Familiarity with the clinical picture and treatment methods of hymenoptera venom allergy (HVA) by Polish general practitioners (GPs)

Znajomość obrazu klinicznego i metod leczenia alergii na jad owadów błonkoskrzydłych wśród polskich lekarzy podstawowej opieki zdrowotnej

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Summary

Introduction. The role of general practitioners (GPs) has significantly increased in the past few decades. Due to the fact that in their offices they treat patients experiencing hymenoptera venom allergy (HVA) symptoms they have to be familiar with the clinical picture and basic treatment methods of the disorder.

Aim. To estimate the current knowledge about HVA among primary care physicians in Poland.

Material and Methods. GPs attending Top Medical Trends 2013 in Poznan (Poland) were requested to fill in an anonymous questionnaire composed of 5 items assessing doctors' knowledge of the clinical aspects of HVA, as well as some selected aspects of HVA treatment. The questionnaire was constructed according to the guidelines and recommendations of the European Academy of Allergy and Clinical Immunology (EAACI).

Results. 308 questionnaires were distributed, 275 were returned and approved for further analysis. All respondents were GPs specializing in family medicine (43.6%) and internal medicine (42.2%). Although 99.6% of the respondents declared knowledge of HVA symptoms only 2.91% of the questionnaires contained entirely correct answers to the question regarding this issue. The most common mistakes were: to assume erythema and pain at the site of insect stinging as characteristic symptoms for local reaction (91.6%) and to assume that the increase of blood pressure (63.6%) and lymphadenopathy (58.9%) are symptoms of HVA. Most of the respondents knew that venom immunotherapy (VIT) is the treatment of choice. Unfortunately, only 7.3% pointed indications for VIT correctly and only 46.9% were aware of the high effectiveness of VIT.

Conclusions. The questionnaire revealed major mistakes that Polish GPs make while managing HVA patients, namely likely over-diagnosis of HVA and underestimation of the effectiveness of VIT. Both can decrease the quality of medical care for HVA patients.

Keywords: *Hymenoptera venom allergy, venom immunotherapy, primary care, primary care physicians, bee, wasp, hornet*

Streszczenie

Wprowadzenie. W ciągu ostatnich lat rola lekarzy pierwszego kontaktu znacząco wzrosła. W swoich praktykach spotykają oni pacjentów manifestujących objawy alergii na jad owadów błonkoskrzydłych (hymenoptera venom allergy, HVA), muszą zatem znać jej symptomy i podstawowe metody leczenia.

Cel pracy. Oszacowanie wiedzy lekarzy podstawowej opieki zdrowotnej o HVA.

Materiał i metody. Lekarzy uczestniczących w Kongresie Top Medical Trends 2013 w Poznaniu poproszono o wypełnianie anonimowych ankiet zawierających pytania skonstruowane w oparciu o rekomendacje ekspertów z *European Academy of Allergy and Clinical Immunology* (EAACI), pomocne w ocenie znajomości obrazu klinicznego i metod leczenia HVA.

Wyniki. Rozdano 308 kwestionariuszy, z których 275 zostało zwróconych i zaakceptowanych do dalszych analiz. Wszyscy respondenci byli lekarzami podstawowej opieki zdrowotnej, najczęściej specjalistami medycyny rodzinnej (43,6%) lub chorób wewnętrznych (42,2%). Mimo, że aż 99,6% ankietowanych zadeklarowało znajomość objawów HVA, jedynie 2,9% kwestionariuszy zawierało w całości poprawne odpowiedzi na pytanie o te objawy. 91,6% ankietowanych błędnie uznało występowanie zaczerwienienia i bólu w miejscu ukłucia za miejscowe objawy alergii, a wzrost ciśnienia tętniczego (63,6%) oraz limfadenopatię (58,9%) za objawy reakcji alergicznej. Większość ankietowanych wiedziała, że immunoterapia swoista jest preferowaną metodą leczenia. Niestety jedynie 7,3% zaznaczyło poprawnie wskazania do zastosowania immunoterapii oraz 46,9% wiedziało o wysokiej skuteczności tego leczenia.

Wnioski. Kwestionariusz wskazał najważniejsze błędy lekarzy podstawowej opieki zdrowotnej w prowadzeniu pacjentów z HVA: traktowanie zbyt wielu objawów jako alergicznych oraz niedocenianie efektywności immunoterapii. Obydwa mogą obniżać jakość opieki nad pacjentami z HVA.

