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Increasing Incidence of Medical Visits due to Insect Stings in Alaska

Background

During the summer of 2006, Fairbanks experienced its first two known cases of fatal anaphylaxis resulting from yellow jacket stings. These cases occurred concurrently with anecdotal reports of an increase in yellow jacket prevalence in the state, both *Vespula vulgaris* (common ground yellow jacket) and *Dolichovespula arenaria* (aerial yellow jacket). These observations prompted an investigation to determine if there has been an increased incidence of medical visits due to insect stings/bites in Alaska in recent years.

Methods

We conducted a retrospective review of two databases in Alaska to identify trends of patients seeking care for adverse reactions following insect stings: (1) the Alaska Medicaid Database from 1999–2006, and (2) the Allergy, Asthma & Immunology Center of Alaska (AAIC) clinic visit database from 1999–2007. Cases of adverse reactions to insect stings were defined as a person diagnosed from 1999–2006 with any mention of one or more of the following ICD-9 codes: E905.3 (venomous insect specific to hymenoptera), E906.4 (bite from non-venomous arthropod), and 989.5 (toxic effect from venom) as the primary diagnosis. Rates were calculated using Alaskans enrolled in Medicaid during the study period.

Results

During 1999 and 2000, statewide insect bite incidence rates among persons enrolled in Medicaid were 346 and 391 per 100,000 persons per year, respectively; during 2005 and 2006, the rates were 638 and 455 per 100,000 persons per year, respectively. From 1999–2006, the three highest years for insect bite incidences occurred during 2004–2006 (chi-square for linear trend based on individual years from 1999–2006, 54; $p < 0.001$). All regions except the Gulf Coast experienced a statistically significant increase, with the greatest percentage increases seen in the Interior and Northern regions (Figure 1). AAIC reported an increase of 2.5 cases per year ($p < 0.001$; Figure 2) with no known increase in patient referral sources outside of those associated with population increases.

Discussion

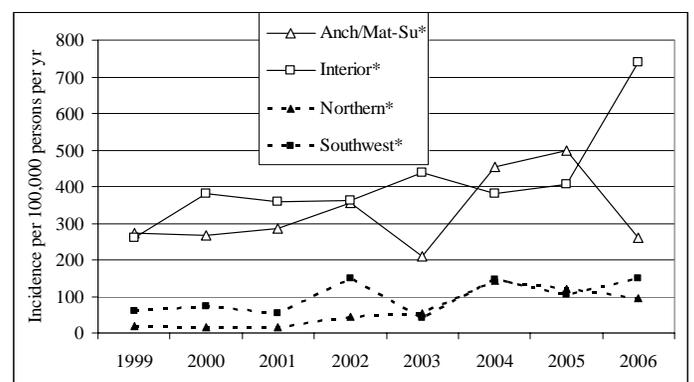
Results from our retrospective reviews support the hypothesis that an increase in medical visits due to insect stings/bites has occurred in Alaska since 1999. Alaska has had a mean annual temperature increase of 3.4°F over the past five decades, with the greatest increases occurring during winter.¹ Further work is

warranted to identify whether temperature, precipitation or other climate factors are impacting changing patterns of insect stings/bites in Alaska.

Recommendations

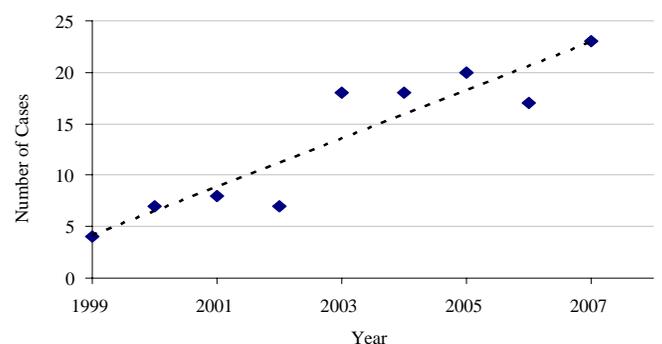
1. Health care providers should alert patients at risk for severe allergic reactions that medical visits due to insect stings appear to be increasing in Alaska and provide recommendations for prevention (e.g., wear repellent, avoid wearing fragrances and brightly colored clothes, and avoid leaving sweet foods in areas where bees and humans both congregate).
2. Patients at risk for severe allergic reactions should be given an epinephrine auto-injector and instructions on its use. They should also be referred to an allergist for evaluation and possible initiation of venom immunotherapy.

Figure 1. Yearly Incidence of Billing for Insect Stings among Medicaid-enrolled Patients — Alaska, 1999–2006. (Southeast and Gulf Coast regions were excluded for visual clarity.)



* Chi-square for trend $p < 0.05$

Figure 2. Patients Referred to the Allergy Asthma and Immunology Center of Alaska for Evaluation of Adverse Reactions to Insect Stings, 1999–2007.



Reference

1. Alaska Climate Research Center. Available at: <http://climate.gi.alaska.edu/ClimTrends/Change/TempChange.html>