

Effect of an ACE Inhibitor on Allergic Reaction to a Bee Sting

Christopher P. Alderman

An 83-year-old man being treated with combination product containing perindopril and indapamide had a systemic reaction after being stung by a bee. An angiotensin-converting enzyme inhibitor may significantly increase the severity of allergic reactions after being stung by bees, ants, or wasps. Clinicians should be aware of the potential for this phenomenon if assisting people who have been stung.

KEY WORDS: ACE inhibitors, Angiotensin-converting enzyme inhibitors, Bee sting, *Hymenoptera*.

ABBREVIATIONS: ACE = Angiotensin-converting enzyme, HMR = Home medicines review. Consult Pharm 2014;29:625-6.

In Australia, home medicines reviews (HMRs) are performed by accredited pharmacists, directly funded by the federal health department.¹ HMR involves a systematic evaluation of all medications (prescription and nonprescription) and allows identification of medication-related problems.¹ Under the provisions of the HMR program, reviews are provided to patients living in the small rural community of Kangaroo Island, located off the coast of the state of South Australia.¹ Kangaroo Island has been described as the world's oldest bee sanctuary and is thought to host the last remaining pure strain of the Ligurian bee (*Apis mellifera ligustica*) anywhere in the world. The strain was introduced there in 1884 and is highly prized for its gentle nature, high productivity, and very high quality honey, and underpins a substantial local beekeeping industry² (Figure 1).

During an HMR clinic on Kangaroo Island, a review was undertaken for an 83-year-old man with a history of hypertension, dyslipidemia, gastroesophageal reflux disease, vitamin D deficiency, and previous deep vein thrombosis and pulmonary embolus. His medications included:

- Atorvastatin 20 mg daily
- Colecalciferol 100,000 international units every three months
- Lansoprazole 30 mg daily
- Warfarin (variable dose)
- A combination product containing perindopril 5 mg and indapamide 1.25 mg, taken daily

He also revealed that he also occasionally used ibuprofen, purchased without a prescription. At the time of referral, the serum electrolytes, liver function tests, complete blood count, and serum concentration of vitamin D were all within the reference range.

During the interview, the patient appeared agitated and preoccupied. On inquiry, he volunteered that about eight hours before the visit he had been stung by a bee. His right index finger was markedly swollen and dusky, and he described widespread and severe itching, stating that he felt like his "whole body was on fire." There was no evidence of skin rash, urticaria, periorbital edema, or wheeze. He explicitly denied previous adverse reactions after past bee stings and mentioned he had been stung on many occasions without experiencing any symptoms similar to those present on the day of the review. He reported he had last been stung about two years before the review and had not sustained any adverse reaction. Significantly, he did reveal that treatment with the perindopril product had commenced about eight months prior to the review.

The Ligurian bee is the most common example of *Hymenoptera* species found on Kangaroo Island. Treatment with angiotensin-converting enzyme (ACE) inhibitors may significantly increase severity of allergic reactions after *Hymenoptera* envenomation (injection of venom).³ In this case, the lack of systemic allergic symptoms after previous stings in the absence of perindopril treatment raises the possibility of an iatrogenic contribution. This type of effect may be mediated through the effects of ACE inhibitors upon the renin-angiotensin system and kallikrein-kinin system.⁴ Using the widely accepted Naranjo algorithm for assessment of potential adverse drug reactions, the contribution of an ACE inhibitor in the exacerbation of a systemic hypersensitivity reaction a bee sting would in this case generate a score of 7,

Figure 1. Ligurian Bees



*Reproduced with permission, Hog Bay Apiary, Kangaroo Island, Australia. 2014.

which corresponds to a rating of a probable reaction.⁵ As ACE inhibitors are commonly prescribed, and stinging insects from the *Hymenoptera* order (including bees, and some wasps and ants) frequently have contact with humans, clinicians should be aware of the potential for this phenomenon if assisting people who have been stung.

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