

## April 04/07: Cigarette Smoking, SLE, and RA

While the rights of non-smokers is a hot topic for lawmakers right now, especially in Europe, the influence of smoking on the development of autoimmune diseases is a growing topic in the group of immunologists and rheumatologists. Exposure to tobacco has consistently been associated with rheumatoid arthritis (RA) and other autoimmune diseases.

The following studies were also published in 2006:

Freemer MM, King Jr TE, Criswell LA (2006)

**Association of smoking with dsDNA autoantibody production in systemic lupus erythematosus**

*Ann Rheum Dis 65, 581-584*

Majka DS, Holers VM (2006)

**Cigarette smoking and the risk of systemic lupus erythematosus and rheumatoid arthritis**

*Ann Rheum Dis 65, 561-563*

Freemer et al. showed in their study that smoking is associated with dsDNA seropositivity in white patients with systemic lupus erythematosus (SLE). More specifically, patients with SLE who smoked at the time of their serological evaluation for dsDNA were more likely to be seropositive than patients with SLE who were former or never smokers at the time of serological evaluation. These results provide a potential mechanism that may underlie dsDNA autoantibody formation.

In RA, cigarette smoking has been associated with rheumatoid factor positivity. In affected subjects, exposure to tobacco has also been associated with several measures of disease severity such as the presence of radiographic erosions etc. (see Majka et al) On the 5th International Congress on Autoimmunity in Sorrento at the end of last year a Brazilian study was presented about "HLA-DRB1 SE genes may trigger specific immune reactions to citrullinated proteins in RA smoking patients" (Oliveira RD et al). The authors concluded that environmental factors contribute to the raising of anti-CCP in individuals with HLA background to RA, being the smoking a strong candidate. Thus, the risk for relatives of RA patients to get also RA is much higher for smokers than for non-smokers.

Using the results of Freemer et al as well as results of other studies on the association of smoking and RA and SLE, Majka et al. discuss in their article the possible mechanisms underlying this association. The concept of a gene-environment interaction is suggested and should be pursued.

Smoking is a common habit that is potentially modifiable. Because autoantibodies to dsDNA and CCP may affect disease course in SLE and RA, respectively, smokers with these diseases should be counselled to stop smoking. This is perhaps the most clinically relevant point to be gained from these studies.

