**To treat or not to treat:**

**Management of non-Group A Streptococcal pharyngitis**

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 Sore throat is one of the most commonly cited reasons for seeking medical attention, accounting for approximately 11-18 million healthcare visits annually1. In determining the cause of infectious pharyngitis we often divide patients into those with viral pharyngitis versus those with Group A streptococcal (GAS) pharyngitis, basing management plans on this diagnosis. Clinical experience tells us that non-Group A streptococcus (non-GAS) may also cause pharyngitis, yet no consensus exists among healthcare professionals regarding the role and need for treatment of non-GAS in pharyngitis. Supporting evidence of non-GAS as a true pathogen includes case reports describing its role in neonatal sepsis, toxic shock syndrome, skin infection, osteomyelitis, meningitis, and endocarditis2. Furthermore, certain species within non-GAS are known to possess the same virulence factors as GAS3. Of note, there are no reported cases of rheumatic heart disease following non-GAS infection. We sought to determine whether non-GAS acts as normal oral flora or true pathogen in pharyngitis through a critical analysis of the literature.

 A review of the literature was conducted to answer the following PICO question: “Among pediatric patients, does non-Group A streptococcal growth on culture in those with symptoms versus those with no symptoms represent true infection?” The review involved searching Pubmed MeSH with the heading “Pharyngitis” and sub-section searches for “Non Group A,” “Group C streptococcus,” “Group G streptococcus,” or the names of individual species within non-Group A streptococcus. Four studies were included in and critically analyzed for the final review. Three studies were cross-sectional analyses, and one was a retrospective case-control study. No randomized-control trials of non-GAS treatment versus placebo were identified. Most studies included both adult and pediatric patients, limiting the applicability of these results.

The studies uniformly found the incidence of non-GAS in pre-adolescent patients to be very low, with Zaoutis4 finding an incidence of 3% among patients with pharyngitis, and 1.5% among healthy controls. A similar study conducted by Tartof3 in Brazilian slums found that healthy patients were more likely to have non-GAS on throat culture compared to patients with pharyngitis, implying that non-GAS is unlikely to be a pathogen in these young patients. These studies found no statistically significant difference in symptoms between pre-adolescent patients with and without non-GAS, again suggesting that the bacteria exist as part of the normal oral flora in this population.

Non-GAS was more likely to be pathogenic in adolescent and adult patients. Little5 found that adolescents and young adult patients with pharyngitis have a greater incidence of non-GAS on throat culture, reporting non-GAS growth (all species) in 33% of adult patients with pharyngitis. Additionally, Tiemstra1 found that patients with non-GAS had an odds ratio of 6.8 (95% CI 4.0-11.8) of having 4 or more symptoms associated with streptococcal pharyngitis compared to those with negative culture. These studies indicate that non-GAS is identified more frequently and is more likely to act as a true pathogen in adolescent and adult patients. Based on these findings, one should consider antibiotic treatment of adolescent and young adult patients presenting with typical signs and symptoms of streptococcal pharyngitis who are found to have non-GAS on throat culture, with the aim of reducing symptom duration and infectivity.

References

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