Group B Streptococcal Disease of the Newborn

Manitoba Health
Public Health

Communicable Disease Control Unit

Case Definition

- Clinically compatible illness in an infant, aged newborn to several weeks (see below), with positive culture for Group B streptococcus (GBS) from a normally sterile body site, usually blood or cerebrospinal fluid.

Reporting Requirements

- Group B streptococcal disease of the newborn in not reportable in Manitoba.

Clinical Presentation/Natural History

Group B streptococci can produce serious disease in newborns. Two distinct forms of illness occur. Early-onset disease (one to seven days) is characterized by sepsis, respiratory distress, apnea, shock, pneumonia and meningitis; it has a case-fatality rate of about 50%, is acquired *in utero* or during delivery, and occurs more frequently in low-birthweight infants. The risk of serious disease is greatest among premature infants. Late onset disease (seven days to several months) is characterized by sepsis and meningitis; it has a case-fatality rate of about 25%, is acquired by person-to-person contact, and occurs more often in full-term infants. Survivors of meningitis may have speech, hearing or visual problems, psychomotor retardation or seizure disorders.

Etiology

Group B streptococci are gram-positive cocci.

Epidemiology

Reservoir: Humans. The usual reservoir site in women is the gastrointestinal tract. Women may also carry GBS in their vagina, cervix, urethra, pharynx or on the skin. The Group B streptococci found in bovine mastitis are not a cause of GBS of the newborn.

Transmission: While the precise manner of acquisition is unclear, up to 30% of pregnant women harbour Group B streptococci in the genital tract. Although as many as 70% of their offspring may be colonized post-natally, only about 1-2% develop symptomatic infection. Early-onset disease results from ascending infection of GBS from the vagina and cervix, acquisition by the neonate during passage through the birth canal, or nosocomial acquisition. Late-onset disease occurs through nosocomial or community transmission.

Occurrence:

General: GBS of the newborn is the leading infectious cause of neonatal morbidity and mortality in Canada and the United States. The worldwide incidence is estimated at between 0.3 and 3.7 per thousand live births, with an overall mortality rate of 5-20%.

Manitoba: There are as many as 30 cases of GBS of the newborn identified each year.

Incubation Period: The incubation period for early onset disease is short, from one to three days. Cases of early onset disease are often apparent at birth, and the majority are apparent in the first 24 hours of life.

Susceptibility and Resistance: Susceptibility is universal, but maternal antibody to type-specific capsular polysaccharide antigen across the placenta appears to be protective.

Period of Communicability: Group B streptococci are transmissible to infants perinatally if the mother is colonized. However, a negative vaginal culture at the time of labour does not guarantee absence of colonization.

Diagnosis

Diagnosis is based on clinical presentation and a positive GBS culture.

Control

Management of Cases:

- Management should be by infectious disease specialists in hospital.
- Treatment of neonatal sepsis should initially be empiric, using penicillin G or ampicillin plus an aminoglycoside. A third generation cepahalosporin may be used initially if a gram negative organism is seen on lumbar puncture or is isolated from blood. While Group B streptococci are sensitive to penicillin G and ampicillin, penicillin-tolerant strains have been described, so in severe infections, the aminoglycoside should be continued.
- For more details on the management of infants with suspected sepsis, or with perinatal risk factors for GBS sepsis, see the College of Physicians and Surgeons of Manitoba Guideline *Group B Streptococcal Infection in Pregnancy*.

Management of Contacts:

- Not applicable.

Preventive Measures:

- Attempts to eradicate genital tract Group B streptococci in women during pregnancy with oral antibiotics have been only partially successful. There are high relapse rates when antibiotics have been discontinued, possibly due to re-colonization from rectal carriage of the organism or by reacquisition from culture-positive sexual partners.
- There is no reliable rapid screening technique that will identify GBS for treatment during labour. Identification of patients at risk by means of antibody screening is not yet available, but may become clinically relevant in the future.
- The administration of intravenous penicillin or ampicillin at the onset and throughout labour to women who are colonized with Group B streptococci and who are at high risk of delivering an infected infant (premature labour at <37 weeks, premature rupture of membranes at <37 weeks, intrapartum fever, prolonged rupture of membranes of ≥18 hours, or a sibling affected by symptomatic Group B streptococcal infection), interrupts transmission of Group B streptococci to newborns and decreases infection and mortality. Current recommendations include:
    1. Screen women for GBS with a combined vaginal/anorectal swab at 35 to 37 weeks gestation. Offer intrapartum prophylaxis to all identified carriers in the current or preceding pregnancy (as well as all women who deliver pre-term before availability of a culture result). Since this is a transient organism, a negative culture does not guarantee absence of colonization at the time of labour.
    2. Whether or not screening has been performed, offer intrapartum prophylaxis if at least one of the following is present:
        a) History of a previous infant with GBS disease or an unexplained stillbirth at term.
        b) One of the following risk factors:
            – premature onset of labour or rupture of membranes at <37 weeks
            – prolonged rupture of membranes (>18 hours)
            – maternal fever (>38° orally), without dehydration
- Prior to administering antibiotics to the mother during labour, a combined vaginal/anorectal culture for GBS should be done.

- The preferred treatment for women in labour is intravenous ampicillin — 2 gm initially, followed by 1-2 gm every four to six hours. If GBS is confirmed, intravenous penicillin, G 5 million units every six hours may be substituted. For women with penicillin allergy, use intravenous clindamycin — 600 mg every eight hours.

Additional Resources

For health care professionals:

College of Physicians and Surgeons of Manitoba Guideline: *Group B Streptococcal Infection in Pregnancy*. Available from the College of Physicians and Surgeons of Manitoba.