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Respiratory Diseases

Allergy to Hymenopter Venins: About Two Cases

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Abstract **Case Report**

The prevalence of allergic diseases has increased significantly, Hymenoptera allergy is one of the most frequent causes of anaphylaxis. The most common species are Wasps and Bees. The fatal risk has been known since antiquity. We report the study of two observations of allergy to hymenoptera venom collected in the respiratory diseases department of the Ibn Rochd University Hospital of Casablanca. A man and a woman, victims of a hymenoptera sting, presented severe allergic reactions requiring treatment with allergenic immunotherapy. The clinical examination was unremarkable. The blood count showed hypereosinophilia. Skin tests were positive for bee venom. The specific IgE assay for bee venom was positive. The diagnosis chosen was that of allergy to bee venom. Our patients were classified as Mueller stage III. The bee venom desensitization protocol was started according to the Ultra Rush protocol with clinical monitoring of the desensitization sessions.

Keywords: Allergy to hymenopter venins, Wasps and Bees, allergic reactions, allergen immunotherapy.

INTRODUCTION

Although allergic reactions to hymenoptera venoms date back to antiquity, specific immunotherapy has been in use for more than a quarter of a century. Over the last few decades, the prevalence of allergic diseases has steadily increased, constituting a major public health problem. Among them, allergy to hymenoptera venom causing a serious systemic reaction concerns 3% of adults and 0.5% of children. In exposed individuals, particularly beekeepers, this figure rises to 40%. Hymenoptera venom allergy has a significant impact on the patient's quality of life and can be severe or even lethal in healthy patients [1].

The clinical evaluation of the severity of the reaction after a sting associated with the biological diagnosis, based on skin and blood tests (specific IgE assay), as well as on the search for risk factors, allows an adapted management of the patient. When indicated, specific sensitization has proven to be effective. Specific immunotherapy or specific desensitization is the only treatment that provides effective protection in 80 to almost 100% of patients allergic to hymenoptera venoms [2].

The objective of the study of these two observations is to illustrate the different stages of diagnosis and the desensitization protocol of an allergy to hymenoptera venoms. It is a pathology that is rare, poorly known and therefore under-diagnosed. Its clinical severity, such as anaphylactic shock, is the immediate indication for specific immunotherapy, which is also still poorly known and represents the only effective treatment to protect allergic patients.

OBSERVATIONS

Patient n°1:

The patient was 46 years old and had no previous medical history. The history of the disease goes back to August 2008, during a stay in a country, the patient was stung by an unidentified insect on the arm, following which he developed urticaria of the trunk and both arms without general signs. The evolution was spontaneously favorable after a few hours.

In August 2009, one year after the first sting, the patient was stung again, while walking near a beekeeper, he was stung by a bee in the ear. Thirty minutes later, an edema of the face with generalized

rash associated with laryngeal tickling, cough and wheezing appeared.

Following this symptomatology, the patient consulted the emergency room where he received a nebulization of Salbutamol and injectable corticosteroids with improvement of symptoms one hour later. Following these two incidents, the patient consulted for specialized management.

The clinical examination was unremarkable. The blood count showed hypereosinophilia. Skin tests were positive for bee venom. Specific IgE for bee venom was elevated to 44KU/l (normal value <0.10KU/l). Specific IgE for wasp vespula, polistes and mosquito venom was negative.

The diagnosis chosen was bee venom allergy. Our patient was classified as Mueller stage III and since he presented respiratory signs during the second incident, we started the bee venom desensitization protocol according to the Ultra Rush protocol (Table 1), with clinical monitoring during the desensitization sessions (Table 2).

Biological monitoring in our patient was based on the annual determination of bee venom specific IgE levels, the results were as follows: 08/09/11: 27 Kua/L, 23/10/12: 22.1 Kua/L, 15/01/13: 21.3 Kua/L, 03/04/14: 20.1 Kua/L, 19/05/15: 7.86 Kua/L. The decrease in the level of specific IgE was an argument in favor of the effectiveness of desensitization.

