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Group A and B Streptococci

Streptococci are Gram-positive cocci that grow in chains. Group A and B streptococci are two groups of beta-haemolytic streptococci. Group A streptococci are *Streptococcus pyogenes*, and Group B are *Streptococcus agalactiae*. Both may cause invasive disease[1].

Group A

Group A streptococci (GAS) are a cause of many infectious diseases both invasive and non-invasive, and may also asymptomatically colonise the nose, throat, vagina and rectum[2]. Carriage in the throat is common[3] and may follow from non-eradication of bacteria after infection[4].

Over one third of invasive GAS diseases are skin and soft tissue infections, the most severe being necrotizing fasciitis. Bacteraemia without identified focus is the second most common manifestation of severe GAS disease. GAS can be isolated from the blood in over 70% of invasive GAS infection[5,6,7].

GAS meningitis is uncommon, with 50% of cases occurring in neonates. It may spread from a non-invasive infection such as otitis media but often has no obvious point of entry[8].

67% of all patients with invasive GAS disease have an underlying condition[5]. It may also affect pregnant and postpartum women. The infection may take many forms including bacteraemia, soft tissue infection and streptococcal toxic shock syndrome (STSS)[9].

Group B

Group B streptococci (GBS) are common commensal bacteria in the vagina, cervix, rectum, perianal area, urethra and may also colonise the skin and pharynx[10].

GBS are the leading cause of neonatal meningitis in the UK, accounting for 42-48% of culture-positive cases[11,12]. Neonatal GBS infection may also present as sepsis, pneumonia or focal infection. Early infections are more likely to present as sepsis or pneumonia[10]. Early infection is most often caused by vertical transmission of commensal GBS from the mother. However, most cases are late onset[11].

GBS may also cause amniotic and endometrial infection in pregnant and postpartum women, which may then cause sepsis. Rarely, this may lead to meningitis[13]. GBS amniotic infection may lead to intrauterine foetal death[8].

GBS infections in non-pregnant adults are increasing in the UK, but mostly occur in patients with underlying disease. The most common manifestations are bacteraemia and soft tissue infection such as cellulitis[10].

Detection

Detecting GAS and GBS by culture can be difficult, as other organisms may be present, depending on the sample type. Also, some GBS strains are non-haemolytic or hyper-haemolytic, causing confusion when trying to identify the pathogen[14]. For both GAS and GBS, culture may take 48hrs, and is unreliable after antibiotic therapy has started, which may cause problems in the case of sepsis or meningitis. Latex agglutination and immunoassays are rapid but have lower sensitivity than culture. DNA detection by polymerase chain reaction (PCR) has a higher sensitivity than culture, and is more rapid. PCR also has the advantages of not being affected by the presence of other organisms, and it can still be used after antibiotic therapy has started[15].
At Micropathology Ltd we use single-round hot-start molecular amplification assays for GAS and GBS, targeting the *MF* gene in GAS and the *cfb* gene in GBS.

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