

Survey of whole body–extract immunotherapy for imported fire ant– and other Hymenoptera-sting allergy

Report of the Fire Ant Subcommittee of the American Academy of Allergy and Immunology, C. T. Stafford, MD,* R. B. Rhoades, MD,** A. L. Bunker-Soler, MD,* W. O. Thompson, PhD, and L. K. Impson, BS Augusta, Ga.

A survey of 5300 allergists was conducted to determine the number and geographic distribution of patients receiving immunotherapy for imported fire ant (IFA) allergy in the United States and Canada. Responses were received from 1293 physicians who reported a total of 2573 patients being treated in 28 states. Most patients were from the southeast, but some patients were reported to be receiving IFA immunotherapy in areas outside the boundaries of known IFA infestation. Although IFA is a widespread health hazard in the southeast, it appears to exert an uneven impact on allergy practice in this region. Of the 1293 physicians responding to the survey, 117 (9%) reported the use of whole body extract (WBE) in the treatment of 1746 patients with winged Hymenoptera-sting allergy. Continued use of WBE immunotherapy was reported by physicians from all regions of the United States and from Canada. The largest numbers of patients receiving winged WBE immunotherapy were reported from Texas (641), Pennsylvania (246), Florida (129), and Canada (127). The results of this survey suggest a need for continuing medical education regarding (1) the magnitude of the health hazard posed by the IFA and (2) the efficacy of venom versus WBE in the treatment of winged Hymenoptera-sting allergy. (J ALLERGY CLIN IMMUNOL 1989;83:1107-11.)

Two IFA species currently infest large areas of the southern United States. *Solenopsis richteri* Forel, the black IFA, was imported to Mobile, Ala., about 1918.¹ Its spread has been limited to a small area along the Mississippi-Alabama border from Pontatuck to Meridian with extensions into northwestern Alabama (Fig. 1).² The more aggressive red IFA, *Solenopsis invicta* Buren, apparently entered the United States on produce shipped through the port of Mobile almost 50 years ago.³ It has adapted well to environmental

Abbreviations used

IFA: Imported fire ant
AAAAI: American Academy of Allergy and Immunology
WBE: Whole body extract

conditions in the south, where it now infests >160 million acres in 13 states and continues to spread at a rate of several million acres per year.^{2, 4, 5}

The IFA has become an agricultural pest and a health hazard for >30 million people who live in the southeastern United States.⁶ The sting-attack rate has been reported to range from 28% to 58% during spring and summer months in areas of heaviest IFA infestation.⁷⁻⁹ Severity of IFA-sting reactions range from the usual local sterile pustule to severe secondary infection or life-threatening anaphylaxis.⁹ Systemic allergic reactions account for approximately 10% of IFA-sting reactions requiring medical treatment.¹⁰ IFA-sting deaths, once believed exceedingly rare, have recently been documented in five southern states.¹¹⁻¹³

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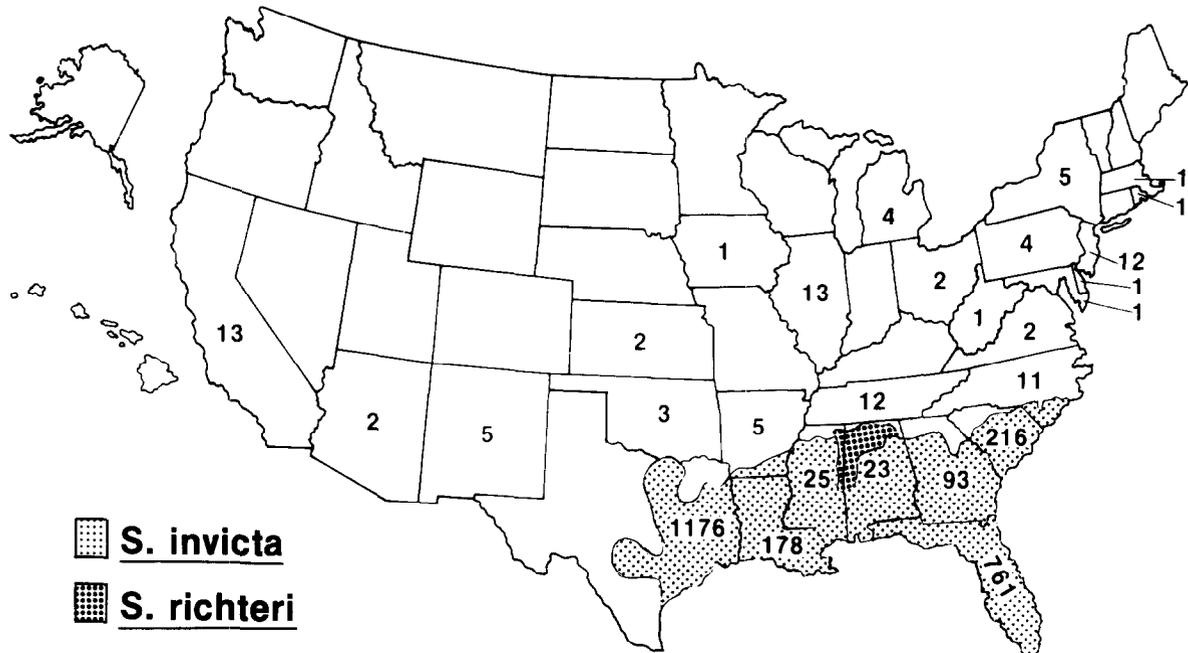


