

Chlamydial LPS and high-sensitivity CRP levels in serum are associated with an elevated body mass index in patients with cardiovascular disease

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Objective: Seropositivity for *Chlamydia pneumoniae* has been associated with an elevated body mass index (BMI). Our aim was to study if serum chlamydial lipopolysaccharide (cLPS), *C. pneumoniae* antibodies and high-sensitivity C-reactive protein (hsCRP) levels are associated with BMI

Patients and Methods : The study population consisted of 174 patients with symptomatic carotid stenosis, abdominal aortic aneurysm or occlusive aortic disease. Information on BMI, diabetes, smoking, hypercholesterolemia, and statin medication was available. Serum *C. pneumoniae* IgG and IgA antibodies, cLPS, hsCRP and total endotoxin activity (totLPS) were measured.

Results: BMI correlated with cLPS ($r = 0.197$; $P < 0.01$) and with hsCRP ($r = 0.195$; $P < 0.01$); in addition, there was a positive correlation between cLPS and hsCRP ($r = 0.499$; $P < 0.01$). A trend of an increasing proportion of *C. pneumoniae* IgG positivity (titre 64; $P = 0.018$) and higher serum cLPS ($P = 0.01$) and hsCRP ($P = 0.01$) concentrations was observed across the BMI groups (BMI 24.9 kg/m², BMI = 25.0—29.9 kg/m², and BMI 30.0 kg/m²). Among the three BMI groups, 24.6%, 38.8%, and 48.3% were *C. pneumoniae* IgG-positive and the median (IQR) cLPS concentrations (ng/ml) of the groups were: 92.6 (50.8—167.0), 128.9 (76.4—163.9), and 146.4 (105.8—175.8), respectively. The median (IQR) hsCRP (mg/l) concentrations of the groups were: 1.70 (0.70—3.05), 1.70 (0.80—5.20), and 3.40 (1.45—8.55), respectively. These associations remained statistically significant in a multivariate analysis.

Conclusions: Elevated serum cLPS levels were associated with an elevated BMI. This is a novel finding and it strengthens the link between chlamydial infection and obesity. A lack of association between totLPS and BMI suggests that the association between infection and an elevated BMI may be specific to certain pathogens.