Table 1: Ultra-rush protocol in 3h30

Day	Time	Injected venom (ug)
Day 1	0h 0h30 1h 1h30 2h30 3h30	0,1 1 10 20 30 40
Day 15	0h 0h30	50 50
Day 45	One injection of 100 ug	100
Monthly	One injection of 100 ug	100

Table 2: Clinical monitoring of desensitization sessions

Dates	Injectable volumes	Observation and treatment
04/08/10	101,1 ug	Sensation of respiratory discomfort + Local reaction at the injection site treated with dermocorticoids
18/08/10 au 26/07/12	100 ug	Sensation of respiratory discomfort Local reaction at the injection site + Treatment with dermocorticoids
23/08/12	100 ug	Local reaction at the injection site
27/09/12 au 03/08/15	100 ug	No incidents
01/05/15	100 ug	End of desensitization

Patiente n°2:

This was a 58-year-old female patient, with a history of eczema on both hands when using cleaning products or perfumed products and presents with signs of gastroesophageal reflux with regurgitation, pyrosis when taking acidic foods. The onset of the symptomatology dates back to August 2014, at the edge of a swimming pool, where the patient was bitten by an unidentified insect at the anterior aspect of the left wrist, then she felt intense pain with pruritus at the site of the bite. Two to three minutes later, the patient presented with generalized urticaria with chest tightness and respiratory discomfort with edema and redness of the face and left upper extremity. These symptoms progressively regressed following the injection of corticosteroids and nebulization of Salbutamol in the emergency room. Given this symptomatology, the patient was referred to us two days later for further treatment. The clinical examination was unremarkable. Recombinant allergen assay of specific IgE for bee venom was positive at 0.8 KUA/L (normal value < 11.4), specific IgE for wasp vespula and polistes venom were negative. Tryptasemia was 4 mg/L (normal value < 11.4). The diagnosis retained was that of allergy to bee venom. Our patient was classified as Mueller stage III. The bee venom desensitization protocol was started according to the Ultra Rush protocol with clinical monitoring of the desensitization sessions (Table 3). In view of the appearance of signs of respiratory distress 45 days after the start of the desensitization protocol, it was necessary to stop the current desensitization and to resume the desensitization courses according to a slower protocol, in small progressive doses with a cumulative dose of injected venom that must always be higher than the cumulative dose of the previous session, hence the need to reach a booster dose of 200 µg monthly with administration of per os antihistamines 24 to 48 h before immunotherapy and for 2 to 3 days (Table 4).

Table 3: Clinical monitoring of desensitization sessions

Date	Injectable volumes	Observation and treatment
06/03/15	Cumulative dose 101.1 ug	Local redness treated with dermocorticoid
20/03/15	Cumulative dose 100 ug	Petite rougeur locale, traitée par dermocorticoïde Légère oppression thoracique
20/04/15	100 ug	Redness of the face and the front of the trunk Intense chest tightness Hypotension, confusion Patient transferred to resuscitation: O2+ adrenaline injection and salbutamol nebulization

Table 4: Resumption of the stepwise desensitization protocol

Date	Injectable volumes	Observation and treatment
06/05/15	Cumulative dose 45 ug	Redness of the face, pruritus, laryngeal tickling Heaviness of the lower limbs, cyanosis of the extremities IV injection of solumedrol 120 mg
15/06/15	Cumulative dose 75 ug	Small redness without pruritus at the injection site treated with dermocorticoid Redness of the face with slight chest tightness that regressed with oxygen therapy
19/08/15	Cumulative dose 85 ug	Small redness without pruritus at the injection site treated with dermocorticoid Redness of the face
18/01/16	Cumulative dose 200 ug	Small redness without pruritus at the injection site treated with dermocorticoid Redness of the face Vulvar pruritus
09/10/17	Cumulative dose 200 ug	Small redness without pruritus at the injection site treated with dermocorticoid Redness of the face

DISCUSSION

Allergic reactions to insect bites have been known since ancient times. The history of allergy to insect venom dates back to 2641 BC with the death of Menes of Memphis, a pharaoh of the first dynasty [3].

Some Hymenoptera such as Bees, Wasps, Bumblebees... are likely to attack humans. The inoculated venoms are harmful, either because of their quantity (multiple stings), or because the stung subject develops an allergic reaction [4]. In Morocco [5], the incidence of envenomations by hymenopteran insects from 2008 to 2011 was 0.0014 per 100,000 inhabitants, it reaches a value of 0.0062 per 100,000 inhabitants in the region of Tangier-Tetouan, this is the case of our two patients who were stung in the summer period in the northern region: the first one in the region of Taounat and the second one in Tangier. However, this morbid phenomenon is still, in most regions, very underestimated. Indeed, many cases of stings and envenomations by hymenoptera escape the data collection system. This bias can be explained by the inaccessibility of health care centers, and more particularly of the many people who rely on traditional medicine [6].

