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WOMEN WITH RHEUMATOID ARTHRITIS HAVE HIGHER LIFETIME PROFESSIONAL AND NON-PROFESSIONAL EXPOSURE TO SILICA DUST COMPARED TO FRENCH GENERAL POPULATION

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Background: Occupational exposure to silica dust is associated with increased risk of developing ACPA positive Rheumatoid arthritis (RA). Little is known about non-occupational exposure, as there are no available tools to assess it in clinical practice.

The Dust Exposure Life-Course Questionnaire (DELCO), developed within the SILICOSIS project, a European Research Council Advanced Grant, provides clinical research with a tool derived from social sciences. The DELCO allows to quantify both occupational and non-occupational (e.g. body care; hobbies such as DIY, woodworking, stone cutting, etc.) exposure to silica and some other inorganic particles during the whole lifetime.

In the DELCO, the identification of sources of exposure is grounded on an extensive list of products and activities summed up by the International Agency on Research on Cancer and on a wide overview of the literature addressing silica exposure and silica-related (or suspected-to-be-related) diseases.

Objectives: To explore occupational and non-occupational silica exposure in a series of consecutive RA patients and the association of quantified silica dust exposure with major disease features (ACPA positivity) or outcomes (erosive disease).

Methods: The DELCO was administered to 97 consecutive RA patients (77F, 20M, mean age 59.1+/- 13.3 yrs., 75 ACPA positives, 66 with

erosive disease) attending the rheumatology department of Avicenne Hospital (Bobigny, FRANCE). The DELCO scores of patients were compared to those of 388 controls, matched for sex, age and smoking status, from a 2739-subject national cohort, representative of the general French population (ELIPSSilice). Within RA subjects, the association of the scores with ACPA positivity and with erosive disease was assessed after adjustment for tobacco use.

Results: RA patients had higher median scores of occupational (10 [0, 17] vs. 0 [0, 4]) exposure vs. controls (p<0.0001). Median occupational exposure was higher in both men and women compared to controls matched by age, sex and tobacco use (23.5 [18, 34.5] vs. 2.5 [0, 12] for men and 7 [3, 14] vs. 0 [0, 5] for women, p<0.0001 for both). Non-occupational median exposure was significantly higher only in women with RA (15 [9, 21] vs. 12 [5, 21], p< 0.05). Male vs. female RA patients had higher median occupational scores of exposure (p<0.001), while non-occupational exposure was not significantly different. After adjusting for smoking (smokers>5 pack/y vs. nonsmokers or smokers <5 pack/y), neither professional or non-professional scores were associated with erosive disease, despite a strong negative interaction with tobacco use.

Conclusion: Women with RA have higher professional and non-professional lifetime exposure to silica dust compared to age, and sex-matched subjects from the French general population. In this series, constituted mainly of non-smoking women, exposure to silica may be a relevant environmental factor for the development of RA. Higher occupational exposure in RA is confirmed in men with RA. Neither occupational nor non-occupational exposure was associated with ACPA positivity or erosive disease, likely due to the high prevalence these features in the patient series.

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