Słowa kluczowe: *alergia na jad owadów błonkoskrzydłych, immunoterapia swoista, podstawowa opieka zdrowotna, lekarze podstawowej opieki zdrowotnej, pszczoła, osa, szerszeń.*

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www.alergia-astma-immunologia.eu

Przyjęto do druku: 10.08.2015

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Wykaz skrótów:

HVA – Hymenoptera venom allergy
GPs – general practitioners
QoL – quality of life
SR – systemic reaction
LLR – large local reaction
VIT – venom immunotherapy
PCPs – primary care physicians
PC – Primary Care
EAACI – European Academy of Allergology and Clinical Immunology
TMT – Top Medical Trends
Q – question

INTRODUCTION

Insect sting allergy is responsible for significant morbidity, potential mortality and affects patients` quality of life (QoL). Therefore of immense importance are: correct diagnosis of insect venom allergic patients and consequent treatment.

Social insects of the Hymenoptera order, like honeybees and wasps, are the species most responsible for human allergic reactions to insect venom. Hymenoptera venom allergic (HVA) patients develop two kinds of allergic reactions: local and/or systemic ones. A large local reaction (LLR) is defined as a swelling which develops within minutes to hours after stinging, exceeds 10 cm in diameter and usually persists for over 24 hours. The systemic reactions (SR) can involve many systems, including: skin, mucosa, gastrointestinal, respiratory and cardiovascular. Clinical features of SR are polysymptomatic, the most frequent symptoms being: urticaria, angioedema and dyspnea due to bronchial and/or laryngeal obstruction and arterial hypotension with collapse. The most serious HVA symptoms have rapid onset and, if associated with respiratory and cardiovascular symptoms, usually meet criteria of severe anaphylaxis.

The population-based prevalence of systemic allergic reactions to insect venom is reported to be from 3% up to 8.9%, depending on the study methods and diagnostic criteria applied [1-3]. The prevalence rate of local allergic reactions is higher and ranges from 2% to 26% [1-3]. The frequency of allergic sting reactions is larger among individuals with a high degree of exposition, such as beekeepers. Among beekeepers, 14-35% experience systemic allergic reactions after bee stinging [4].

The diagnosis of HVA is based on clinical history and a positive test for specific IgE antibodies against insect venom in skin and/or serum. Only IgE positive patients with a history of systemic reactions to Hymenoptera venom are recommended for venom immunotherapy (VIT) which has been demonstrated to be the most effective therapeutic method in treating HVA. Other methods of treatment of HVA include prophylaxis of future stings and prescription of an emergency medication kit with an epinephrine self-injector for patients threatened with generalized reactions.

Considering the high prevalence and severity of HVA reactions, it seems reasonable to promote knowledge of HVA, in particular among primary care physicians (PCPs) who meet this category of patients in their daily practice. In most European countries, including Poland, the majority of patients who seek medical advice because of allergy and asthma are first attended to in a primary care (PC) unit. Hence, the importance of PC physicians (PCPs) as the first-line sieve responsible for correct diagnosis and management of allergic diseases is beyond appreciation for it is PCPs who decide whether to run diagnostic tests and whether specialized treatment is necessary.

The idea to expand the range of responsibilities of PCPs so that it should include the diagnosis and treatment of allergic diseases has been a recent EAACI initiative [5,6]. Assuming that the contemporarily dominant European model of treating allergic illnesses based on allergy specialists will become unsustainable soon, EAACI Task Force for Allergy Management in Primary Care issued a document that posits more intensive cooperation among PCPs, allergy specialists and patients' organizations in working out a new model of allergy care. For the model to effectively engage PCPs in allergy care, it is necessary to ascertain that PCPs are knowledgeable about symptomatology, diagnosis and treatment of allergic diseases, especially life threatening ones such as HVA.

The aim of our study is to estimate the current knowledge about HVA among PCPs in Poland.

MATERIAL AND METHODS

The questionnaire (Table I) employed in this survey has been composed of 5 items assessing doctors' knowledge about clinical aspects of HVA, as well as some selected aspects of HVA treatment. It has been constructed according to the guidelines and recommendations of the EuropeanAcademy of Allergy and Clinical Immunology (EAACI). Randomly selected primary care physicians, participants of the first session day of Top Medical Trends (TMT) Congress in Poznan on 15 March 2013, were asked to complete it.

Two pollsters, medical students, members of the Academic Students Group of Allergology working at the Department of Internal Medicine, Geriatrics and Allergology in Wroclaw-MedicalUniversity, distributed the questionnaire and provided instruction how to fulfil the task. They informed the participants that the questionnaire was a multiple choice test in some of the questions.

RESULTS

Out of 3800 registered TMT conference participants, 308 agreed to fill in the questionnaire. In all, 275 questionnaires were admitted for analysis (7.24% of all participants of the congress); the reasons of excluding some of the filled in questionnaires are presented in figure 1.