FIG. 1. Number and geographic distribution of patients reported to be receiving IFA immunotherapy.

To assess further the magnitude of the health hazard posed by the IFA, the Fire Ant Subcommittee of the AAAI sponsored a survey of allergists throughout the United States and Canada to obtain information about the number and geographic distribution of patients receiving immunotherapy for IFA-sting allergy.

To compare the scope of IFA allergy to that for other types of Hymenoptera sensitivity, allergists responding to the IFA-immunotherapy survey were also asked to report the number of patients receiving Hymenoptera-venom immunotherapy and the number being treated with Hymenoptera WBE, other than fire ant.

MATERIAL AND METHODS

Survey questionnaires were mailed from the AAAI office to 5300 members of the AAAI and the American College of Allergists. Mailing lists were cross-checked to prevent duplicate mailings to allergists who are members of both organizations.

The following questions were included in the questionnaire:

1. How many patients do you have receiving IFA desensitization? _____
2. How many patients do you have receiving other Hymenoptera desensitization? _____ Hymenoptera WBE? _____
3. Estimated number of new cases per year of IFA sensitivity. _____ Other insect sensitivity. _____

4. Please indicate your approximate geographic drawing area by state and counties. _____
5. Approximate number of patients that you have receiving desensitization to any agent (molds, pollens, venoms, epidermals, etc.). _____

The survey data was tabulated and organized by state for interpretation. Calculated means and ratios are illustrated in Figs. 2 to 5.

RESULTS

Of the 5300 physicians surveyed, 1293 (24%) responded from all geographic regions of the United States and from Canada. A total of 2473 patients from 28 states were reported to be receiving IFA immunotherapy (Fig. 1). The largest numbers were reported from Texas (1176), Florida (761), South Carolina (216), Louisiana (178), Georgia (93), and other southern states.

The mean percentage of patients receiving immunotherapy to IFA compared to other Hymenoptera is illustrated in Fig. 2 for key southern states.

The mean percentage of patients receiving immunotherapy for IFA allergy compared to all other allergic conditions is illustrated in Fig. 3. The ratios for individual allergy practices are illustrated in Fig. 4.

Of the 1293 physicians responding to the survey, 117 (9%) reported the use of WBE for treatment of 1746 patients allergic to stings of winged Hymenop-

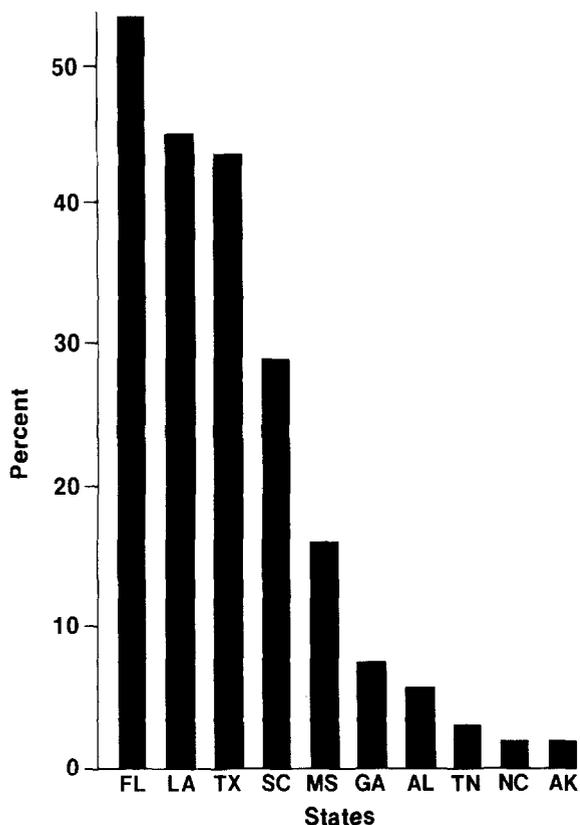


FIG. 2. Mean percentage of IFA immunotherapy relative to other Hymenoptera immunotherapy.

