**Summary**

This study aimed in part to evaluate the role of *M. pneumoniae* in respiratory infection among children and young adult using ELISA and Real Time-PCR technique. Cytokines profile for this infection was also included in this study in addition to detect the association between *M. pneumoniae* infection and autoimmune diseases based autoantibodies production including antidouble strand antibody (ADSA), anti-citrullenated protein antibody (ACPA), antinuclear antibody (ANA), and Rheumatoid factor (RF).

A total of 323 patients and 43 samples obtained from apparently healthy individual as control were included in this study. Those patients were grouped into three groups according to their clinical status. The first group (A) included 127 serum samples and throat swabs of the suspected *M. pneumoniae* infections admitted to Al-Diwaniya Maternity and Pediatric Teaching Hospital and patients who came to Chest and Respiratory Consultant Clinic Diseases Center, Al-Diwaniya-Iraq, in a period of five months ( from January- to May 2013). This study include also 40 serum samples (group B) collected from children of primary school age from the Lab. of King's college/ London. While the third group (C) included 156 serum of autoimmune patients collected from clinical immunology department of Al-Sader Hospital in Al-Najaf province in the period from May to October 2013.

Among the first (A) group 42/127( 33%) revealed positive result for *M. pneumoniae* infection by using ELISA (IgM). Among those only 13 were positive by RT-PCR. While among ELISA negative samples 85/127 (66.92%) only 6 samples were positive by RT-PCR technique. In cultivation method from 42 serologic positive cases was revealed only 2 isolates of *M. pneumoniae* using methylene blue glucose diphasic medium and Mycoplasma glucose agar media.

The result of group (A) indicated for non-significant correlation between *M.* *pneumoniae* infection and both age and sex of patients, while there were significant differences according to the residency, urban (40.8%) in relative with rural (23.2%) P<0.05, also there were significant (P<0.05) differences according to the period (months) of study in which the high percentage of infections with *M. pneumoniae* was in April (50%). This group (A) was also investigated immunologically. Accordingly, IL-4 (71.4 pg/ml) and IL-17 (252.2 pg/ml) were significantly higher (P<0.05) as compared to healthy (46.2 pg/ml and 114.7 pg/ml respectively) whereas non-significant differences were found regarding the IFN-γ of patients (162 pg/ml) as compared to healthy individuals (191 pg/ml) .

Regarding to the second group (B) the results showed that 28/40 (70%) were infected by *M. pneumoniae* according to ELISA (IgM) test. However no-significant differences (P<0.05) were found in the serum level of IL-4 (63.3 pg/ml), IL-17 (438.13 pg/ml) and IFN-γ (46 pg/ml) compared with healthy 46.29 pg/ml , 114.7 pg/ml and 18 pg/ml respectively.

The third group (C) of patients who were already diagnosed as autoimmune patients through their admission to Clinical Immunology Laboratory in Al-Najaf Province , those patients were distributed as ; 50 of them revealed ADSA, 36 revealed ACPA, 38 revealed RF, and 34 had ANA. Among them 28/50 (56%), 20/36 (55.5%), 6/38 (16.78) and 10/34 (29.41%) were infected with *M. pneumoniae* respectively based on ELISA (IgG) test. According to the percentage of infection among them, there was significant (P<0.05) correlation between infection and production of ADSA or ACPA.