IS CHLAMYDIA PNEUMONIAE A MISSING LINK IN THE "DUTCH HYPOTHESIS" AND CHRONIC NON-SPECIFIC LUNG DISEASE (CNSLD)?

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The "Dutch Hypothesis" states that bronchitis, asthma and COPD are a disease continuum (chronic non-specific lung disease - CNSLD) defined by a common host response to environmental factors.¹ Research has traditionally focused on adaptive immunity and atopy as a key host characteristic. More recently, Chlamydia pneumoniae (Cpn) chronic infection has been associated with asthma and COPD.² On this basis it has been suggested that Cpn may contribute to the pathogenesis of CNSLD and that innate immune response to Cpn may be an important factor in causation.³ Most published associations of Cpn and airways disease have focused on asthma and COPD, with less known about the relationship of chronic Cpn infection and uncomplicated acute bronchitis (UAB). Nevertheless, UAB has been implicated as a risk factor for the development of asthma,⁴ raising the question whether a common etiologic factor is present for CNSLD. We therefore studied whether Cpn chronic infection is also associated with UAB in patients with acute respiratory illnesses (ARI).

We studied 402 outpatients (mean age 34.2 years) with ARI diagnosed as upper respiratory illness (URI, n=115), UAB (n=189) or acute exacerbations of reactive airways disease (RAD, n=98) and obtained acute and convalescent serum specimens for Cpn, Chlamydia trachomatis (Ct) and Mycoplasma pneumoniae (Mpn) antibodies, and throat swabs for Cpn culture. Subjects with evidence for an acute infection by Cpn, Ct or Mpn were excluded.

Cpn seropositivity (polyvalent MIF titer ≥ 1:16) was 47% in URI, 57% in UAB and 76% in RAD (P-trend <.01 after controlling for age, sex, smoking, allergy, Ct and Mpn titers).

The results are consistent with a previous report linking Cpn-specific antibodies with the spectrum of respiratory illnesses including bronchitis, asthma and COPD (CNSLD).⁵ Defects in innate immunity have recently been reported in association with Cpn infection in asthma.⁶ Cpn-specific IgA antibodies suggesting chronic infection have been associated with both UAB and asthma but Cpn-specific hsp60 antibodies were associated only with asthma.⁷ Thus, development of asthma instead of just UAB after acute Cpn infection may depend on, in addition to chronic infection, a pathogenic host response involving chlamydial heat shock protein-60 (hsp60) that has been implicated in the pathogenesis of other chronic chlamydial diseases.⁸ Taken together, these results suggest that research focusing on host innate immune response to infectious agents such as Cpn may be important to understand the etiopathogenesis of CNSLD.

References
3. Hahn DL Chest 2002; 122:1510-1512