Envenomations occur mainly in summer (June, July), these months correspond jointly to the period of strong beekeeping activities (harvesting of products: honey, pollen, wax, royal jelly and propolis) and the proliferation and mating of insects in this period [7].

Hymenoptera venoms can cause clinical manifestations of a toxic or allergic nature, local, loco-regional or systemic, with immediate, semi-reduced or delayed onset depending on the physiopathological mechanism [8].

The Hymenoptera is an important order, with more than 100,000 species divided into about 100 families and divided into two suborders, the symphitae and the apocrites [9]. Their name comes from the membranous wings that most hymenopteran insects wear in pairs. The word comes from the Greek hymen, "marriage", and pteron, "wing" [10].

The actual number of Hymenoptera worldwide is estimated to be between 1 and 3 million species divided into about 100 families. There are three sub-orders: symphytes, terebrants and aculeates (stinging beetles). We will focus here on the sub-order of aculeates (or sting-bearers) which includes the Apidae (bees) and the Vespidae (wasps) [11].

The family Apidaes is represented by bees and bumblebees and the family Vespidaes is divided into three genera Vespula, Vespa and Poliste [12].

In terms of geographical location, Vespula allergy is the most common all over the world; Polistes are found especially around the Mediterranean (Polistes dominulus or rather dominula; Polistes Gallicus). The climate, temperatures, the behavior of the insects, which are more or less aggressive, as well as individual exposure influence the risk of stinging. Changes in our ecosystems, with the introduction of new species ("Asian" hornets, "Africanized" bees known to be particularly aggressive, etc.) expose us to new allergenic risks.

Rising temperatures in cold regions may be causing an increase in the prevalence of Hymenoptera venom allergies in these regions. For example, in Alaska, the first case of fatal anaphylaxis after a Hymenoptera sting was reported in 2006, and the frequency of Hymenoptera venom allergy has increased 3 to 4 times in recent years, mainly in the northernmost regions [13].

Certain occupations or activities are associated with an increased risk of being stung: gardeners and horticulturists, farmers, beekeepers (and their families), personnel working in greenhouses (pollination), outdoor sports activities [14]. Hives or wasp nests near homes or workplaces should also be considered as a risk factor.

For risk factors for allergic reactions, there is little data regarding genetic factors that would favor the production and persistence of specific IgE in patients stung by hymenoptera [15]. A possible familial genetic predisposition for hymenoptera venom allergy has been suggested in a study of children in Israel [16]. In another study, a protective factor related to certain alleles (HLA DR 4 and DQw 3) was identified, the presence of which is related to the inability to synthesize IgE against bee venom allergens [17].

It is generally accepted that atopy is not a risk factor for allergy to Hymenoptera venom in the general population [18], despite some conflicting studies. For example, a correlation has been noted between atopic terrain and sensitization to hymenoptera venom. This is not related to a history of allergic reaction to the venom nor to an increased risk of subsequent allergic events [19], but probably to the predisposition of atopic individuals to produce IgE antibodies to environmental allergens [20].

In an adult population, sensitization to hymenoptera venom is found in 15-25% of subjects, with a prevalence of systemic reactions about 10 times lower [21]. Some sensitized and asymptomatic patients will have an allergic reaction to the sting (17% of cases). Sensitization therefore represents a risk factor for systemic reactions to re-injection, although no parameter has been identified to predict which sensitized individuals are at risk of allergic reaction. However, this risk seems to be clearly dependent on the severity of the previous reaction [22].

A short time interval between stings increases the risk of a systemic reaction to the sting. In an Italian study, 60% of patients developing an allergic reaction had been stung previously without any particular reaction less than 2 months before, whereas in the group of non-allergic patients only 4% had been stung within the previous 2 months [23].

Extremely frequent stings seem to induce tolerance. Thus, according to an old study, 45% of beekeepers who are stung less than 25 times per year develop systemic reactions, whereas those who are stung more than 200 times per year do not [24].

In the case of a generalized allergic reaction to hymenoptera venom, in children 60% of generalized reactions are mild and involve only the skin, whereas in adults respiratory or cardiovascular symptoms are present in 70% of cases [25].

Male gender is an independent risk factor, probably related to the fact that adult males are more frequently exposed to hymenoptera stings [26]. After an extensive local reaction, the risk of having an anaphylactic reaction is 5-10%. This risk is 20% after a moderate anaphylactic reaction, and 40% after a severe anaphylactic reaction [27].