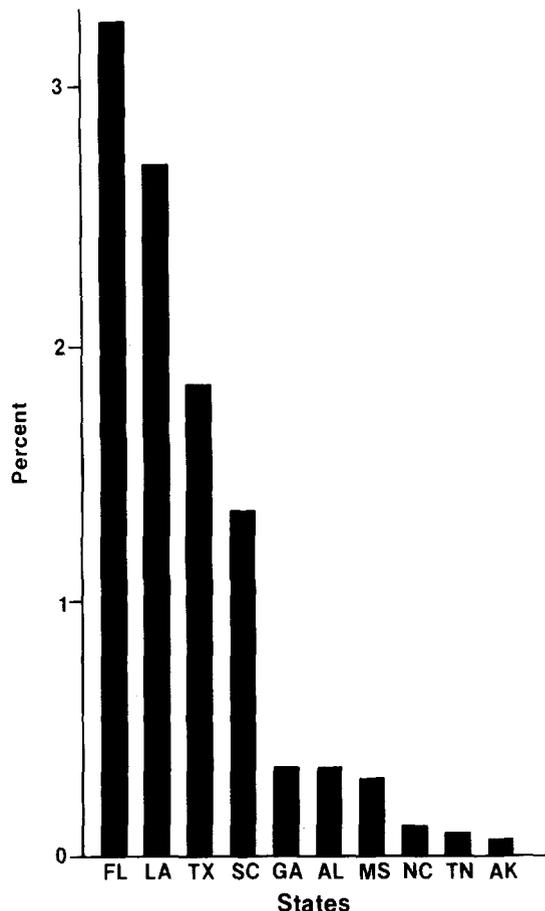


FIG. 3. Mean percentage of IFA immunotherapy relative to all other immunotherapy.

tera. The use of WBE immunotherapy was reported by physicians from all geographic regions of the United States and from Canada (Fig. 5). The largest numbers of physicians reporting the continued use of WBE were from Texas (9), Pennsylvania (9), New York (8), California (8), and Illinois (8). The largest numbers of patients reported to be receiving WBE immunotherapy were from Texas (641), Pennsylvania (246), Florida (129), and Canada (127). Responding physicians from only 21 states denied the use of WBE immunotherapy in their practices.

DISCUSSION Immunotherapy for IFA-sting allergy

Most patients receiving IFA immunotherapy were reported from the southeast, but some were reported from adjacent and surrounding states. This expanding distribution of IFA-sensitive patients beyond the boundaries of known IFA infestation most likely reflects movement of allergic patients outside the southeastern region.

In some areas of the southeast, immunotherapy for IFA allergy accounts for up to 50% of immunotherapy administered for Hymenoptera allergy (Fig. 2) and up to 10% of that prescribed for all allergic conditions.

The mean percentage of IFA immunotherapy relative to that prescribed for all other allergic disorders in key southern states is illustrated in Fig. 3.

Although IFA is a widespread health hazard in the southeast, it appears to exert an uneven impact on allergy medical practice in this region. This is indicated by wide variations in the proportion of patients treated with IFA immunotherapy, even in areas where the IFA represents a major medical problem (Fig. 4).

The results of this portion of the survey suggest that the IFA may be exerting a considerable, although it is highly variable, impact on allergy practice in the southeast.

Continued use of WBE for winged Hymenoptera-sting allergy

The use of winged Hymenoptera WBEs by 9% of responding allergists was an unexpected finding of this survey. Controlled clinical studies have proved the efficacy of venom immunotherapy in the treatment of winged Hymenoptera-sting allergy.^{14,15} Hymenoptera-sensitive patients with a history of a systemic sting reaction have a 65% risk of a subsequent generalized

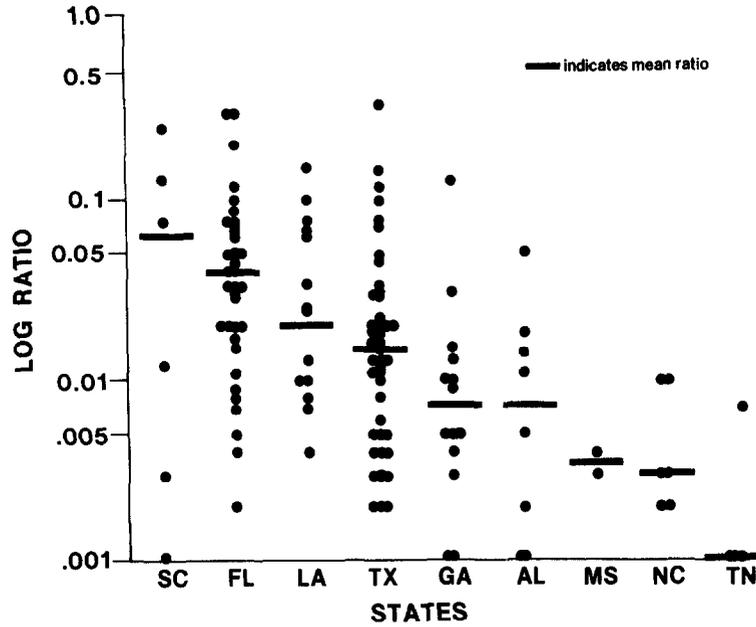


FIG. 4. Ratio of IFA immunotherapy relative to other immunotherapy administered by individual physicians.