Respondents' profile

The majority of the respondents were in the age span of 36- to 66- year-olds and had long experience as PCPs (more than 5 years). The study group was representative in terms of specialization [7]. 45.45% of the respondents worked in small towns, 40.00% in big urban centers and 13.82% in villages. Other data profiling the respondents are given in table II.

Questionnaire results

Answers to questionnaire questions are shown in table III.

Table I. Questionnaire structure

Personal details:
Age ……..
Sex M F
Speciality: ……...
How long have you been working **as PCP**? …….

Q1: Your practice is located in:
- a. City with more than 100,000 inhabitants
- b. Town with less than 100,000 inhabitants
- c. Rural area

Q2: The prevalence of venom allergy (to bee, wasp, hornet stings or bumble bee – combined) is:
- a. 1% of population suffer from venom allergy
- b. 1- 30% of population suffer from venom allergy
- c. Above 30% of population suffer from venom allergy

Q3: Do you know the clinical symptoms of insect venom allergy?
- a. yes
- b. no

Q4: Choose **all possible symptoms of allergic reaction** to wasp, bee, hornet or bumblebee venom. MARK ALL CORRECT ANSWERS.
- a. erythema and pain at the sting site
- b. erythema, pain and swelling (more than 10 cm in diameter and lasting longer than 24 hours) around the sting site
- c. lymphadenopathy
- d. increase of blood pressure
- e. pruritus and utricaria (beyond the area of sting site)
- f. angioedema
- g. bronchial obstruction with wheezing
- h. anaphylactic shock

Q5: Do you recommend to perform skin tests with insect venom or venom specific IgE tests in patients with any allergic symptoms to venom, irrespective of the symptoms' severity?
- a. yes
- b. no

Q6: According to you, is there a possibility to treat venom allergic patients with venom immunotherapy (VIT)?
- a. yes
- b. no

Q7: Which of the symptoms are indications for VIT? PLEASE MARK ALL CORRECT ANSWERS
- a. erythema and pain at the sting site
- b. erythema, pain and swelling (more than 10 cm in diameter and lasting longer than 24 hours) around the sting site
- a. lymphadenopathy
- b. increase of blood pressure
- c. utricaria
- d. angioedema
- e. bronchial obstruction with wheezing
- f. anaphylactic shock
- g. none of the above mentioned. A HVA patient requires corticosteroids and antihistamins in case of sting
- h. none of the above mentioned. A HVA patient requires a prescription for a self- injector with epinephrine

Q8: Specific venom immunotherapy for insect-allergic patients is:
- a. ineffective
- b. moderately effective
- c. highly effective

Abbreviations:
Q - question
M - male
F - female
PCP - primary care physician
VIT - venom immunotherapy
HVA - hymenoptera venom allergy

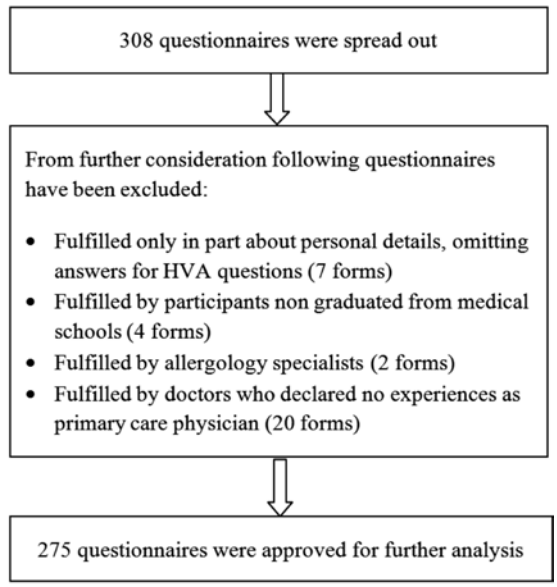

Fig. 1. Pools selection

Table II. General characteristic of the study group

Age (mean age 49.46 ± 10.17)		
26-35	23	8.36%
36-45	79	28.73%
46-55	89	32.36%
56-65	57	20.73%
66-77	16	5.82%
no answer	11	4.00%
	275	100%
Sex		
Male	76	27.64%
Female	197	71.64%
No answer	2	0.73%
	275	100%
Specialization		
Family medicine (FM)	96	34.91%
Internal medicine (IM)	92	33.45%
IM and FM	24	8.73%
Specialization other than IM or FM	50	18.18%
No answer	13	4.73%
	275	100%
Experience as primary care physicians (in years)		
Below 5 years	26	9.45%
5-20 years	128	46.55%
Above 20 years	99	36.00%
No answer	22	8.00%
	275	100%
Location of PCP medical practice		
City of more than 100,000 inhabitants	110	40.00%
Town of less than 100,000 inhabitants	125	45.45%
Rural area	38	13.82%
No answer	2	0.73%
	275	100%

FM – family medicine, IM – internal medicine, PCP – primary care physician

Table III. Results of the questions referring to HVA.

