

## **Brief Report: Urgent Care of Pharyngotonsillitis in Israel: Undertested, Overtreated**

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### **Abstract**

*Objective:* To evaluate current testing/treatment practices for pharyngolaryngitis in children in an urgent care center.

*Methods:* The electronic database of an urgent-care center in Jerusalem was searched for all children with a tentative diagnosis of pharyngolaryngitis. A total of 554 records were randomly selected for review. The data extracted included performance of a throat culture (yes/no), performance of a culture at the center (for which results were available; yes/no), culture findings, administration of antibiotics, and timing and type of antibiotic treatment.

*Results:* Antibiotics were initiated presumptively in 94% of cases. Only 31 patients (6.3%) were told to wait for the culture results before beginning treatment. Fourteen percent of the patients who started antibiotic treatment did not undergo a culture test at all. Of the 274 cultures performed on site, only 32% were positive for group A *Streptococcus*. Amoxicillin was the most commonly prescribed medication. Penicillin was often prescribed at higher dosages than recommended by clinical practice guidelines.

*Conclusions:* Contrary to clinical practice guidelines, the vast majority of children presenting to this urgent care center with symptoms of pharyngolaryngitis are presumptively treated with antibiotics, often without referral for a confirmatory culture. The low rate of positive cultures found, together with the known risk of overuse of antibiotics, should prompt further studies in other urgent and primary care settings

**MeSH Words:** Urgent care, pharyngitis, tonsillitis, group A streptococcus

### **Introduction**

Fever accompanied by sore or red throat is a common complaint in pediatric medical practice. Generally, the main concern of the attending physician is to rule out acute pharyngotonsillitis due to group A *Streptococcus* (GAS) infection, which is associated with acute morbidity and

rheumatic fever [1,2]. The American Academy of Pediatrics [3] and the Infectious Disease Society of America [4] both recommend laboratory confirmation of GAS for a diagnosis of pharyngotonsillitis because the accurate differentiation of viral from GAS pharyngitis is not clinically possible [2]. Nevertheless, studies in the United States show that patients continue

to be treated without testing and that the number of patients treated for pharyngolaryngitis is significantly higher than the documented rate of GAS-positive cultures [5,6]. Our literature review yielded one study of the theoretical management of pharyngotonsillitis by physicians in Israel [7], but no reports of actual practice. The aim of this study was to quantitate the testing and treatment practices in one urgent-care center in Israel.

## Materials and Methods

### *Setting*

TEREM Immediate Medical Care is a privately-owned company that establishes and manages free-standing urgent-care clinics. TEREM's central clinic, located near the entrance to Jerusalem, is open 24 hours per day, 365 days per year. Laboratory services are provided during all hours of operation.

### *Data source*

TEREM has developed an in-house electronic database in which physicians are required to record all visits, diagnoses, laboratory tests, and treatments. Demographic, clinical, and laboratory data for individual patients can be retrieved through the application's data warehouse. On weekdays, throat swabs are forwarded for culture to the laboratories of the patient's health management organization (HMO). In Israel, all citizens are required by law to belong to one of the country's 4 HMOs. On weekends, the cultures are plated in TEREM and read the next day by trained laboratory personnel.

### *Study population*

The records of all consecutive patients less than 18 years old, with a diagnosis of pharyngitis or tonsillitis, who presented to TEREM during the 2006 calendar year, were culled from the database (n=5411; 2445 pharyngitis and 2966 tonsillitis). A random sample of these charts (n=554) was reviewed for the present study. Data extracted in each case from TEREM's data warehouse included patient age, performance of a throat culture (yes/no), performance of the culture at TEREM (for which the results were available; yes/no), and findings. Each selected chart (which is scanned into the database) was

reviewed for administration of treatment and timing and type of treatment. Patients with an additional infectious diagnosis and patients taking antibiotics at the time of presentation were excluded.

As the study was based on aggregate, anonymous data gathered in the process of quality assurance, no formal ethics committee approval was needed.

## Results

Forty children were excluded from the analysis because of a concomitant infectious disease (e.g. pneumonia, otitis media) (n=20) or current antibiotic treatment (n=20); the remaining 487 patients constituted the study group.

Mean age of the patients was 9.3 years (SD=3.9, range=1-18 years). A total of 394 cultures were performed: 120 by the patients' HMO and 274 at TEREM (for which we had the results). Thirty-two percent of the TEREM cultures grew GAS.

### *Initiation of antibiotics*

Antibiotics were initiated presumptively in 457 cases (94%); only 31 patients (6.3%) were told to wait for the culture results before starting treatment. Of those who were started on antibiotics, 93 (14%) did not undergo a culture study at all.

### *Choice of antibiotics*

Amoxicillin was the most commonly prescribed medication (52%), followed by penicillin (30%). Thirty seven patients received a penicillin dose of 1000 twice daily, which exceeds the maximum dose recommended by the American Academy of Pediatrics. Ten patients were treated with a first-generation cephalosporin and 23 with macrolides, although in only 4 of these cases was a penicillin allergy documented on the chart. Thirty-nine patients were treated with broad-spectrum antibiotics (amoxicillin/clavulanic acid or cefuroxime).

## Discussion

This study shows that in the setting of an Israeli urgent-care center, a large percentage of children are being presumptively treated with antibiotics for pharyngotonsillitis. Similar findings were

reported in the United States [5,6,8,9]. We assume that this practice is at least partly due to the difficulty of following patients in urgent-care settings, such as emergency departments, compared to primary care. However, given the known risk of unnecessary antibiotic use, and the efforts being made to curb it, the present preliminary study raises major concerns. The importance of the evidence-based approach, i.e., waiting for the culture results before treating, is highlighted by our low (30%) rate of positive cultures, which indicates that most children who are tested do not have a GAS infection. It is also supported by previous reports of a relatively low clinical significance of treating GAS infection in terms of the disease course [10] and the finding that treatment within 9 days of onset is sufficient to prevent rheumatic fever [2]. The failure to perform a culture at all is additionally disadvantageous because, if treatment fails, there is no way of assuring that the diagnosis was correct in the first place.

Current guidelines recommend relatively low doses of penicillin, namely, 250 mg bid or tid for children weighing up to 27 kg and 500 mg bid and tid for older adolescents and adults [2]. However, our findings show that penicillin is often prescribed in much higher doses. Amoxicillin is used more often than penicillin in our clinic, most likely because of a higher perceived compliance owing to its better taste. Interestingly, data indicate that once-daily dosing is efficacious for amoxicillin [2], but this schedule was never prescribed. Although the rate of inappropriate use of wide-spectrum antibiotics was low in our series, this phenomenon should be addressed as well.

### Conclusions

At the TEREM Immediate Medical Care facility, the vast majority of pharyngotonsillitis cases are treated immediately, without waiting for the culture results. Furthermore, not all children started on antibiotics undergo a confirmatory test. These findings warrant further studies in other urgent-care centers and departments. The enforcement of an evidence-based approach to pharyngotonsillitis should be targeted as part of the global effort to reduce unnecessary antibiotic treatment.

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