TEMPERATURE AND SMALL PARTICULATE MATTER POLLUTION ARE ASSOCIATED WITH ORGAN SPECIFIC LUPUS FLARES: A SPATIO-TEMPORAL ANALYSIS

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Background: Understanding the role of environmental exposures in the development of SLE and their association with SLE activity may help identify modifiable risk factors and potential etiological mechanisms. Cluster detection is an essential tool in public health which has the goal of detecting anomalous clusters of disease cases.

Objectives: We performed a spatial-time cluster analysis of the Johns Hopkins Lupus cohort with the goal of identifying potential spatial-time clusters of SLE organ specific disease activity related to temperature changes and fine particulate matter pollution (PM2.5).

Methods: 1261 patients who fulfilled 4 of the 11 American College of Rheumatology classification criteria for SLE and who had recorded home addresses were included in the analysis. Disease activity was expressed as Physician Global Estimate (PGA), and included rash, joint, serological, neural, renal, pulmonary, and haematological flare-ups. The area utilised in this analysis was a 350 kilometre radial buffer around the Johns Hopkins Lupus Centre. This area was considered due to the high and consistent density of study participants. The data ranged from January 1999 to February 2009. Average temperature and PM2.5 exposure over a period of 10 days prior to patient visit was obtained from the United States Environmental Protection Agency, and county level demographics were obtained from the US census. Univariate, multivariate, and multilevel models were built in order to study the association of these variables with lupus flare-ups. The models were adjusted for age, sex, income, racial distribution, and rural vs. urban patient residence.

Results: Rash (OR=1.0075 for 1 degree Fahrenheit(F) increase), neurologic (OR=1.0096 for 1 degree F increase), and joint (OR=1.011 for 1 degree F increase) flares were statistically significantly associated with an increase in temperature in univariate and multivariate analysis. Renal flares were negatively associated with increases in temperature (OR=0.996 for 1 degree F increase) in both univariate and multivariate analysis. Serositis flares were found to be associated in both univariate and multivariate analysis with increases in PM2.5 concentration (OR=1.024 for an increase of 1 ug/m3), as were hematologic flares (OR=1.019 for an increase of 1 ug/m3), and joint flares (OR=1.011 for an increase of 1 ug/m3). Maps were generated highlighting the study area and the flares. After adjusting for temperature and PM2.5, rash, neurologic, and renal flare-up clusters changed spatially and temporally, suggesting that the adjustment variables could be contributing causes to the original clusters of these kinds of flare-ups.

Conclusions: An increase in temperature was found to be significantly associated with skin, joint, and neurologic flares and inversely associated with renal flares, while increase in fine particulate matter pollution was significantly associated with serositis and hematologic flares. Spatiotemporal cluster adjustment for PM2.5 and temperature changed the neurologic, renal, and rash flare up clusters both spatially and temporally further supporting that these variables could be contributing causes to the original flare clusters. The clusters that remained unchanged indicate areas of unexplained variation that requires further study.

Disclosure of Interest: None declared


SILICONE BREAST IMPLANTS AND THE RISK OF AUTOIMMUNE DISEASES: REAL WORLD ANALYSIS

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Background: Previous reports have suggested an association between silicone breast implants (SBIs) and connective tissue disorders. However, several epidemiological studies have produced inconsistent results.

Objectives: To evaluate the association between SBIs and the most clinically relevant auto-immune diseases (ADs) using a large, population based database.

Methods: In this cross-sectional study, we used the computerised databases of Maccabi Healthcare Services (MHS) which include up to 20 years of data on 2 million members. Women with SBIs were identified by procedure and diagnosis codes, clinical breast examinations and mammography referrals. ADs were identified using the International Classification of Diseases 9th revision (ICD-9) codes. SBIs-free women were matched by age group and socio-economic status (SES) in a ratio of 1:4. Multivariable logistic regression and Cox’s proportional hazards models were performed.

Results: We included 24,651 SBI recipients and 98,604 matched SBIs free women in our study. The association between SBIs and AD was significant (p<0.05) (adjusted OR 1.21, 95% CI 1.17–1.26). The strongest association with SBIs (OR >1.5, p<0.001) was recorded for systemic sclerosis (SSc) and sarcoidosis (OR of 1.99 and 1.67, respectively). Similar results were calculated when analysis was limited to cancer free women. Multivariable Cox regression model yielded a HR of 1.45 (95% CI 1.21–1.73) for being diagnosed with at least one AD in women with SBI compared to those without.

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