The influence of periodontitis on anti-cardiolipin antibodies in Buerger disease patients

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Key Words: Buerger disease, Anti-cardiolipin antibodies, Beta-2-glycoprotein-I, Periodontitis

Objectives:
Buerger disease is an inflammatory occlusive disorder affecting small and medium-size arteries and veins, occurring predominantly in young male heavy smokers. Thrombosis has been reported to be important in the pathogenesis of Buerger disease. Beta-2-glycoprotein-I dependent anti-cardiolipin antibody is associated with thrombosis, and periodontitis patients were reported to have a significantly greater prevalence of anti-cardiolipin antibodies. According to the Swiss Prot database, the sequences with homology to the peptide (TLRVYK) on beta-2-glycoprotein-I are present in the arg-gingipain protease of the *P. gingivalis* (TLRIYT) and phosphoglycerate kinase of *T. denticola* (TLAIYK).

The aim of the present study was to examine the influence of periodontitis on anti-cardiolipin antibodies in Buerger disease patients.

Materials and methods:
Nineteen patients who had been diagnosed with Buerger disease on the basis of Shionoya's criteria and angiographic findings were enrolled in this study. The twenty-eight generally healthy control subjects were matched for age, gender, smoking and systemic status. Polymerase chain reaction (PCR) was used to identify *Porphyromonas gingivalis* and *Treponema denticola* in the occluded arteries of Buerger disease patients. Serum samples were collected for the measurement of anti-cardiolipin antibodies, anti-peptides antibodies, and antibodies against *P. gingivalis* and *T. denticola* using Enzyme-linked immunosorbent assay (ELISA). Mann-Whitney U test was used to compare the IgG antibody titers in both groups. Spearman rank correlation coefficient was applied to examine the correlation between above antibody titers. The significant difference was set at P<0.05.

Results:
Buerger disease patients exhibited significantly severe periodontitis than control subjects. The antibody titers against *P. gingivalis* and *T. denticola* were significantly higher in Buerger disease patients than control subjects (P<0.01, P<0.05, respectively). *Porphyromonas gingivalis* was detected in 52.6 % of arterial samples and *Treponema denticola* was detected in 78.9 % of arterial samples in Buerger disease patients. The anti-cardiolipin antibodies and anti-TLRVYK antibodies were significantly higher in Buerger disease patients than control subjects (P<0.001, P<0.01, respectively). The antibody titers against TLRVYK and TLAIYK peptides were also significantly higher in Buerger disease patients than control subjects (P<0.001, P<0.05, respectively). A significantly positive correlation between anti-cardiolipin antibodies, anti-TLRVYK antibodies, anti-TLRVYK antibodies and anti-TLAIYK antibodies was observed.

Discussion:
Buerger disease patients had increased antibodies against TLRVYK peptide and TLRVYK-homologous peptides on *P. gingivalis* and *T. denticola*, suggesting that they might elicit anti-TLRVYK antibodies in response to the infection with *P. gingivalis* and *T. denticola*.

Conclusion:
Periodontitis may be associated with the elevated anti-cardiolipin and anti-TLRVYK antibodies in Buerger disease patients.