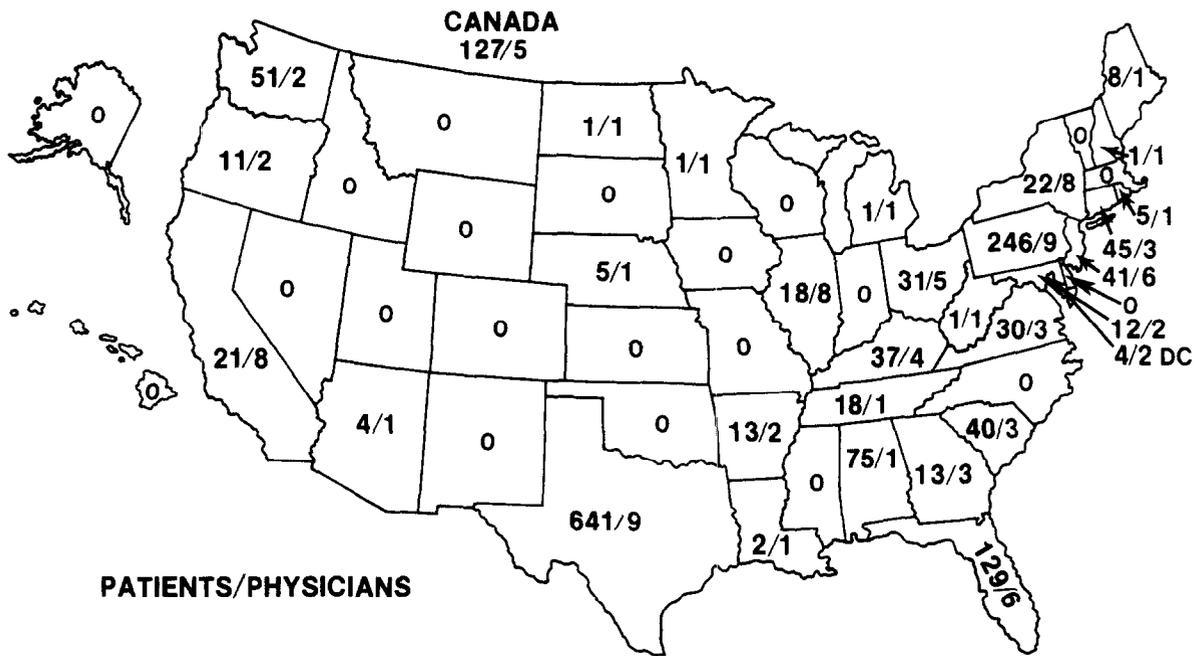


FIG. 5. Number and geographic distribution of physicians prescribing WBE immunotherapy for patients with winged Hymenoptera-sting allergy.

allergic sting reaction if the sting is untreated. The risk of a subsequent systemic sting reaction can be reduced to approximately 5% with venom immunotherapy. Immunotherapy with WBE has been demonstrated to be no more effective than placebo treat-

ment.^{14, 15} Treatment failures and even deaths from subsequent stings have been reported in patients treated with winged Hymenoptera WBE.^{16, 17}

Since Hymenoptera venoms were approved for clinical use in 1979, venom immunotherapy has been

accepted as the standard treatment for systemic allergic reactions to stings of the winged Hymenoptera.^{15, 18} Accepted indications for immunotherapy with Hymenoptera WBEs appear to be quite limited. WBEs may occasionally be useful in the treatment of inhalant allergy to insect body proteins. In addition, clinically relevant antigens have been detected in IFA WBEs that appear to be clinically effective in the treatment of IFA-sting allergy.¹⁹⁻²³ A double-blind, placebo-controlled, investigational new drug study is currently underway to compare the clinical efficacy of IFA venom with IFA WBE in immunotherapy of IFA-sting allergy.

These limited clinical indications appear to be inadequate to explain the continued use of Hymenoptera WBE by 9% of the practicing allergists who responded to this survey. These results suggest that some allergists may be continuing to prescribe immunotherapy with WBE for Hymenoptera-venom allergy. Patients receiving such treatment may be inadequately protected from potentially life-threatening allergic reactions to stings of the winged Hymenoptera.

The results of this survey suggest a need for continuing medical education regarding (1) the magnitude of the health hazard posed by the IFA and (2) the efficacy of venom versus WBE in the treatment of winged Hymenoptera-sting allergy.

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