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CLINICAL ASPECTS AND THERAPEUTIC APPROACH IN CASE OF INSECTS STINGS

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Abstract

There are numerous species of insects which, through their stings can cause many allergic and toxic reactions while transmitting a number of diseases. The studies show that in the last years, the frequency of these kind of accidents has risen, especially during summers which have higher temperatures. By taking these aspects into account, the purpose of the authors was to point out the clinical manifestations of these reactions as well as describing the therapeutic and preventive methods for these.

The study was conducted on a number of 42 patients with ages between 2 and 79 years old, diagnosed with insect stings, over a period of 3 years in which different parameters were observed. The results of the study show an increase of this kind of „accidents" during summers with higher temperatures, the type of clinical manifestations, the evolution of patient treatment as well as the prevention methods which apply.

Key words: (maximum 6): insect, sting, skin lesions, allergic reactions, hypersensitivity;

INTRODUCTION

Having a large number of species of insects in the world today, makes coming into contact with them a high probability, especially in the last years due to climate change and increasing temperatures.

Insect stings or bites can cause numerous allergic reactions and their severity is determined by each individual's hypersensitivity. Still, the most exposed subjects are the ones at the most extreme ages, children and the elderly, to whom we can add the atopic, persons with reduced immunity (caused by serious illnesses, treatments, etc.)

In Romania „these kind of accidents" are more frequent in the warm season and are caused by mosquitoes – fig. 1, bees, wasps, flies, spiders, ants, flea, bedbugs, ticks; species of insects which are spread throughout our country's territory, in different geographical areas where the climate allows for these to flourish. At the same time they inject into the skin various substances or venoms which can cause different types of reactions, either local at skin level or more extensive – systemic or even fatal. The treatment is individualized depending on spread, gravity and symptoms.

Fig. 1 Mosquito

The insects are harmful and at the same time, vectors of various infectious agents or diseases, which require general and individual prevention actions in order to avoid as much as possible contact and adequate therapeutic methods depending on severity.

MATERIAL AND METHOD

The purpose of this study was to point out the type of clinical manifestations and the therapeutic conduit which applies in the case of allergic reactions caused by insect stings, frequent in the warm season and increasing in number over the last years.

The study was conducted in a private Dermatology practice and it included a number of 42 patients which required consult while complaining of different clinical manifestations which appeared as a result of insect stings. The age of the subjects is between 2 and 79 years old, both women and men, coming from the urban and rural environment. The study was conducted over a period of 3 years, between 2013 and 2015, starting on the 1st of May and ending on 31st September.

The following aspects were tracked: clinical symptomatology, the type and localization of skin lesions, systemic manifestations, gravity, presence of complications, response to treatment, evolution, case distribution over the period in question and as much as possible the species of insects which caused these reactions.

The treatment for the local clinical manifestations was based on wet compresses with antiseptic solutions and menthol mixtures, crèmes containing derma-corticoids. In the case of systemic clinical manifestations there were oral antihistamines administered and glucocorticoids and in the more severe cases, injection with glucocorticoids.

RESULTS AND DISSCUSIONS
RESULTS

Following the study, there were more results obtained. Therefore, out of all the examined subjects, 23 patients came from the rural environment, respectively 54.78% and 19 patients from the urban environment, meaning 45.24%. The gender distribution of patients was split into 18 men, 42.85% and 24 females, meaning 57.14%. The distribution on age groups, gender and district of origin can be found in Table 1 and Table 2.

Table 1

Female patient distribution based on age groups and district of origin in the case of insects stings

Age Group	District of origin	
	Urban	Rural
2-10 years old	1	2
11-20 years old	2	1
21-30 years old	2	1
31-40 years old	3	4
41-50 years old	1	2
51-60 years old	-	1
61-70 years old	-	1
71 years old and over	1	2

Table 2

Male patient distribution based on age groups and district of origin in the case of insects stings

Age Group	District of origin	
	Urban	Rural
2-10 years old	1	1
11-20 years old	1	2
21-30 years old	1	2
31-40 years old	2	1
41-50 years old	1	-
51-60 years old	1	1
61-70 years old	1	1
71 years old and over	1	1

From symptoms point of view, 35 patients showed mild clinical manifestations at the place of the sting, like erythema, edema, and tough papilloma and localized hives. The rest of 7 patients have showed regional skin reactions like hives, edematous lesions presenting as erythema, papules and vesicles, more intense pain and pruritus. The systemic manifestations were of moderate intensity, like nervousness in children (fear) and 3 adults complained of headache.

The results of the study shows that from symptom gravity point of view 83.33% of the patients presented with mild reactions to the insect stings and only 16.66% presented moderate intensity reactions. The allergic reactions which appear after insect stings are appearing in various skin regions of the body. In our study population the results show that the most frequent insect stings happened on the inferior limbs (leg, calf, thigh) in 18 of the patients; in 10 of the patients it happened on the superior limbs (hand, forearm, arm); 6 patients presented with stings on their face, 2 patients on their neck and 1 patient on their buttock. The stings were either unique or multiple.

4 patients displayed complications caused by secondary infections, 1 elderly patient was displaying cellulite on the calf and 3 young patients displayed impetiginosa type of infection.

Under local treatment using wet compresses impregnated with boric acid 1%, dabs using menthol solution 1% followed by applying locally a cream with topical corticosteroid, and for fighting off the pruritus we administered orally antihistamines, the results displayed a favorable evolution with symptom withdrawal in a matter of days.

Favorable evolution was obtained also in patients with extended skin lesions like hives, these benefiting from oral administration of glucocorticoids in short sessions, and for the patients with secondary infections we administered antibiotics orally. None of the patients taken into this study required hospitalization or emergency treatment.