Questions and variants of answers:	Answers:	
	Correct	Incorrect
2. The prevalence of venom allergy (to bee, wasp, hornet or bumble bee stings – combined) is:		
1% of population suffer from venom allergy		25.46%
1-10% of population suffer from venom allergy	66.55%	
above 30% of population suffer from venom allergy		6.91%
no answer		1.09%
4. Choose a**ll possible symptoms of allergic reaction** to wasp, bee, hornet or bumble bee venom. MARK ALL CORRECT ANSWERS.		
erythema and pain at the sting site		91.64%
erythema, pain and swelling around the sting site exceeding 10 cm in diameter and lasting more than 24 hours	94.91%	
lymphadenopathy		58.91%
increase of blood pressure		63.64%
skin pruritus and utricaria (beyond sting site)	93.09%	
angioeodema	94.55%	
bronchial obstruction with wheezing	97.82%	
anaphylactic shock	98.18%	
5. Do you recommend to perform skin tests with insect venom or venom specific IgE tests in patients with any allergic symptoms to venom, irrespective of the symptoms' severity?		
Yes		30.91%
No	67.27%	
No answer		1.82%
6. According to you, is there a possibility to treat venom allergic patients with VIT?		
Yes	89.45%	
No		8.73%
No answer		1.82%
7. Which of the symptoms are indications for VIT? PLEASE MARK ALL CORRECT ANSWERS.		
swelling, erythema, pain at sting site, lasting for some hours		13.45%
swelling and erythema above 10 cm in diameter at sting site along with pain lasting over 24 hours		39.27%
lymphadenopathy		20.00%
increase of blood pressure		22.55%
urticaria		34.91%
angioedema		74.91%
bronchial obstruction with wheezing	85.09%	
anaphylactic shock	89.82%	
none of the above mentioned. A HVA patient requires corticosteroids and antihistamins in case of sting		8%
none of the above mentioned. A HVA patient requires a prescription for a self- injector with epinephrine		18.18%
8. Specific immunotherapy for insect-allergic patients is:		
ineffective		6.91%
moderately effective		37.45%
highly effective	46.91%	
no answer		8.73%

HVA – Hymenoptera Venom Allergy, VIT – Venom Immunotherapy

More than half of the respondents (65.5%) knew the right bracket rate of prevalence of insect venom allergy, but at the same time as many as almost 25% considered HVA to be a very rare allergy type (below 1% of the population). Although almost all of the participants of the study (99.64%) declared sufficient knowledge of HVA symptoms (Q3) and at least 93% of them were able to identify the major ones, only 2.91% identified correctly all of the clinical symptoms of HVA, avoiding the symptoms which are not specifically related to HVA (Q 4). The most common mistakes made in answering this question were: considering erythema and pain at the site of insect stinging as characteristic symptoms of allergic reaction (91.64%) and assuming that increase of blood pressure (63.64%) and lymphadenopathy (58.91%) are symptoms of insect allergy.

Most respondents (67.27%) made performing diagnostic tests (skin tests with venom and/or venom specific IgE tests) conditional on the severity of HVA symptoms, while the others qualified for diagnostic tests all patients showing any HVA symptoms (Q5).

Most of the respondents knew that venom immunotherapy (VIT) is a method of treatment for patients with HVA (Q6), but 8.73% were ignorant of this kind of therapy. The majority of respondents succeeded in pointing out the most important indications for VIT, but only 7.27% selected all recommended indications for VIT (Q7), leaving out symptoms which do not constitute an indication for the therapy. Additionally, 18.18% of the respondents do not consider HVA symptoms as indications for VIT, thinking it sufficient to equip the patients with a self-injector with epinephrine.

When we asked about the efficacy of VIT, the most common answer was "highly effective." However, almost 37.45% of the participants described VIT as "mildly effective" and 6.91% as ineffective.

DISCUSSION

Among allergic diseases, HVA claims a special place for a number of reasons: first of all HVA is one of the most common causes of potentially life-threatening anaphylaxis; secondly, venom allergic patients are threatened with insect sting for half a year in our climate zone; thirdly, the possibility of being stung can neither be predicted nor excluded; and lastly, if re-stung, 50-75% of patients with a history of severe HVA develop a systemic reaction with the same or even higher grade of intensity than before [8]. The high health and life hazard that HVA involves makes the best possible knowledge of HVA a necessity not only for allergy specialists but above all for PCPs who are usually the first to consult victims of venom sting. The question is "are PCPs competent enough to make qualified decisions about the way stung individuals reporting post-sting symptoms should be handled?".

