Thesis Title   Detection of specific IgM in *Mycoplasma*

                     pneumoniae infection

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ABSTRACT

Indirect enzyme-linked immunosorbent assay (ELISA) for detection of *M.pneumoniae* IgM antibody was established. The test was compared with the conventional complement fixation test (CF) and commercial particle agglutination (PA) test kit. The studied sera comprised of 12 paired sera of patients who were diagnosed to be infected recently with *M.pneumoniae* by CF, 29 paired sera of those who were diagnosed not to be infected recently with *M.pneumoniae* by CF, 20 single sera of pulmonary tuberculosis patients who were diagnosed by acid-fast staining and/or cultivation of the sputa, 17 single sera containing cytomegalovirus (CMV) CF antibody titer $\geq$ 1:64, 5 single sera of patients who were diagnosed to be infected with group A Streptococci by anti-streptolysin O (ASO) test, 30 paired sera and 119 single sera of normal individuals.

It was found from this study that the CF antibody titer of ≥ 1:32 could still be used as the cut-off level in diagnosis of recent *M.pneumoniae* infection and the PA antibody titer of ≥ 1:160 should be used as the cut-off level in diagnosis of this infection in Thai people.

From the study on paired sera of patients with recent *M.pneumoniae* infection, it was found that the level of *M.pneumoniae* IgM antibody detected by the established ELISA were significantly higher than those in sera of patients with other diseases and normal sera (Kruskal wallis test, $p < 0.001$). The value obtained with ELISA correlated well with those obtained by both the CF ($r = 0.73$, $p < 0.001$) and the PA ($r = 0.75$, $p < 0.001$).

The sensitivity, specificity, accuracy, positive predictive value and negative predictive value of the test evaluated in acute phase sera of patients with recent *M.pneumoniae* infection were 16.7%, 100%, 82.5%, 100% and 81.8 % respectively, while the values in convalescent phase sera of them were 100%, 100%, 100%, 100% and 100% respectively.

The sensitivity, specificity, accuracy, positive predictive value and negative predictive value of the CF in acute phase sera of these patients were 8.3%, 100%, 80.7%, 100% and 80.4% respectively, while the values in convalescent phase sera were the same as the IgM ELISA.

For the commercial PA, it was found that the sensitivity, specificity, accuracy, positive predictive value and negative predictive value were 41.7%, 100%, 87.7%, 100% and 86.5% respectively in acute phase sera, while the value in convalescent phase sera were the same as those two tests.

The results from the study on the acute phase sera indicated that the established IgM-ELISA had higher sensitivity than the conventional CF in detection of cases since the early stage of disease, but lower than the commercial PA test kit. However, the results from the study on the convalescent phase sera indicated that all of the three methods had equally high ability in detection of cases at the late stage of disease. Thus, both acute and convalescent sera should be obtained from the patients with suspected *M.pneumoniae* infection. The acute sera should be tested by the PA test in order to get early diagnosis and be able to give suitable antimicrobials. However, since the sensitivity of the PA test was only 41.7% for the early diagnosis of the infection, then the convalescent sera should also be tested by either the PA, CF or IgM-ELISA in order to detect cases which were not diagnosed from testing the acute sera.

However, in order to give the definite diagnosis of recent infection, the demonstration of $\geq$ 4-fold rising of antibody titer in paired serum specimens in still needed.