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OBSTRUCTIVE PULMONARY DISEASE

SOMYING NGAMURULERT: DETECTION OF *CHLAMYDIA PNEUMONIAE* IN  
CHRONIC OBSTRUCTIVE PULMONARY DISEASE PATIENTS WITH ACUTE  
RESPIRATORY ILLNESS. THESIS ADVISORS: SONTANA SIRITANTIKORN, Dr.rer.nat.,  
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*Chamydia pneumoniae* has emerged as a common cause of acute respiratory tract infection. Diagnosis of *C. pneumoniae* infection is difficult. The purpose of this study is to develop polymerase chain reaction (PCR) and use it for detection of *C. pneumoniae* DNA in clinical specimens i.e., throat swab, nasal swab and sputum of chornic obstructive pulmonary disease (COPD) patients with acute respiratory illness (ARI). The PCR and serological methods i.e., ELISA and microimmunofluorescence (MIF) are used for diagnosis of acute *C. pneumoniae* infection and the role of *C. pneumoniae* infection in COPD patients with ARI is evaluated.

Primers derived from 16s rRNA gene were used in nested PCR. The result showed that nested PCR was sensitive and specific for detection of *C. pneumoniae* DNA. PCR could detect 0.005 inclusion body forming unit which was 1000 times more sensitive than isolation in cell culture. The specificity of PCR was determined by using *C. pneumoniae* primers to amplify DNA of *Moraxella catarrhalis*, *Haemophilus influenzae*, and *Streptococcus pneumoniae*. No amplified products were obtained. The PCR method provided a detection rate of *C. pneumoniae* DNA in throat swabs superior to sputum and nasal swabs. *C. pneumoniae* DNA was found in 40.2% of COPD patients with ARI and 6.7% of the healthy control group. The rates of *C. pneumoniae* DNA detection among the COPD patients with common cold, influenza-like illness and acute exacerbation were not different.

The serological response of COPD patients was investigated by ELISA and MIF. High sensitivities were obtained for IgG- and IgA-ELISA but not for IgM-ELISA when compared to the MIF test. Seroprevalence of IgG, IgM and IgA antibody to *C. pneumoniae* in convalescent sera were found in 85.5%, 4.5%, 88.7% respectively. Both IgG frequency and mean of cut of index (COI) in COPD patients with ARI and without ARI were significantly higher than in the healthy control group. Frequency of *C. pneumoniae* IgA in COPD patients with ARI was higher than in both control groups. This investigation showed *C. pneumoniae* may plays a significant role in acute respiratory tract illness in COPD patients.

PCR and serological methods were used for diagnosis of *C. pneumoniae* infection in COPD with ARI patients. Acute infection of *C. pneumoniae* determined by PCR and/or MIF was 69.6%. Detection rate of *C. pneumoniae* infection diagnosed by PCR (56.5%) is more than MIF (37.0%). Sensitivity for diagnosis of acute respiratory tract infection in COPD patients was 81.3% by PCR and 53.1% by MIF. ELISA-IgG COI  $\geq 2.5$  and IgA COI  $\geq 3$  were suggested for detection of acute *C. pneumoniae* infection. We concluded that *C. pneumoniae* may be a significant etiologic pathogen of acute respiratory tract infection in COPD patients. Combination of PCR and serology methods could be used for diagnosis of acute infection of *C. pneumoniae* in COPD patients; however, the rate of detection by PCR was higher than serology.