From the results of the study it shows that in 20 of the patients, meaning 47.6%, the type of insect which caused the sting could not be identified. In 12 of the patients - 28.57%, the stings were caused by mosquitoes, 7 patients – 16.66% suffered from bee stings, 2 patients – 4.76% suffered from ant stings and 1 patient – 2.38% from horse fly, illustrated in Figure 2.

Fig. 2 Horse fly

Another relevant result of this study is the different repartition of the number of cases in the studied period, aspect related to the different

temperature values recorded in the warm season of the studied period, 2013-2015. Aspect which is displayed in Table 3.

Table 3

Numeric distribution of patients which suffered insect stings in the warm season during the 2013-2015 period

Year	Number of subjects	Percentage
2013	13	30.95%
2014	10	23.80%
2015	19	45.23%

DISCUSSIONS

Around the globe there are thousands of insect species which through their sting or bite inject into the skin venom or saliva and can determine numerous reactions, varying from localized, immediate to more intense reactions, delayed which can sometimes cause death. Literature data shows that annually over a million people suffer these kinds of aggressions.

This is why it is important for the population and especially medical personnel to know about the clinical manifestations of insect stings, but also how to treat, depending on the location, gravity, complications and last but not least, the general and individual prevention methods which apply.

In Romania can also be found numerous species of insects, but the most frequent stings are caused here by mosquitoes, bees, wasps, spiders, flies (Horse fly), ants, fleas and ticks.

In the majority of the cases, the insect which caused the sting cannot be identified, the diagnostic being set based on the clinical manifestations, the location of the skin lesions, the context and location where the sting took place and the aggression. This aspect is displayed in our study, 20 of the examined patients not being able to identify the insect, feeling only the sting, and the rest of the patients being able to identify it. Therefore, 28.57% suffered mosquitoes stings, 16.66% suffered bee stings.

The areas with abundant vegetation, parks, waterfronts, agricultural areas with farms, are the zones where many insects can be found and where stings happen frequently as it was also pointed out in our study that the number of patients which suffered insect stings is higher in the rural environment compared with the urban environment. In the rural environment, subjects are more exposed due to the agricultural activities, farms, etc.

The human organism response to insect stings varies greatly, the gravity of the allergic reactions depending on the sensibility degree of each individual. Reported to age groups there are differences, our study showing that allergic reactions and clinical manifestations were displayed in higher numbers on children and youngsters – 17 cases, while older people only 11 cases. In numerous other studies it was pointed out that hyper sensible

persons like children and atopic people display more frequently allergic reactions to insect stings.

A number of 18 patients taken into this study displayed stings on their inferior limbs, 10 patients on their superior limbs, these being the most exposed skin areas.

From gravity point of view, the clinical manifestations with the largest predominance, 83.33% of the patients, presented with mild reactions, strictly localized and only 16.66% of the patients presented moderate intensity reactions with regional expansion under the form of hives or eczema, some followed by mild systemic reactions like nervousness or headache.

Insects are considered not only pests but also vectors for infectious agents and diseases, being able to trigger secondary infections. These kinds of infectious complications were diagnosed in only 4 patients, but these have responded very well to orally administer antibiotic treatment.

Under local treatment with wet compresses, topical corticosteroids, orally administered antihistamines for pruritus, the evolution was favorable and it submitted quickly to milder, localized forms. For the patients with infectious complications and expanded reactions, the evolution was also favorable, without requiring hospitalization, however, the healing process required more days of treatment, in addition to a general treatment with orally administered glucocorticoids and antibiotics for the secondary infections.

The fact that these kinds of accidents usually happen in the warm season is well known. Following our study we noted that in summers with higher temperatures well over the average, the incidence of the cases with allergic reactions caused by insect stings is higher. In the summer of 2015 when the air temperature was significantly higher, we recorded 45.23% patients which suffered insect stings compared to the summer of 2014 when only 23.80% of the cases were recorded.

That is why, in order to reduce the number of these accidents, it's required to adopt prevention methods both generally and individually. General methods imply periodic pest removal, in urban and rural areas with rich vegetation, forests, parks, waterfronts, and for pools, water parks, swimming pools, water chlorination is highly recommended as well as the removal of stagnant water sources.

The individual measures imply avoiding the insect infested areas, especially mosquitoes, adequate clothing which covers the frequently exposed skin areas (long sleeved shirts, long pants). For houses, the use of insecticide substances and sprays is highly recommended, but also the application of crèmes and sprays which repel insects.

Recently, the treatment of desensitization was introduced, treatment which is being done following well established standards and only in special centers.

CONCLUSIONS

Any person can suffer allergic reactions caused by insect stings, the most vulnerable groups being the children, persons with hypersensitivity and atopic.

The insect species which can be found in our country are mosquitoes, bees – Figure 3, wasps, flies, (Horse fly), spiders, ants, flies, ticks; representing vectors of infectious agents and diseases.

Fig. 3 Bee

The most frequent clinical manifestations are localized at the place of the sting, with systemic and fatal reactions being rare.

The correct diagnostic, the local and general, fast and differentiated therapeutic conduit based on the gravity of the symptoms, determines the evolution towards the fast healing of patients.

The most frequent complications are secondary infections.

The most exposed skin zones to insect stings are the open areas of the inferior and superior limbs as well as the face.

There is an increased number of patients suffering from insect stings during seasons with higher temperature.

There is a requirement for intensifying the general and individual prevention methods in order to reduce these accidents which can be fatal for some persons.

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