infection. None of the patients in the study had a fever. The diagnosis of infection was never based on biochemical measurements of C-reactive protein alone.

Commercially available blood collection tubes and heparin used for anticoagulation may be contaminated with endotoxin (5,6). Therefore, in our study, the use of standard tubes for the assessment of endotoxin concentrations in plasma was validated: 1) Aliquots from the blood sampling tubes were filled with endotoxin-free cell culture medium and tested for endotoxin after comparable sample handling. No endotoxin was detected by the commercial test kit used. 2) To further exclude contamination of samples by endotoxin, a sensitive bioassay was used to measure in vitro endothelial cell activation for neutrophil transmigration (7). Aliquots from blood sampling tubes filled with endotoxin-free cell culture medium with and without 10 μg/ml of polymyxin B had no effect on endothelial cell activation for leukocyte transmigration, thus confirming the lack of endotoxin contamination.

Rauchhaus et al. suggest an alternative hypothesis to explain endotoxemia in terms of bacterial translocation across the intestinal wall due to atherosclerotic processes in the mesenteric vasculature. However, because the observed association between endotoxemia at baseline and carotid atherosclerosis at follow-up was particularly pronounced in patients who had no coronary artery disease and in whom there was no ultrasound evidence of carotid and femoral artery atherosclerosis at baseline, it is unlikely that intestinal ischemia with bacterial translocation was present in these patients when endotoxin samples were obtained at baseline. Furthermore, recent data show that elevated levels of antibodies to lipopolysaccharide from Escherichia coli, probably reflecting successful immune responses to intestinal translocation of bacteria, are inversely related to carotid artery atherosclerosis and are not associated with endotoxemia (manuscript submitted). These data indirectly support a role of infections as a source of atherogenic endotoxemia.

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REFERENCES


Coronary Heart Disease and Chlamydia pneumoniae DNA in Blood Mononuclear Cells

The report by Wong et al. (1), on the detection of Chlamydia pneumoniae (Cpn) DNA in the peripheral blood mononuclear cells (PBMCs) of a small proportion (<10%) of patients with coronary artery disease (CAD), raises several interesting issues. There is a strong desire to have an easily determined marker of Cpn in the arterial wall, because obtaining atheromatous tissue is likely to be a rare event and serologic assessments, as pointed out by Wong et al. and Kaski and Camm in the accompanying editorial (2), are of no help. The question is whether the weak association between Cpn DNA in PBMCs and CAD in men, said to be a predictor of CAD, is meaningful. The same association was not seen for women. Reasons for the failure to show the same association in women are suggested (hormones?), but could it be that the lack of association for women is the most plausible result? Surely those without CAD in the age group studied are not devoid of atheromatous changes in other major vessels; and Cpn DNA has been detected in a large proportion of all major vessels examined (3). Thus, if there is a relation between atheromatous lesions and PBMCs carrying Cpn DNA, the latter finding might be expected irrespective of the existence of CAD. Thought should be given to the possibility that the positive association in men, despite statistical significance, is spurious, and that the negative association in women is not so bewildering. Curious, however, is the finding of Cpn DNA in the PBMCs of <10% of patients. Wong et al. (1) regard the large proportion (>50%) of patients, including blood donors, with such cells reported by Bowman et al. (4) in Sweden to be remarkable; the Southampton workers refer to possible geographic differences to explain these different proportions. We are inclined to think that this is not plausible in view of some of our observations in ongoing studies. Thus, in examining PBMCs from subjects in the United Kingdom with peripheral vascular disease, we have found 47% of the samples to be Cpn-positive by polymerase chain reaction. In addition, donors (≥15 years old) of hearts for transplantation whose vessels (principally ascending aorta and pulmonary artery) were Cpn-positive were less likely to have spleen cells, presumably containing PBMCs, that were Cpn-positive than were donors whose vessels were Cpn-negative. Overall, 37% of the spleen specimens were positive. Therefore, we think that the relation between Cpn DNA in circulating monocytes and CAD remains enigmatic. Doubtless, the true situation will become clear eventually. In the meanwhile, to suggest that Cpn DNA in PBMCs is a predictor of CAD in men, but not in women—that is, in <10% of them—and that they stand out as a rare event and serologic assessments, as pointed out by Wong et al. and Kaski and Camm in the accompanying editorial (2), are of no help. The question is whether the weak association between Cpn DNA in PBMCs and CAD in men, said to be a predictor of CAD, is meaningful.

The Southampton workers refer to possible geographic differences to explain these different proportions. We are inclined to think that this is not plausible in view of some of our observations in ongoing studies. Thus, in examining PBMCs from subjects in the United Kingdom with peripheral vascular disease, we have found 47% of the samples to be Cpn-positive by polymerase chain reaction. In addition, donors (≥15 years old) of hearts for transplantation whose vessels (principally ascending aorta and pulmonary artery) were Cpn-positive were less likely to have spleen cells, presumably containing PBMCs, that were Cpn-positive than were donors whose vessels were Cpn-negative. Overall, 37% of the spleen specimens were positive. Therefore, we think that the relation between Cpn DNA in circulating monocytes and CAD remains enigmatic. Doubtless, the true situation will become clear eventually. In the meanwhile, to suggest that Cpn DNA in PBMCs is a predictor of CAD in men, but not in women—that is, in <10% of them—and that they stand out as having an “active” infection and might benefit from antibiotic therapy, seems misplaced. Fortunately, the antibiotic trials currently in progress are being undertaken with complete disregard for the PBMC Cpn DNA status of the patients.
The Electric Cardiographic Abnormalities Are Not Hidden!

The report by Matetzky et al. (1) stimulates the following thoughts. There are two ways to interpret electrocardiograms (ECGs). One is to memorize patterns and the other is to use basic principles of electrocardiography, including the use of vector concepts, as described by Grant (2–6).

The tracing in Figure 1A of the report by Matetzky et al. reveals a left atrial abnormality; a mean spatial QRS vector that is directed at about +20° in the frontal plane (it changes direction during inspiration and expiration) and about 45° posteriorly; a mean spatial ST segment vector that is directed at +115° in the frontal plane and at least 90° posteriorly, indicating epicardial injury of the posterior wall of the left ventricle; a mean spatial T-wave vector that is directed at +90° in the frontal plane and 80° to 90° anteriorly, indicating posterior myocardial ischemia; and a large U wave in lead I.

The point is, the ST segment vector points toward an area of posterior epicardial injury. Furthermore, one can suspect that the ST segment vector is directed toward an obstruction in the circumflex coronary artery or its branches. It should be no surprise that the ST segment is elevated in leads V7–9, because the ST segment vector points toward an area of posterior myocardial ischemia.

Interestingly, the tracing in Figure 1B is also interesting. The tracing in Figure 1B of the report by Matetzky et al. reveals a right ventricular abnormality; a mean spatial QRS vector that is directed at about +115° in the frontal plane and at least 90° posteriorly, indicating epicardial injury of the posterior wall of the left ventricle; a mean spatial T-wave vector that is directed at +90° in the frontal plane and 80° to 90° anteriorly, indicating posterior myocardial ischemia; and a large U wave in lead I.

The point is, the ST segment vector points toward an area of posterior epicardial injury. Furthermore, one can suspect that the ST segment vector is directed toward an obstruction in the circumflex coronary artery or its branches. It should be no surprise that the ST segment is elevated in leads V7–9, because the ST segment vector points toward an area of posterior myocardial ischemia. The ST segment abnormality is not hidden.