

Combined exposure to birch pollen and thunderstorms affects respiratory health in Stockholm, Sweden

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April 16, 2024

Abstract

Background: Thunderstorm asthma is a term used to describe surges in acute respiratory illnesses following a thunderstorm and is often attributed to an intense exposure to aeroallergens. Several episodes of epidemic thunderstorm asthma have been observed worldwide; however, no such cases have been described in Sweden. In Sweden, the most prominent exposure to airborne pollen occurs during the blooming of the birch. We aimed to explore the potential associations between the respiratory health and the combined exposure to thunderstorms and birch pollen. *Methods:* We investigated the association between the daily numbers of outpatient visits due to respiratory cases and the combined exposure to thunderstorms and birch pollen during a period of May 1st - August 31st in 2001-2017, in Stockholm County, Sweden, by using time series analysis with log linear models. *Results:* We detected a significant increase in the number of outpatient visits on both the same day and the day after the occurrence of a thunderstorm, when either the concentrations of ambient birch pollen or the number of thunderstorm-associated lighting discharges were within the highest categories. *Conclusions:* It is possible that co-exposure to heavy thunderstorms and high concentrations of birch pollen affects the respiratory health of the Stockholm population. To the best of our knowledge, this is the first study addressing the thunderstorm-related respiratory illnesses in Sweden and the effect of birch pollen. Other similar studies are needed before any conclusions can be drawn; however, our study may be important for future public health advice related to thunderstorm asthma.

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