ABSTRACT

Detection of *Haemophilus influenzae* Type b (Hib) and *Neisseria meningitidis* DNA by Polymerase Chain Reaction in the Cerebrospinal Fluid of Culture Negative Meningitis Patient

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This was a descriptive exploratory research. In general, the objectives of the research were to seek proper and fast diagnostic techniques for meningitis patients. The objectives of the research, in particular, were to seek the proportion of the positive PCR results of bacterial meningitis caused by *Haemophilus influenzae* type b (Hib) and *Neisseria meningitidis* with negative cerebrospinal fluid (CSF) culture results.

There were thirty-nine CSF samples drawn from two hundred-ninety six CSF. The culture results from the entire samples were negative Hib and *Neisseria meningitidis*. The samples were extracted by heating, amplification, and run in 2% of agarose gel electrophoresis. The first DNA amplification was carried our by multiple polymerase chain reaction (PCR) to detect the *Haemophilus influenzae* DNA and *Neisseria meningitidis* serogroups A, B, C by means of *Haemophilus influenzae* specific primer and *Neisseria meningitidis* serogroups A, B and C specific primer. The samples with positive *Haemophilus influenzae* PCR result were continued by determining the Hib using the Hib specific primer. The result was electrophoresis and read by way of the ultraviolet rays. The results were qualitatively analyzed by way of inductive process judgment.

The results of the research showed that the proportion of positive CSF samples by PCR method were eight samples (20,5%) for *Haemophilus influenzae* and two samples (5,1%) for *Neisseria meningitidis*. From the eight samples of positive *Haemophilus influenzae*; seven samples (17,9%) were Hib and one sample (2,5%) was non-Hib. The estimation of positive result proportions by means of 95% level of significance were: 7,6%- 33,2% for *Haemophilus influenzae*, 0%-12% for *Neisseria meningitidis* and 5,9%- 30% for Hib.

It can be concluded from the research that PCR method provides additional positive results on bacterial meningitis diagnosis; in which the previous culture method shows negative culture results. Furthermore, the PCR method is relatively faster than culture method. The time required beginning from the extraction, amplification, electrophoresis until the result reading is approximately four hours. Therefore, PCR method can be used as an alternative for laboratory diagnosis method on bacterial meningitis patients to equip the test results by using culture or serological technique.

Key words: *Haemophilus influenzae* type b (Hib) and *Neisseria meningitidis* , *polymerase chain reaction*, meningitis, cerebrospinal fluid