

TITLE: DETECTION OF BACTERIAL MENINGITIS TO REAL TIME PCR AUTOMATED MULTIPLEX

AUTHORS: GIARETA, M.R.¹; BIESZCZAD, A.²; SIEBRA, C. A.³; AREND, L.N.³; ITO, C. A. S.⁴; PILLONETTO, M.^{3,5}

INSTITUTION: ¹MICROBIOLOGISTA DO SETOR DE BACTERIOLOGIA DO HOSPITAL GERAL UNIMED DE PONTA GROSSA, PR-BRASIL; ²FARMACÊUTICA DA COMPANHIA DAS FÓRMULAS – FARMÁCIA DE MANIPULAÇÃO CURITIBA, PR-BRASIL; ³MICROBIOLOGISTA DO SETOR DE BACTERIOLOGIA GERAL DO LACEN/PR; ⁴PROFESSORA DE MICROBIOLOGIA, SETOR CIÊNCIAS BIOLÓGICAS E DE SAÚDE, UEPG, PONTA GROSSA, PR – BRASIL, ⁵PROFESSOR ADJUNTO DE MICROBIOLOGIA, ESCOLA DE SAÚDE E BIOCÊNCIAS, PUCPR, CURITIBA, PR – BRASIL, E-MAIL: m.pilonetto@pucpr.br.

ABSTRACT:

Acute bacterial meningitis is a serious and rapidly evolving disease, a major cause of mortality among infectious diseases. Fast and accurate diagnosis is essential. Molecular methodologies have been used to complement the diagnosis. Among these techniques, real-time polymerase chain reaction (qPCR) is promising. The objective of the study was to evaluate samples of liquor from community meningitis performed by routine methodology (Gram staining, culture and latex agglutination) and by qPCR (automated and non-automated equipment). For the study, 24 samples of cerebrospinal fluid (CSF) with cytochemical characteristics of bacterial meningitis were sent to the Central Laboratory of the State of Paraná (LACEN-PR) during the period from July 2013 to January 2014. Samples were submitted to analysis by real-time PCR methodology using Becton & Dickinson's BD-MAX® (Franklin Lakes, NJ) and 7300 Applied Biosystems real-time PCR systems (Foster City, CA). *Streptococcus pneumoniae* and *Neisseria meningitidis* detection was evaluated. Gram staining was positive for 4 of 23 (16.7%) samples for Gram positive Diplococcus, 3 of 23 (12.5%) samples had positive cultures for *S. pneumoniae* and 6 of 23 samples (25%) were positive by Latex to *S. pneumoniae* (3) and 3 *N. meningitidis* (3). In real-time PCR, 10 of 23 (41.7%) samples were positive in both tests, 5 to *S. pneumoniae* and 4 to *N. meningitidis* were positive in both equipments. One sample was identified as *N. meningitidis* in BD MAX® equipment, but negative for AB 7300® and one sample identified as *S. pneumoniae* by AB 7300® equipment and had negative result on BD MAX®. qPCR proved to be effective in the etiological diagnosis of community bacterial meningitis, with the highest positivity index for *S. pneumoniae* and *N. meningitidis* compared to routine tests. Another advantage is a fast result, about 2:30 hours for AB 7300® and 2 hours for BD-MAX®, the latter with the advantage of being automated.

Key-words: Bacterial meningitis, real-time PCR, *Neisseria meningitidis*, *Streptococcus pneumoniae*.

Development Agency: Central Laboratory of the Parana State, Curitiba (LACEN-PR)