SEROLOGICAL EVIDENCE OF AN ASSOCIATION BETWEEN CHLAMYDIAL INFECTION AND CANCER

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Abstract

Epidemiological and experimental studies indicate a causative role of viruses in malignancies. Recently, a link between bacterial infections and the development of cancer has been suggested. The purpose of this study was to evaluate the association between chlamydial infection and cancer.

The association between C. trachomatis infection and cervix cancer was analysed in a prospective study. The presence of IgG antibodies to C. trachomatis and C. pneumoniae was determined from the serum samples of 182 Nordic women with invasive cervical carcinoma and 538 matched cancer-free controls by the microimmunofluorescence (MIF) method. Serum antibodies to C. trachomatis were associated with an increased risk for cervical squamous cell carcinoma (SCC) (OR 2.2, 95% CI 1.3-3.5), but not for cervical adenocarcinoma (OR 0.4, 95% CI 0.1-1.7). C. trachomatis serotype G was highly significantly associated with an increased risk for SCC (adjusted OR 6.6, 95% CI 1.6-27). The presence of serum IgG antibodies to more than one serotype of C. trachomatis, on the other hand, also increased the risk of SCC.

The association between C. pneumoniae infection and lung cancer was analysed separately in men and women. C. pneumoniae-specific antibodies and immune complexes (IC) were analysed from 230 Finnish smoking males with lung cancer and their matched controls using serum samples collected before the lung cancer diagnosis. Suggestive chronic C. pneumoniae infection was associated with an increased risk for lung cancer (OR 1.6; 95% CI 1.0-2.3). The risk was increased especially in men younger than 60 years (OR 2.9; 95% CI 1.5-5.4), but not in the older age group (OR 0.9; 95% CI 0.5-1.6).

Chlamydial antibodies and chlamydia-specific ICs were analysed from serum samples of 29 Finnish women with lung cancer and 87 matched cancer-free controls by MIF. The mean follow-up from serum sampling to cancer diagnosis was 6.7 years. IgG class antibodies to C. pneumoniae were common in pregnant Finnish women (66% among cases, 62% among controls), whereas IC-bound C. pneumoniae IgG antibodies were rare. No additional risk for lung cancer in association with chlamydial antibodies was found among women.

The association between chlamydial infections and lymphomas was evaluated in a cross-sectional study. Seventy-two lymphoma patients from Tampere University Hospital and 72 matched controls were selected, and IgG antibodies and ICs to C. pneumoniae and C. trachomatis were analysed from their serum samples by MIF and enzyme immunoassay (EIA). The serological markers suggesting chronic chlamydial infection were associated with an increased risk for malignant lymphoma. The association was most evident for the presence of C. pneumoniae-specific ICs in non-Hodgkin’s lymphoma (OR = 7.3, 95% CI 2.2-25) and appeared to be limited to men.

Infection with C. trachomatis was found to increase the risk of subsequent development of invasive cervical SCC. Chronic C. pneumoniae infection was also found to be a new independent risk factor for lung cancer in males. Serological markers suggestive of chronic chlamydial infection were associated with lymphomas, proposing that chlamydial infection may have a similar role as H. pylori in the pathogenesis of lymphomas.

Keywords: antibodies, cervical cancer, lung cancer, lymphomas