

Letter

Rates of honeybee sting hypersensitivity in San Antonio during honeybee colony collapse disorder

Introduction

The abrupt disappearance of honeybees (*Apis mellifera*) from a hive or colony has been described as colony collapse disorder (CCD). Although the disappearance of bees from hives or colonies has occurred throughout the history of apiculture, the term *colony collapse disorder* was first applied to the dramatic rise in disappearance of Western colonies in North America in 2006. There is enormous potential economic impact of CCD because many agricultural crops worldwide are pollinated by bees. For example, the California almond industry is worth \$2 billion annually and relies on over 1 million hives for cross-pollination.¹ Similarly, there has been clinical uncertainty regarding the possibility that significant reductions have occurred in the number of cases of hypersensitivity to honeybee stings in San Antonio after the honeybee CCD. Additionally, concern has been expressed by program directors in allergy/immunology fellowships that the number of stinging insect hypersensitivity consultations has fallen precipitously in recent years. We undertook this study to determine whether the number or proportion of patients in our clinic diagnosed with hypersensitivity to honeybees has fallen since the report of CCD in 2006.

Our study was an Institutional Review Board–approved retrospective analysis of a clinical venom hypersensitivity database over the 27-year period from 1984 to 2011. The data were analyzed for patients referred to the allergy/immunology clinic for evaluation of a systemic reaction to flying *Hymenoptera*. The patient population included military beneficiaries in the San Antonio Military Health System, which includes over 230,000 patients. For the period of the study, only patients with a history consistent with a systemic reaction to a flying *Hymenoptera* were evaluated with skin testing. Skin testing methods included skin prick and serial intradermal testing to the standardized venoms of honeybee, yellow jacket, white-faced hornet, yellow hornet, and wasp and included appropriate controls. All patients were tested to all 5 of the flying *Hymenoptera* venoms. A wheal of at least 3 mm with surrounding erythema was a positive result for prick skin test at 1 µg/mL concentration. A wheal of at least 5 mm with surrounding erythema was a positive result for intradermal tests at 0.001 µg/mL, 0.01 µg/mL, 0.1 µg/mL, or 1 µg/mL.

All positive skin test results for honeybee and the other flying *Hymenoptera* were tabulated annually, and the data were analyzed with linear regression lines calculated from 1984 until 2011. The results demonstrate a decline in the number of patients that were skin test positive to all flying *Hymenoptera* combined as well as a decline in patients positive to honeybee (Fig 1).

To focus on the period beginning in 2006 with the initial reports of honeybee CCD,^{1,2} a second analysis was done using a linear

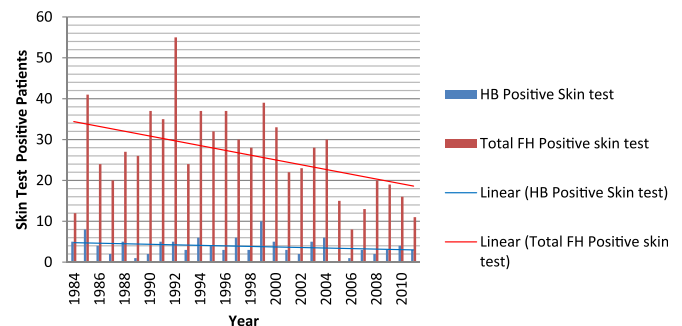


Figure 1. Number of patients with positive skin tests to honeybee and other flying *Hymenoptera* venoms evaluated after systemic reactions to flying *Hymenoptera* sting from 1984 until 2011.

regression line from 2006 to 2011 (Fig 2). Interestingly, this analysis showed an increase in the number of patients skin test–positive to honeybee venom.

The number of patients with honeybee hypersensitivity was small, ranging from 1 to 4 annually, but there was not an identifiable downward trend (Fig 2). Similarly, the proportion of patients diagnosed with honeybee hypersensitivity among all flying *Hymenoptera* ranged from 12.5% to 27% over the period without a downward trend. Our data did not include the total number of patients referred or evaluated for flying *Hymenoptera* allergy. Our unmeasured observation has been that the decrease in patients diagnosed with flying *Hymenoptera* hypersensitivity is a result of a decrease in the number of patients referred and evaluated. Without specific measure and comparison, we cannot be certain that the decrease in the number of patients diagnosed is not as a result of a reduction the incidence of flying *Hymenoptera* hypersensitivity in referred patients.

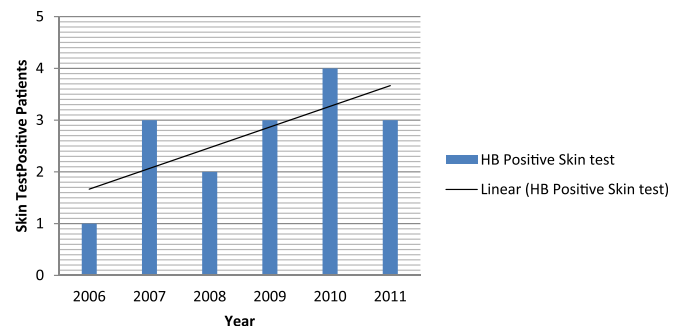


Figure 2. Number of patients skin test–positive to honeybee venom evaluated for systemic reactions to flying *Hymenoptera* sting from 2006 until 2011.

Disclosures: Authors have nothing to disclose.

In the San Antonio area, since the onset of the period associated with honeybee CCD, we have not observed a reduction in the number of patients diagnosed with honeybee hypersensitivity nor in the proportion of honeybee hypersensitive patients among all flying *Hymenoptera*-hypersensitive patients. However, over the entire 27-year period studied, a downward trend was seen in the number of patients diagnosed with flying *Hymenoptera* hypersensitivity in the allergy clinic. Although we believe this is because of a decrease in the number of referrals to the allergy department for evaluation of flying *Hymenoptera* allergy, we cannot rule out a decrease in the incidence of flying *Hymenoptera* hypersensitivity.

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References

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