

### 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 21 Organism 11:

## *Shigella flexneri*

*Shigella* is a genus of the bacterial family *Enterobacteriaceae*. Shigellae are Gram-negative, nonmotile, non-spore forming, rod-shaped bacteria, very closely related to *Escherichia coli*. *Shigella* are isolated on selective and differential media, identified by means of biochemical reactions and serotyping to the species<sup>1</sup>.

Shigellosis is an infectious disease caused by various species of *Shigella*. People infected with *Shigella* develop diarrhea, fever, and stomach cramps starting a day or two after they are exposed to the bacterium. The diarrhea is often bloody. Shigellosis usually resolves in 5 to 7 days, but in some persons, especially young children and the elderly, the diarrhea can be so severe that the patient needs to be hospitalized. A severe infection with high fever may also be associated with seizures in children less than 2 years old. Some persons who are infected may have no symptoms at all, but may still transmit the *Shigella* bacteria to others<sup>2</sup>.

A Japanese microbiologist named Shiga, for whom the genus is named, discovered shigella over 100 years ago. There are four species of *Shigella*: *boydii*, *dysenteriae*, *flexneri*, and *sonnei*.

*Shigella* is transmitted from an infected person to another who becomes infected. *Shigella* are present in the diarrhoeal stools of infected persons while they are sick and for a week or two afterwards. Most *Shigella* infections are the result of the bacterium passing from stools or soiled fingers of one person to the mouth of another person. This happens when basic hygiene and hand-washing habits are inadequate. It is particularly likely to occur among toddlers who are not fully toilet-trained. Family members and playmates of such children are at high risk of becoming infected. The spread of *Shigella* from an infected person to other persons can be stopped by frequent and careful hand-washing with soap, a practice that is important among all age groups.

Part of the reason for the efficiency of transmission is because a very small inoculum (10 to 200 organisms) is sufficient to cause infection. As a result, spread can easily occur by the fecal-oral route and occurs in areas where hygiene is poor. Epidemics may be food-borne or water-borne. *Shigella* can also be transmitted by flies<sup>2</sup>.

Shigellosis can usually be treated with antibiotics. The antibiotics commonly used are ampicillin, trimethoprim/sulfamethoxazole), nalidixic acid and the fluoroquinolone, ciprofloxacin. Appropriate treatment kills the bacteria present in the gastrointestinal tract and shortens the course of the illness. Some *Shigella* have become resistant to antibiotics and inappropriate use of antibiotics to treat shigellosis can actually make the organisms more resistant in the future. Persons with mild infections will usually recover quickly without antibiotic treatment. Therefore, when many persons in a community are affected by shigellosis, antibiotics are sometimes used selectively to treat only the more severe cases. Antidiarrheal agents such as loperamide (Imodium) or diphenoxylate with atropine (Lomotil) are likely to make the illness worse and should be avoided<sup>3</sup>.

## References

1. Ewing, WH. 1986. Edwards and Ewing's Identification of Enterobacteriaceae, 4<sup>th</sup> edition. Elsevier Science Publishing Co. Inc, New York.
2. Acheson, DWK and T. Keusch. 1995. *Shigella* and enteroinvasive *E. coli*, p. 763-784. In MJ Blaser *et al.*, Infections of the gastrointestinal tract. Raven Press, New York.
3. Sack, RB *et al.* 1997. Antimicrobial resistance in organisms causing diarrheal disease. *Clin. Infect. Dis.* 24(suppl.1): S102-S105.

## Questions

1. How does the genus *Shigella* differ from *E. coli*?
2. How are the *Shigella* species transmitted from one person to the other?
3. What antibiotics are usually used to treat shigellosis?