Undiagnosed Bordetella pertussis among Chlamydophila pneumoniae and Mycoplasma pneumoniae patient samples – a pilot study

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Background: Bordetella pertussis is a re-emerging infection and the prevalence has risen worldwide the last years despite high vaccine coverage in many countries. It causes a life-threatening disease for infants whom have not yet received vaccination. Immunity after vaccination or infection is not lifelong and symptoms after re-infection can be milder and show unspecific symptoms which aggravate that a proper diagnose can be determined. The infection is highly contagious and many cases are likely undiagnosed. Patients with unspecific symptoms can still efficiently spread the disease. This increases the risk of exposure of those at higher risk of severe disease, mainly infants.

Material/methods: Two hundred unidentified outpatient samples that had previously been analyzed with duplex real-time PCR for Chlamydophila pneumoniae and Mycoplasma pneumoniae were extracted and analyzed with real-time PCR for B. pertussis (gene-target IS481). The samples were randomly picked from samples included in the routine diagnostic of C. pneumoniae and M. pneumoniae, taken between January 2014 and October 2015. Samples that were positive for C. pneumoniae, M. pneumoniae or where a culture positive nasopharyngeal sample was taken, at the time of the sample-taking, were excluded. The samples were collected from two counties in Sweden. Half of the samples were taken from men and half from women and the mean age of the patients was 44 years (range 3-96).

Results: Seven (3.5%) of 200 samples were positive for B. pertussis and were thus previously undiagnosed. The mean Ct-value of the samples was 27.3 (range 15.9-35.6). The mean age of the B. pertussis-positive patients was 32 years (range 12-49). Clinical information coupled to two of the samples described that the patients had suffered from cough for several weeks but no B. pertussis-diagnostic was ordered at that time.

Conclusions: B. pertussis is an undiagnosed infection especially among adolescent and adult outpatients. Clinical awareness of B. pertussis infection as a cause of persisting cough needs to be increased. Ideally, B. pertussis, C. pneumoniae and M. pneumoniae PCR tests should always be performed for outpatients with long-lasting cough. The diagnostics is important for epidemiological reasons so that the spread of the disease can be monitored and exposed persons at risk quickly can receive adequate care.