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Please read this bit first

The HPCSA and the Med Tech Society have confirmed that this clinical case study, plus your routine review of your EQA reports from Thistle QA, should be documented as a "Journal Club" activity. This means that you must record those attending for CEU purposes. Thistle will **not** issue a certificate to cover these activities, nor send out "correct" answers to the CEU questions at the end of this case study.

The Thistle QA CEU No is: **MT00025.**

Each attendee should claim **THREE** CEU points for completing this Quality Control Journal Club exercise, and retain a copy of the relevant Thistle QA Participation Certificate as proof of registration on a Thistle QA EQA.

Cycle 20 Organism 2

The causative organism was Streptococcus pyogenes.

Streptococcus pyogenes (Group A streptococcus GAS, beta-haemolytic streptococcus group A, Lancefield group A streptococcus) is a Gram-positive, non-motile, coccus that occurs in chains or in pairs of cells. The metabolism of *S. pyogenes* is fermentative, catalase negative, facultative anaerobe, and requires enriched medium containing blood in order to grow. They exhibit beta (clear) haemolysis on blood agar, bacitracin susceptible and PYR positive.

S. pyogenes is one of the most frequent pathogens of humans. It is estimated that 5 – 15% of normal individuals harbor the bacterium, usually in the respiratory tract, without signs of disease.

In the last century, infections caused by *S. pyogenes* claimed the live especially since the organism was the most important cause of puerperal fever (sepsis after child birth). Scarlet fever was formally a severe complication of a streptococcal infection, but now, because of antibiotic therapy, it is little more than a pharyngitis accompanied by a rash. Similarly, erysipelas is less common today.

Acute *S. pyogenes* infections may present as pharyngitis, scarlet fever, impetigo or cellulites. Invasive, toxigenic infections can result in necrotizing fasciitis, myositis and streptococcal toxic shock syndrome. Patients may also develop immune-mediated post-streptococcal sequelae such as acute rheumatic fever and acute glomerulonephritis, following acute infections caused by *S. pyogenes*.

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S. pyogenes produces a wide array of virulence factors. These include:

a.) M protein, fibronectin-binding protein (protein F) and lipoteichoic acid for adherence.
b.) Hyaloronic acid capsule as an immunological disguise and inhibit phagocytosis.
c.) Invasins such as streptokinase, streptodomase (DNase), hyaluronidase, and streptolysins.
d.) Exotoxins, such as erythrogenic toxin which causes the rash of scarlet fever and systemic toxic shock syndrome.

Penicillin is still effective in the treatment of *S. pyogenes* infections. It is important to identify and treat these infections in order to prevent sequelae. Other beta-lactam antibiotics can be used as well as the macrolides. Some countries have macrolide resistant strains of *S. pyogenes.*

Questions

1. How will you identify a *S. pyogenes*?
2. What types of infections are caused by *S. pyogenes*?
3. Why is it important to treat *S. pyogenes* infections?