Stings to the face result in extensive and large swelling, which may indicate a severe reaction. Stings to the oral or laryngeal mucosa may be life-threatening due to airway obstruction edema.

Pre-existing cardiovascular disease is a risk for developing a more severe and lethal anaphylactic reaction [28].

Clinical signs are presented by local and locoregional reactions to Hymenoptera bites. They are always annoying, sometimes worrying, local and locoregional reactions to Hymenoptera stings are a frequent reason for consultation both to seek a preventive or curative therapeutic response, but also in the fear that these manifestations are the beginnings of more serious symptoms. Despite their commonplace nature, they remain poorly understood and the literature on them is relatively poor. Local reactions are normal symptoms, consequences of the direct toxicity of venoms as well as of the specific or non-specific immune reaction that they trigger. Very soon after the sting, a painful and then possibly pruritic edema appears at the site, which may persist for several hours or even days (136). There is a gradient in the intensity of these local reactions, but the distinction between

local reaction and locoregional reaction is simple since the medical definition of the latter is clear. Indeed, swellings at the site of a hymenoptera sting greater than 10 cm and which persist for more than 24 hours are classified in this group [29]. These are erythematous and pruritic inflammatory reactions that may exceptionally be the site of vesicles, bullae or even other non-anaphylactic systemic attacks [30].

Systemic or general reactions are relatively frequent and particular emphasis should be placed on mild generalized reactions, which should raise the alarm and prompt an allergological work-up to discuss an indication for specific desensitization. These reactions are polymorphous since they may involve all organs. Cutaneous, mucosal, respiratory, circulatory, digestive and neurological signs can be distinguished. In addition, the expression of a single symptom or the grouping of several symptoms can be observed, resulting in different clinical pictures. Finally, all degrees of severity are possible: Mucocutaneous signs are certainly the most frequent. These are essentially generalized urticaria. In some cases, the subcutaneous tissues are involved and angioedema is observed. Quincke's edema is the most severe form, and its laryngeal location is a sign of severity. Dysphonia may be one of the first signs. Respiratory involvement will result in a typical asthma attack. This clinical picture is more frequent in asthmatics. Diffuse bronchial oedema can lead to acute severe asthma. This respiratory damage may be accompanied by rhinitis or even conjunctivitis. Circulatory damage due to generalized vasodilatation may result in clinical symptoms of varying severity, ranging from simple malaise to anaphylactic shock, which may lead to death.

This shock is to be differentiated from other causes of syncope that can occur in a context of stinging: vagal shock, cardiogenic shock, systemic mastocytosis, hyperventilation syndrome and panic attack, hypoglycemia. Digestive signs are not uncommon and include epigastric pain, abdominal pain, nausea, vomiting and transit disorders such as diarrhea. Neurological symptoms include visual disturbances, dizziness, feelings of drunkenness which may be related to anaphylactic shock, urinary or fecal incontinence. Paresthesias of the stung area (arm, leg), linguals, orbitals are often a sign of more serious reactions. Memory disorders have also been reported and in extreme cases comas.

Anaphylactic shock is a medical emergency whose symptoms combine tachycardia with a small and thready pulse, blood pressure instability then frank hypotension, syncope then rhythm disorders and ventricular arrhythmia. It evolves in 3 phases, it is a hypovolemic shock, where the vasodilatation created by the mediators of immediate hypersensitivity plays a primordial role [31]. Other phenomena may be associated: cardiac anaphylaxis with initial cardiac arrest, coronary spasm and myocardial necrosis, decrease in left heart contractility, and also hepato-splanchnic venoconstriction increasing hypovolemia and systemic hypotension, or pulmonary venoconstriction with increase in pulmonary vascular resistance and aggravation of hypoxia [32]. The consequences are on the cardiac and cerebral functions; cerebral cortical perfusion is decreased which worsens the consequences of hypoxia on the brain [33].

Atypical clinical expressions of hymenoptera venom allergy are multiple. We note the neurological attacks, whose clinical picture is multiple and varied: one of the most frequent seems to be mononeuritis and optic neuritis, polyradiculoneuritis, Fisher's syndrome associating ataxia, areflexia, ophthalmoplegia considered as a variant of Guillain Barré syndrome, quadriparesis and urinary incontinence, epileptic episodes presenting as grand mal attacks, trigeminal neuralgia, encephalopathy which is sometimes fatal, Reye's syndrome with multi-target organ involvement but primarily encephalopathy and hepatomegaly, and even disturbance of consciousness and obsessive-compulsive disorder-like sequelae.

