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A Case of Antibiotic Overuse

Story From the Front-Lines:

A healthy woman in her 30s presented to an urgent care center for evaluation of acute pharyngitis. She was planning to travel to California and wanted to be treated so as to not be sick while traveling. Rapid strep testing was obtained and was negative though a course of Amoxicillin was provided for empiric treatment of pharyngitis. She subsequently received a second course of antibiotics after presenting again for persistent symptoms. The patient took the antibiotics as they were prescribed but while she was still taking the antibiotic she developed a rash on her legs bilaterally.

The rash was non-blanching and petechial in appearance and extended up into her thighs. She was ultimately admitted to the hospital for evaluation and treatment of the rash. Her rash was suggestive of leukocytoclastic vasculitis likely triggered by exposure to amoxicillin.

Teachable Moment:

In this case the patient received a prescription for antibiotics despite having had negative testing for Streptococcal pharyngitis. Although the suspected vasculitis in this case was not confirmed to be the result of antibiotic use, it was temporally associated and highly likely.

Upper respiratory infections including pharyngitis are common complaints in patients who present for care in the outpatient setting. In clinical guidelines published by the American College of Physicians in 2016 the authors outline that in the case of pharyngitis the most common causative agent remains viral, rather than bacterial with an estimated <15% of cases of pharyngitis being caused by non-viral agents³. Despite this, more than 60% of adults who present with symptoms of pharyngitis receive a prescription for antibiotics³. Given the similar presentations of both viral pharyngitis and pharyngitis caused by group A streptococcus it can be challenging for a clinician to ascertain the appropriate diagnosis and recommend the appropriate therapy.

A variety of strategies have been proposed in an effort to reduce the prescription of unnecessary antibiotics. These strategies include testing all-comers who present with sore throat with rapid strep and subsequent culture, using a clinical scoring algorithm to stratify those to test and those to treat empirically and even testing only children and not testing adults⁴. The use of a clinical scoring system such as the Centor criteria is a central feature in most recommended testing algorithms⁴. The Centor criteria were developed in the 1980s as the result of a study which examined the presenting complaints of patients presenting with pharyngitis to determine which complaints were most likely to be associated with Streptococcal pharyngitis¹. The study identified four clinical criteria – the presence of tonsillar exudates, tender cervical adenopathy, fever and absence of cough – as symptoms more commonly seen with Streptococcal disease^{1,2}. However, these clinical risk estimates still have limited specificity as having all four of the Centor criteria equates to a likelihood of around 50% for having a positive Streptococcal culture^{1,2}.

A recommended algorithm for evaluating and determining the need for treatment with antibiotics for the treatment of pharyngitis is to use the modified Centor criteria to identify individuals who should undergo testing for Streptococcus and only provide treatment with antibiotics if testing is positive^{3,4}. An alternative

strategy is to empirically treat those with high scores by Centor criteria, testing those with intermediate scores (2-3) and not testing or treating those individuals with low scores^{3,4}.

Ultimately it is important to remember that antibiotics are not benign medications and have not-insignificant risks of unintended consequences. The side effects of using antibiotics can range from as minor as a rash to contributing to the development of antibiotic resistance to *Clostridium difficile* infections to life threatening reactions such as Stevens Johnson Syndrome or anaphylaxis³. Therefore before providing our patients with antibiotics for treatment of pharyngitis we should utilize clinical criteria such as the Centor criteria and also Streptococcal antigen testing and culture to confirm that our treatment is likely to provide benefit and avoid antibiotics when the likelihood of streptococcal disease is low, including in the setting of negative testing, to reduce the risks of unnecessary antibiotics for our patients.

References:

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