The results of our evaluation study imply that almost all surveyed physicians know the prevalence of HVA, declare to know the symptoms of HVA and are able to name correctly the most relevant symptoms of venom allergy. However, full symptomatology of HVA is not thoroughly known, because only a small percentage of the surveyed PCPs ticked off all HVA symptoms, without making the error to include symptoms that are not linked to the IgE type of allergic response to venom. Analysis of the questionnaire answers showed two main mistakes concerning misqualification of some symptoms as venom allergic. The first one consisted in misunderstanding short-lasting erythema and pain at sting site as symptoms of allergic reaction. The second was recognizing nonspecific symptoms such as increase in blood pressure and/or lymphadenopathy as specific HVA symptoms. Indeed, erythema and pain are normal reactions to Hymenoptera sting. Also increased blood pressure due to the emotions of fear or anxiety can occur following an insect sting but is not a symptom of venom allergy. Lymphadenopathy has been reported very rarely after insect sting and has been only sporadically accompanied by large local reactions. The mistakes mentioned here do not seem to entail essential consequences for the practical handling of HVA patients because the respondents who wrongly identified the three symptoms as venom allergic, simultaneously selected rightly the relevant HVA symptoms; and what is important, not a single respondent selected the misqualified symptoms as HVA allergic, while neglecting the truly relevant ones. While the mistakes are not critical, a conclusion arises that PCPs do not differentiate between the symptoms of IgE-mediated disease and non-IgE mediated diseases.

Of practical significance can be the conclusions drawn from answers to other questionnaire questions. As the responses to question 5 show, as many as 31% of the respondents would perform skin tests with insect venom or venom specific IgE tests in patients with any allergic symptoms to venom, irrespective of the symptoms' severity. The consequences of such an attitude can be: 1/ unnecessary allergy specialist refferals given to patients who do not need diagnostic tests, such as patients with LL reactions, nonspecific reactions or even normal reactions to stinging; 2/ overcrowding of allergy clinics with patients who are diagnosed as allergic to venom but for whom there are no indications for VIT 3/ charging patients for unnecessary sIgE tests which are not refunded in Poland.

Another conclusion drawn from the questionnaire feedback that may have practical consequences for the treatment of insect sting patients is PCPs' unsatisfactory knowledge of VIT and its effectiveness. The facts in support of this finding are: almost 9% of respondents have no knowledge whatsoever that venom allergic patients can be treated with venom immunotherapy, a few percent of the respondents are of the opinion that even serious HVA symptoms do not qualify patients for VIT, antihistamine medication and epinephrine self-injector being considered sufficient means to cope with possible future sting. In addition, 37.45% of the respondents regard VIT to be only mildly effective and another 6.91% as totally ineffective. Thus one might be anxious that a lot of HVA patients are not referred to allergy specialists and do not undergo VIT.

With reference to venom immunotherapy, the issue of evaluating the competence of PCPs was recently addressed in the published studies conducted by European Academy Allergy Clinical Immunology (EAACI) and International Primary Care Respiratory Group (IPCRG) whose objective was to assess the actual quality of care for allergic diseases in primary health care. The EAACI study was responded by 225 subjects from 36 countries, the IPCRG survey by 173 subject from 24 European countries [9]. Their results indicate that most insect stung patients are consulted in primary care settings, respectively: out of these 75.5% and 81.5% patients with bee and wasp venom allergy have access to allergen immunotherapy but, as indicated in the IPCRG survey, unproblematic referral to an allergy specialist who might start venom immunotherapy is as low as 43%.

The above facts combined with our findings concerning insufficient knowledge on the part of PCPs on the subject of

qualifying patients for VIT and about the efficiency of venom immunotherapy are disturbing as they suggest that insect venom allergic patients may not be provided with proper care. It seems that the overall PCPs' knowledge of and attitude toward VIT is unsatisfactory yet. In a survey carried out among Italian PCPs fewer than 50% of the respondents were aware of the role of immunotherapy in venom allergy treatment and they all considered that they needed more information on the subject [10].

CONCLUSION

It is our strong conviction that knowledge of VIT should be broadly popularized among PCPs. Well prepared information about VIT should be especially targeted at PCPs based in smaller town and villages since it was this group that proved to be insufficiently familiarized with this type of therapy.

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