



CEREBROSPINAL FEVER, PARTICULARITY OF LABORATORY DIAGNOSIS

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Introduction. Bacterial meningitis (BM) is a medical emergency. BM is the most common and notable infection of the central nervous system, can progress rapidly, and can result in death or permanent debilitation. Not surprisingly, this infection justifiably elicits strong emotional responses and, hopefully, immediate medical intervention. The advent and widespread use of antibacterial agents in the treatment of meningitis have drastically reduced the mortality caused by this disease. The majority of patients with bacterial meningitis survive, but neurological sequelae occur in as many as one-third of all survivors (especially newborns and children). This review is a brief presentation of the pathogenesis of bacterial meningitis and a review of current knowledge, literature, and recommendations on the subject of the laboratory diagnosis of bacterial meningitis.

Material and methods. The objective of the study was to carry out a bibliographic analysis of the literature related particularity of laboratory diagnosis of cerebrospinal fever. The paper analyzes the most relevant publications using *Google Academic* and *Pubmed* databases.

Results. Microorganisms encountered in cerebrospinal fluid require rapid and accurate means of detection and identification in the laboratory. Although restricted to morphologic study and Gram reaction, the Gram stain of cerebrospinal fluid has been the primary diagnostic tool for preliminary diagnosis of purulent meningitis, with identification of the etiologic agent often made within one to two hours by direct microscopic examination. Gram stain and appropriate culture procedures still provide the basis for comparing other diagnostic methods. Nonimmunologic methods that show promise in being both rapid and reliable include gas-liquid chromatography and the *Limulus* amoebocyte lysate test. Fatty acid and carbohydrate profiles characteristic of *Haemophilus influenzae*, *Streptococcus pneumoniae*, *Neisseria meningitidis*, and *Staphylococcus aureus* in the cerebrospinal fluid of human subjects and animals have been obtained by gas-liquid chromatography. Also, a unique compound has been detected by gas-liquid chromatography in cerebrospinal fluid from patients with tuberculous meningitis. The *Limulus* test has been reliable in spinal fluid and almost always gives positive results in *H. influenzae* and other Gram-negative meningitides. Nonspecific test procedures of varying degrees of accuracy and promise include lactic acid, C-reactive protein, and lactate dehydrogenase determination. Direct microscopic examination of cerebrospinal fluid remains the most practical and accurate method for identifying the etiologic basis of bacterial (and fungal) meningitis.

Conclusions. Despite the existence of numerous diagnostic techniques, determining the etiology of infectious meningitis remains difficult and cumbersome in many cases. Delay in diagnosis is a significant contributor to mortality in bacterial meningitis. When evaluating a patient for meningitis, physicians must incorporate many factors to determine the most appropriate tests to order. Physicians must consider local epidemiology, duration of symptoms, current and recent medications, current immune status, country of origin, current living situation, social history, vaccination status and history of travel among other factors. Cutting-edge technologies hold significant promise but require extensive bioinformatics and sample processing expertise.