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Allergic diseases and long-term risk of autoimmune disorders: longitudinal cohort study and cluster analysis

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This study has shown that the long-term risk of autoimmune disorders is significantly higher in patients with allergic diseases. Allergic diseases and autoimmune disorders co-occur, and show an age- and sex-related clustering pattern. <http://bit.ly/33tqkZn>

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ABSTRACT

Introduction: The association between allergic diseases and autoimmune disorders is not well established. Our objective was to determine incidence rates of autoimmune disorders in allergic rhinitis/conjunctivitis (ARC), atopic eczema and asthma, and to investigate for co-occurring patterns.

Methods: This was a retrospective cohort study (1990–2018) employing data extracted from The Health Improvement Network (UK primary care database). The exposure group comprised ARC, atopic eczema and asthma (all ages). For each exposed patient, up to two randomly selected age- and sex-matched controls with no documented allergic disease were used. Adjusted incidence rate ratios (aIRRs) were calculated using Poisson regression. A cross-sectional study was also conducted employing Association Rule Mining (ARM) to investigate disease clusters.

Results: 782 320, 1 393 570 and 1 049 868 patients with ARC, atopic eczema and asthma, respectively, were included. aIRRs of systemic lupus erythematosus (SLE), Sjögren's syndrome, vitiligo, rheumatoid arthritis, psoriasis, pernicious anaemia, inflammatory bowel disease, coeliac disease and autoimmune thyroiditis were uniformly higher in the three allergic diseases compared with controls. Specifically, aIRRs of SLE (1.45) and Sjögren's syndrome (1.88) were higher in ARC; aIRRs of SLE (1.44), Sjögren's syndrome (1.61) and myasthenia (1.56) were higher in asthma; and aIRRs of SLE (1.86), Sjögren's syndrome (1.48), vitiligo (1.54) and psoriasis (2.41) were higher in atopic eczema. There was no significant effect of the three allergic diseases on multiple sclerosis or of ARC and atopic eczema on myasthenia. Using ARM, allergic diseases clustered with multiple autoimmune disorders. Three age- and sex-related clusters were identified, with a relatively complex pattern in females ≥ 55 years old.

Conclusions: The long-term risks of autoimmune disorders are significantly higher in patients with allergic diseases. Allergic diseases and autoimmune disorders show age- and sex-related clustering patterns.