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TECHNICAL BULLETIN: Pharyngitis *Plus*

The Pharyngitis *Plus* Panel will include the targets present on the standard pharyngitis panel, as well as bacterial targets that may be the cause of pharyngitis in specific patient populations. Acute pharyngitis is one of the most common illnesses reported in the outpatient setting. Although viruses predominate as the cause of pharyngitis, there is a significant amount of overlap between signs and symptoms of both viral and bacterial causes in all patient groups. Consequently, the clinician's ability to identify bacterial versus viral etiology based upon clinical grounds is unreliable.[1] Viral-bacterial synergy has been clearly implicated in more problematic respiratory infections that include otitis media, acute and chronic sinusitis, as well as, complex pneumonia.[2]

When patients present with an acute sore throat, the typical approach is to exclude Group A beta-hemolytic streptococci in the 5 to 15 year old group. Recent research suggests that the bacterial causes in the 15-30 years of age include *Fusobacterium necrophorum*, *Arcanobacterium haemolyticum*, and *Streptococcus dysgalactiae*.[3] However, there is often overlap of prevalence in other age groups.

I. *Fusobacterium necrophorum*

A. *F. necrophorum* is a Gram-negative facultative anaerobe that causes endemic pharyngitis and has been increasing in frequency within the 15-30 year old age group. *Fusobacterium* pharyngitis has the same clinical presentation as Group A streptococcal pharyngitis in the early stages. As the Centor score (1 point each for tonsillar exudates, swollen tender anterior cervical adenopathy, fever history and lack of a cough) increases, the proportion of patients having *Fusobacterium* pharyngitis increases (see Figure 1).[3]

B. The adolescent/young adult age group has the highest incidence of peritonsillar abscesses and *Fusobacterium necrophorum* represents the most common organism recovered in the 15-30 year old age group.[3]

C. *Fusobacterium* causes at least 80% of the Lemierre's syndrome. This devastating disease follows the onset of acute pharyngitis. Most patients have worsening symptoms for 4-5 days at which time they develop rigors and unilateral neck swelling. This syndrome has a mortality rate of approximately 5% and significant morbidity for those that survive. The diagnosis is usually made in patients with a typical presentation and positive blood cultures. Many patients require intensive care and a long course of antibiotics.[3]

II. *Arcanobacterium haemolyticum*

A. *A. haemolyticum* is typically associated with upper respiratory infections that include pharyngitis and/or tonsillitis. It is an organism that is associated with recurrent throat infections and the presentation is indistinguishable from that caused by Group A strep. The typical pattern may range from a mild respiratory illness to that often associated with diphtheria-like disease. Like *F. necrophorum* listed above, the illness is commonly seen in adolescents and young adults with symptoms of sore throat.[4]

B. *A. haemolyticum* is a Gram-positive rod-shaped organism that is often missed in routine culture given that the hemolytic pattern (necessary to differentiate the colony from other commensals in culture) is best observed on media that contains human or horse blood. Most microbiology laboratories use sheep blood agar as a part of their routine plating protocol. As a result, this organism is often missed.[4]

C. Complex infections with *A. haemolyticum* include its association with Lemierre's disease as well, either alone or in combination with *F. necrophorum*. It has been implicated in systemic and deep-seated infections that include endocarditis, sepsis, osteomyelitis, meningitis, brain abscess, and pneumonia. Patients with the more severe manifestations described are often associated with waning immuno-competence (usually malignancy).[5]

III. Group C and G Streptococci

A. Literature suggests that isolation rates for both C and G streptococci may be higher in older children and adolescents. There are large type colonies (considered pathogenic) and small type colonies (considered non-pathogenic). This colonial variance (along with the expression of hemolysins) poses problems with identification in routine culture.[6]

B. Although both of these organisms are associated with well-documented epidemics of acute pharyngitis in children and young adults, there is still uncertainty about the role that each of these organisms play in the pathogenesis of pharyngitis. Both C and G streptococci share virulence factors and produce hemolysins, extracellular enzymes, and M-proteins similar to those produced by Group A streptococci.[6]

C. Both C and G streptococci have been implicated in rheumatic fever, glomerulonephritis, and skin infections (due to the similarity of M-proteins with the Group A strep strain).[6]

Treatment of acute pharyngitis should be based upon the etiologic agent identified. Although most cases of pharyngitis in children and adults are caused by viruses, the initial distinction between viral and bacterial causes is important. Antibiotic coverage is only required for bacterial causes and supportive therapies for viral pharyngitis that include oral rinses and sprays have been shown to reduce the severity and duration of symptoms.[7]

Antibiotic regimens for the treatment of bacterial pharyngitis focus on Group A strep and as we have suggested in this bulletin, treatment can vary depending upon the etiological agent identified. In particular, treatment regimens for pharyngitis caused by *Fusobacterium necrophorum* should consider clindamycin and infections caused by *Arcanobacterium haemolyticum* may resolve quicker when an aminoglycoside is part of the treatment protocol.[5, 7]

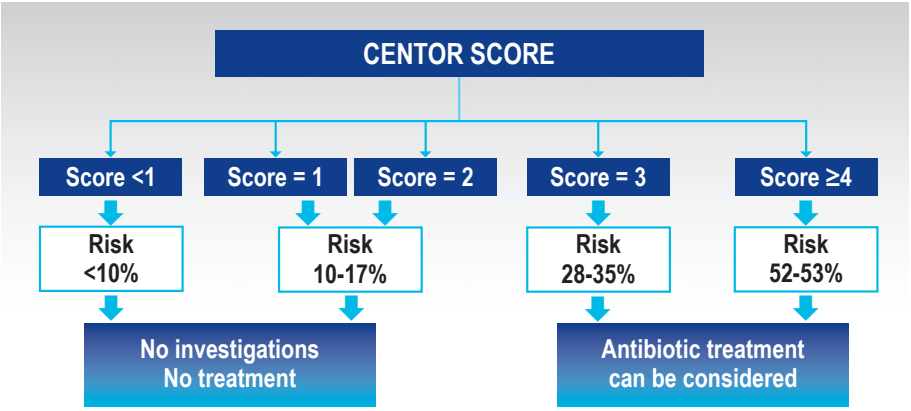

Figure 1. Centor Scoring Criteria (1 point given for each of the following symptoms: absence of cough, swollen and tender anterior cervical nodes, temperature greater than 38 Celsius, and tonsillar exudate or swelling).

Bibliography:

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