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Laboratory Diagnosis of Meningitis

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1. Introduction

Meningitis is an infection of the membranes (meninges) surrounding the brain and spinal cord. Meningitis is usually of multiple etiology-bacterial, fungal or viral yet bacteria remain the common etiological agent (Reid & Fallon, 1992). Meningitis can be acute, with a quick onset of symptoms, or chronic, lasting a month or more, or can be mild or aseptic, but the emphasis should be on identification of cause so that appropriate interventions can be applied.

Bacterial meningitis continues to be a potentially life threatening emergency with significant morbidity and mortality throughout the world and is an even more significant problem in many other areas of the world, especially in developing countries (Carbonnelle, 2009, Brouwer et al., 2010).

Types of bacteria that cause bacterial meningitis vary by age group. Currently, the average age of contracting meningitis is above 25 years with Streptococcus pneumoniae, Neisseria meningitidis and Haemophilus influenzae being the most common pathogens (Ogunlesi et al., 2005, Brain, 2004 as cited in Maleeha Aslam et al., 2006). Trauma to the skull gives bacteria the potential to enter the meningeal space. Similarly, individuals with a cerebral shunt or related device are at increased risk of infection through those devices. In these cases, infections with Staphylococci, Pseudomonas aeruginosa and other gram-negative bacilli are more likely. Recurrent bacterial meningitis may be caused by persisting anatomical defects, either congenital or acquired, or by disorders of the immune system. (Brouwer et al., 2010)

Tuberculous meningitis (TBM), is common in those from countries where tuberculosis is common, and is also encountered in those with immune problems, such as AIDS.

Despite advancement in vaccine development and chemoprophylaxis bacterial meningitis remains a major cause of death and neurological disabilities which can be prevented by rapid and accurate diagnosis with prompt treatment which is essential for good outcome (Carbonnelle, 2009).

Viral meningitis is generally less severe and clears up without specific treatment. Viral (“aseptic”) meningitis is serious but rarely fatal in people with normal immune systems. Usually, the symptoms last from 7 to 10 days and the patient recovers completely. Often, in


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Meningitis is a medical emergency requiring a rapid diagnosis and an immediate transfer to an institution supplied with appropriate antibiotic and supportive measures. This book aims to provide general practitioners, paediatricians, and specialist physicians with an essential text written in an accessible language, and also to highlight the differences in pathogenesis and causative agents of meningitis in the developed and the developing world.

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