The renal damage is manifested by the nephrotic syndrome, which is the most described renal pathology related to hymenoptera stings. The first case was reported in 1955 by Rytand [34]. Curiously, it is mostly described for bee venoms rather than for wasp venoms. The delay between the insect sting and the onset of the nephrotic syndrome can vary from 5 days to 2 weeks [35]. It often occurs after a single sting, but multiple stings are occasionally reported.

Cardiac involvement is more rarely described; cardiac reactions have also been reported after hymenoptera stings. Kounis syndrome is a genuine allergic reaction in the heart with release of mast cell mediators acting directly on the coronary endothelium [36]. This syndrome has been described during hymenoptera stings but also during drug or food allergy. It can occur in a more general anaphylactic context, but also in isolation.

Currently, the diagnosis of hymenoptera venom allergy is based on clinical history, skin testing and specific IgE [37]. Current practice parameters have been published by the American and European Academies of Allergy and Clinical Immunology EAACI.

Skin tests are performed 4 to 6 weeks after the allergic accident, with standardized extracts of different types of hymenoptera, especially in the case of a systemic reaction, when a specific sensitization is considered. There are three types of venoms at our disposal: bee venom (Apis mellifera), wasp venom (Vespula yellow jacket) and wasp venom (Poliste). Bumblebee and hornet venoms are not available.

The specific IgE assay for hymenoptera venom has good sensitivity but lacks specificity due to partial cross-reactivity between species (Vespula wasps and Polistes, Vespula wasps and hornet, bee and bumblebee, presence of anti-CDD IgE) [38]. Their sensitivity is inferior to that of the TST, especially if the test is performed more than one year after the sting [39].

Specific IgG4 testing is performed prior to initiation of STI and during follow-up. In case of positive skin tests and specific IgE for both the bee and the Vespula wasp and when the identification of the responsible insect is not clearly established, a specific IgG 4 level can orient the diagnosis because it is frequently found elevated in case of a recent sting. Classically their level increases during desensitization and their presence is in favor of protection.

The goal of the treatment is allergen desensitization, which limits or prevents the development of new allergies and above all can cure the allergy. Desensitization is also intended to improve the patient's quality of life and to reduce the need for medication. When the maintenance dose is reached, allergic reactions should be reduced or non-existent when exposed to or in contact with the allergen for which the patient is desensitized (bee, wasp, etc.). The aim of desensitization is also to reduce or even stop the current daily treatment if it exists. When the indications are well defined, desensitization can reduce healthcare costs.

Prophylactic measures consist first of all in informing the allergic subject about the risks of recurrence in case of a new sting. Based on the living conditions and habitat of Aculeates, a series of recommendations have been established [40]: information about the risk of recurrence in case of a new sting, avoid parking near beehives, wasp nests, or swarms, avoid walking barefoot in the grass, avoid wearing brightly colored clothing, limit the use of perfumes and scents, careful picnicking, avoid getting agitated in the presence of hymenoptera, avoid staying in the sun with your body wet or covered with sun oil, carry an emergency kit including adrenaline, in case of a bee sting, remove the stinger without compressing the venom sac.

The treatment of extensive local reactions is based on cold compresses and alcohol dressings can soothe. This local treatment can be supplemented with oral antihistamines. If the reaction persists beyond a few hours, oral corticosteroids may be given for 1 to 4 days.

Treatment of systemic reactions is based on subcutaneous or intramuscular injection of adrenaline. Any patient who has experienced anaphylactic shock should be hospitalized for 24 hours for monitoring [41].

The emergency kit should be prescribed to all patients with a clinical history of systemic reactions to hymenoptera stings [42]. It consists of oral antihistamines, oral corticosteroids in orodispersible form or as a drinkable solution, a fast-acting bronchodilator in metered-dose aerosol with an inhalation chamber in children, epinephrine in an autoinjectable syringe in IM (0.15 or 0.3 mg/dose depending on weight). Therapeutic education of the patient and his or her immediate family is essential for the proper performance of first aid procedures.

Specific desensitization or specific immunotherapy (SIT) is the treatment of choice for severe allergy to hymenoptera venom. It induces a decrease in mortality and morbidity in case of re-injury by a hymenoptera [43]. Its effectiveness is about 95% for wasps and 80% for bees. The indications for desensitization depend on the severity of the initial reaction, the risk of recurrence, and the patients' risk factors.

