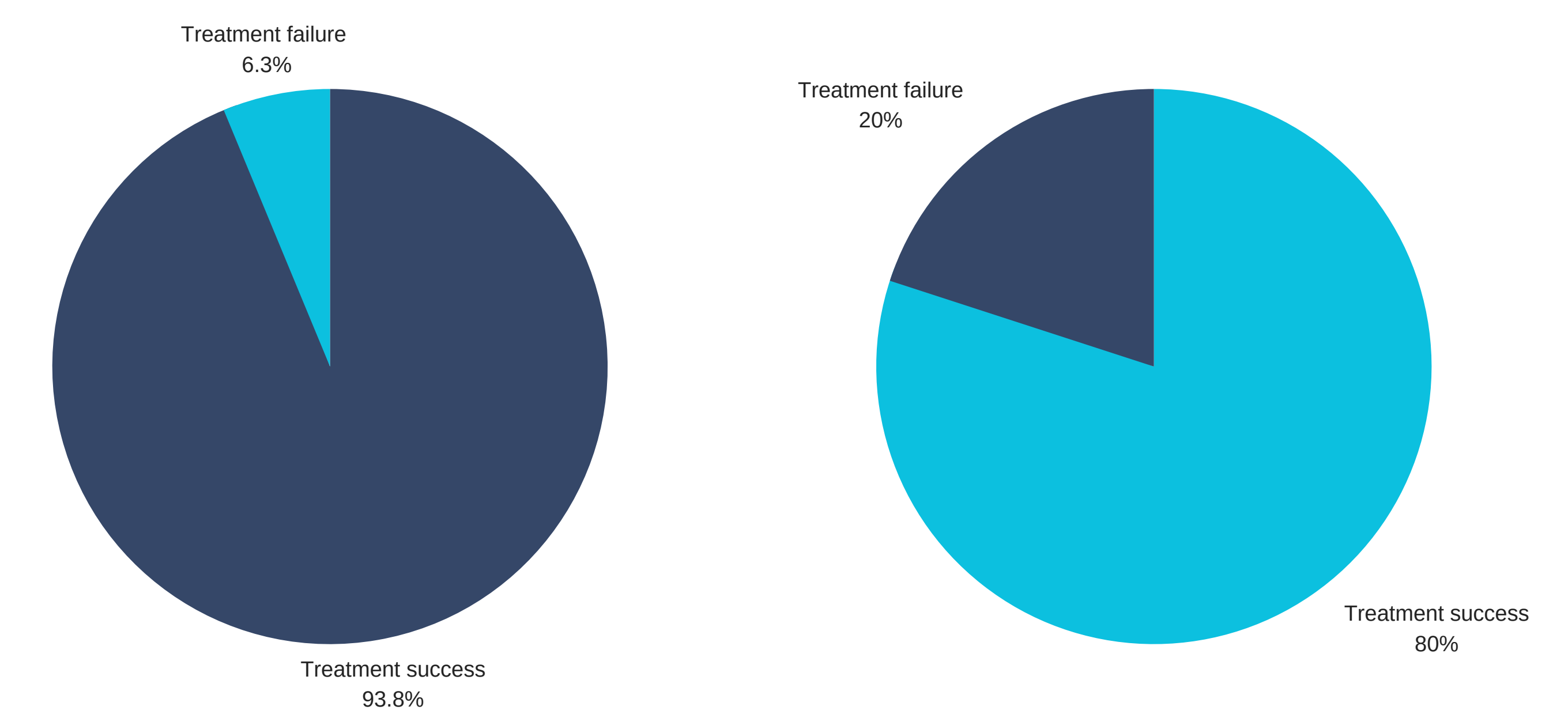


Rate and number AOM after interventions

	Tympanostomy tube	Medical management	p value
Rate of AOM	0.6(0-1.15)	0.6(0-1.05)	0.831
Number of AOM	1(0-1)	1(0-2)	0.239

* Presented with median (interquartile range)

Failure rate of each treatment



Tympanostomy tube group

Medical management group

DISCUSSION

Our study aimed to assess post-treatment acute otitis media rates. Our results aligned with Casselbrant et al.[6] and Alejandro Hoberman et al. [7]. Casselbrant et al. compared amoxicillin prophylaxis with tube placement, finding no significant difference in rate of otitis media episodes. Our outcomes matched Hoberman et al.'s trial on tube placement vs. antibiotics for pediatric recurrent otitis media. Our antibiotic-treated group showed a consistent higher treatment failure rate (20 vs. 6.25 %) in line with earlier research [6-8]. Although not statistically significant, the trend suggests antibiotics might increase treatment failure likelihood. Age stratification didn't yield significance. Further analysis of medical-managed patients demonstrated no significant difference in outcomes with amoxicillin/clavulanic acid treatment. These collective findings strengthen the evidence for similar efficacy between tube placement and antibiotics in managing recurrent otitis media in pediatric patients. Antibiotics could be a reasonable approach for pediatric recurrent acute otitis media in resource-limited settings.

CONCLUSION

This study found that the treatment of recurrent otitis media with antibiotic therapy did not show any significant difference compared to the group treated with tympanostomy tube placement in terms of the rate of AOM post-treatment, number of AOM requiring oral antibiotics, and failure rate. Therefore, antibiotic therapy may be considered as an alternative treatment option in settings with limited treatment resources.

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