INTRODUCTION

Hymenoptera venom allergy (HVA) is a serious and potentially fatal disease and it is one of the major causes of anaphylaxis[1].

The prevalence of hymenoptera stings in the general population ranges from 56.6% to 94.5%, and it may vary according to the location and the climatic conditions, whereas HVA[2] affects up to 5% of the general population and up to 32% of beekeepers[2].

Clinical studies reveal certain predispositions that may affect the severity of the allergic reactions to Hymenoptera venom, for example, age, cardiovascular diseases, drugs, in particular beta-blockers and angiotensin-converting enzyme inhibitors (ACEi), the number of stings per year and atopic diseases[4].

Due to the fear of future reactions, HVA imposes a significant impact in health-related quality of life (QoL)[5].

Hymenoptera venom immunotherapy (VIT) is the only effective treatment in HVA. It is safe and it induces tolerance to hymenoptera venom, providing long-term protection from further systemic reactions in 95% of patients allergic to wasp venom, and approximately 80% of those allergic to bee venom[3].

VIT consists in the subcutaneous administration of the selected venom extract, with an initial induction phase, followed by a maintenance phase that usually consists in the administration of 100 µg of venom extract at scheduled intervals. The overall duration of VIT is 3 to 5 years but it may be longer in selected patients[5,6,7].

VIT reduces the risk of subsequent systemic sting reactions to as low as 5% compared with the risk of such reactions in untreated patients for whom the risk may be as high as 60%[2]. The overall relapse rate after discontinuation of VIT is 10%-15%. The risk is higher in patients who were treated for less than 5 years[8].

The aim of this study was to analyze hymenoptera re-sting reactions in patients with indication for VIT. A secondary objective was to evaluate differences in the severity of reactions of re-stings between patients who underwent VIT or not.

METHODS

A medical records review of all patients with indication for VIT according to the European Academy of Allergy and Clinical Immunology (EAACI) guidelines[9] between 2005 and 2016 in our Clinical Allergy Department was performed.

Data regarding demographics, sting reaction severity according to Mueller´s criteria[10], hymenoptera involved, specific IgE, venom skin tests, date of proposal, first and last administration and treatment completion was collected.

A structured questionnaire was applied by telephone to the patients.

Statistical analysis was performed using IBM SPSS Statistics®, version 24.0. Continuous variables are expressed as means and standard deviations; categorical variables were expressed as frequencies and percentages. A p value < 0.05 was considered statistically significant.

RESULTS

A total of 113 patients were included; 80 (71%) males, with a mean age of 38 (± 15) years. Of these, 23 (21%) were beekeepers and 25 (23%) were atopic. With respect to atopic diseases, 4 (4%) had asthma and 14 (13%) rhinitis. Other comorbidities included cardiovascular disease in 18 (16%) and 14 of these patients were on ACEi and/or beta blockers.

VIT with honeybee was proposed in 73 (64%), wasp 38 (34%) and *Polistes* 2 (2%). The mean duration of VIT was 45 (± 16) months. However, 23 completed less than 36 months of treatment.

Unfortunately, 28 patients (25%) were not treated with VIT. The main reason admitted for not complying with the treatment was economical[3]. VIT was entirely supported by the patients at that time without any type of reimbursement.

Eighty-eight patients (78%) participated in the telephone interview. Of these, 49 (56%) completed VIT, 15 were still on VIT (17%) and 24 (27%) did not undergo treatment. Of those who completed VIT, 14 (29%) were re-stung and 3 went to the emergency department (ED). Twenty-four patients (38%) were stung while still on VIT. Twelve (50%) of those who did not perform VIT were re-stung and 9 went to the ED.

The severity of the reactions, according to Mueller's grade[10], of the patients who were re-stung after completing VIT was: local reactions in 11 (79%), grade I in 1 (7%); grade III in 1 (7%). One had a toxic reaction after multiple stings. The mean follow-up time was 45 (1 –110) months. Those who were stung during VIT, 20 (87%) had local reactions, 1 (4%) grade I and 2 (9%) grade III. Of those who did not undergo VIT and were re-stung: 3 (25%) had grade I, 4 (33%) grade III and 5 (42%) grade IV. (Figure 1)

In this series, the patients who were not treated with VIT had a greater number of systemic reactions when re-stung as well as more severe reactions ($p < 0.01$).

CONCLUSIONS

In this group, re-sting reactions were less severe in the patients who had completed or who were on venom immunotherapy, as expected. Three quarters of those who did not undergo treatment had severe anaphylactic reactions when re-sting.

VIT is recommended in individuals (children and adults) with documented sensitization to the venom of the culprit insect and systemic sting reactions exceeding generalized skin symptoms (such as pruritus, flushing, urticarial and angioedema) and adult patients with generalized skin symptoms if quality of life is impaired[9].

This study reinforces that venom immunotherapy is highly effective in the treatment of hymenoptera venom allergy and it should be widely available for all patients with HVA at risk.

The Authors declare the absence of economic or other types of conflicts of interests.

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