Its principle is to induce a state of immune tolerance to venom allergens in the event of a sting by a hymenoptera, to reduce the sensitivity of the organism to the allergen by modulating the immune response, redirecting the lymphocyte response in the Th1 direction, increasing the number of regulatory T cells, secreting soluble mediators with a tolerogenic action: IL-10, slowing down the effector cells of allergic inflammation, and decreasing specific IgE production.

Desensitization is generally contraindicated in cases of severe immune deficiencies, progressive cancers, autoimmune diseases, severe uncontrolled asthma, unbalanced cardiovascular diseases, poor compliance, severe psychopathies and the use of beta-blockers.

We have three venoms in current allergological practice: bee, wasp Vespula and wasp Polistes. The choice of venom depends on the type of hymenoptera involved and the biological tests (Table 5).

Several desensitization protocols have been proposed since 1978. Clinical efficacy is not dependent on the protocol used for initiation, but only on the booster dose reached. Different protocols have been proposed: slow protocols where several weeks are necessary to reach the booster dose, rush protocols where the booster dose is reached in a few days, ultra-rush protocols where the booster dose is reached in a few hours.

Currently, there is a preference for accelerated protocols over a few hours. The 3.5-hour protocol is now widely accepted at the national and European level. It is identical for both children (of any age) and

adults [44]. On day 1, the patient receives a cumulative dose of 101.1 µg in 6 injections; then on day 15, 100 µg in 2 injections of 50µg; finally on day 45 a single injection of 100 µg.

The booster dose is 100 µg for the majority of patients. It should not be lower than this dose, because in this case the effectiveness of desensitization is less good. However, recent work shows a good efficacy of a maintenance treatment with 50 µg in children, but this remains to be confirmed [45]. In certain clinical situations (significant exposure, allergy to the hornet, reaction during desensitization or during a sting under desensitization), boosters should be 200µg [46]. High exposure includes professions at risk of stinging, but also hobby beekeepers, for whom several authors also propose a booster dose of 200 µg. Similarly, it is advisable to booster at 200 µg monthly in patients with associated mastocytosis, or high baseline tryptasemia [47].

The duration of desensitization or specific immunotherapy (SIT) should be at least 5 years, more effective than 3 years, and can be stopped in most cases. In some patients, SIT can or should be continued for a longer period of time, even for life. There is unanimous agreement that SIT should be discontinued when skin and biological (IgEs) tests are negative. It is therefore recommended that skin and biological tests be monitored five years after the start of the STI before deciding to stop it. However, skin and/or biological tests that remain positive do not mean that the patient is not protected, and conversely there are (rare) cases of recurrence of a systemic reaction despite negative skin tests. The decision to discontinue SIT is therefore based on a range of arguments and should be made by an allergist trained in this area [48].

Table 5: Selection of venoms for desensitization

Hymenoptera identified	TC and or IgEs positive	Desensitization to the identified hymenoptera
Hymenoptera identified	TC and or IgEs positive to bee + spider	Desensitization to the identified hymenoptera
Hymenoptera identified as guepe	TC and or IgEs positive to vespula and poliste	double desensitization if living in the south of France
Identification uncertain	TC and or IgEs Bee/ Guepe	desensitization of bees and guepe
Frelon recognized	TC and or IgEs Vespula	désensibilisation vespula possible
recognized bourdon	TC and or IgEs bee	bee desensitization possible

Table 6: Indications for Hymenoptera venom immunotherapy

Type of reaction	Diagnostic tests TC/IgEs	Desensitization
Local reaction	Positif Negatif	Non Non
Locoregional reaction	Positif Negatif	Non Non
General reaction - severe cardiorespiratory - light	 Positif Negatif Positif Negatif	 Oui Non Non Non
Unusual reaction	Positif Negatif	Non Non

CONCLUSION

Through these two medical observations we illustrate the different clinical and anamnestic arguments for the diagnosis of allergy to hymenoptera venoms as well as the complementary examinations that prove an IgE-dependent sensitization.

The most effective treatment remains prevention. It would seem to be easy to avoid being stung, but the accidents are most often fortuitous. Specific immunotherapy to bee or Vespidae venom can prevent allergic-type reactions. SIT is the most effective immunotherapy in the hands of the allergist. It is recommended that desensitization to hymenoptera venom be maintained for 5 years except in certain specific situations where it may be maintained beyond 5 years.

The protocols have evolved in recent years, we have moved from the classic fifteen-week protocol to an ultra-accelerated protocol in 3.5 hours in a hospital setting.

CONFLICTS OF INTEREST

The authors declare no conflict of interest

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