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Allergy & Clinical

Official Organ of the
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of Allergology and
Clinical Immunology

Immunology

News

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***New Pathological Concepts
in Atopic Dermatitis***

***How to Improve Nasal
Airflow by a Yoga Technique***

***Sudden Death after One
Wasp Sting***

***Immunology of How and
When We Age***

Histamine Releasing Factors

Horizons

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Clinical Trends - Research Trends: Review articles on current clinical or research topics in allergy or clinical immunology. The text should consist of 3,000 to 4,000 words, and up to 6 figures or tables.

References: A maximum of 10 to 15 in sequential order, quoted numerically in the text. Alternatively, no references in the text but a suggested reading list (in alphabetical order).

Clinical Practice - Research Notes: Case reports, descriptions of new drugs or side effects of therapy, practical tips, new diagnostic devices, research abstracts, pre-prints, or comments on relevant items from the popular press. Please limit text to 600 words. One table or one figure and one or two references may be included. Retrieval of information by ACI Awareness Network Service.

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People: Small notes about personal news, prizes of international significance, birthdays and special events, historical events, relations of public personalities to the field of allergy/clinical immunology.

Meeting Reports: Brief articles consisting of personal reports on meetings, describing and emphasizing the most important and original contributions. Text should not exceed 2,000 words.

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Cover

Siva, one of the two great gods of Hinduism, is sitting cross-legged in austere meditation, with a crutch, called a yoga-danda, placed under his right axilla. The crutch in this position has long been claimed to improve nasal airflow, as discussed on pages 113 - 116.

Sudden Death after One Wasp Sting

by T. Schäfer, D. Vieluf,
W. Eisenmenger, & J. Ring

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Frauenlobstrasse, Munich, Germany

Fatal anaphylactic reactions to bee or wasp stings are not rare events; 53 cases have been documented in West Germany between the years 1979 and 1983 [18]. This study reports about a fatal reaction following a wasp sting, where the mechanism causing death remained unclear, although an IgE-mediated reaction appeared most likely.

"Wasp attack - young man dies." This is how the Munich tabloids reported the death of a young Italian man shortly after he had been stung by a wasp while on a motorbike vacation in Bavaria in the summer of 1989.

Due to a rather warm previous winter season, in the summer of 1989 people in Germany were confronted with an unusually high number of wasps. Many experienced a kind of wasp "plague" while being outdoors. There was a higher incidence of sting events, and thus more patients with either severe local or systemic reactions were seen in our outpatient allergy clinic. In addition, people who knew they had previously experienced such reactions after insect stings were reminded to come to the clinic for a check-up.

Case Report

A 28-year-old-Italian man, here called patient M.L., was spending his holidays in southern Bavaria accompanied by his wife, in the summer of 1989. Obviously he had previously experienced a systemic reaction to an insect sting since

he had a self-injection pack of betamethasone with him which had been prescribed by his physician in Italy. While M.L. was riding his motorbike, a wasp got caught under his helmet, although the visor was closed, and it stung him near the right temple. Anaphylactoid symptoms developed immediately. His wife administered the mentioned injection, but it was not effective. His condition deteriorated rapidly. Paramedics accompanying the doctor who was on emergency call found M.L. already dead and tried to resuscitate him, but without success. The body was transferred to the Department of Forensic Medicine at the University of Munich for a postmortem examination.

Autopsy Report

The skin area around the sting showed minor local inflammation. No stinger was left.

Other findings had to do with the intramuscular and intravenous injections and other resuscitation procedures. Signs most likely corresponding to cardiovascular shock were observed in the lungs and kidneys.

The most serious pathological findings were reported in the heart. M.L. had obviously been suffering from cardiac hypertrophy resulting in cardiomyopathy; his heart weighed 636 g (Figure 1). In addition, a severe ulcerative inflammation of the mitral valve causing a combined mitral valve failure was found; this had led to a dilatation of the left heart chamber and atrium. According to the forensic report, death was caused by either anaphylactic shock or cardiac arrest as a consequence of the excited reaction to the sting.

Laboratory Findings

Total IgE

The total IgE level was determined using an ELISA technique (Pharmacia, Uppsala, Sweden) and reported as 13 U/ml.

Specific IgE Antibodies

No specific IgE antibodies to bee or wasp venom were found in the serum of the cadaveric blood on the basis of the Radio-Allergo-Sorbent-Test (RAST, Pharmacia, Uppsala, Sweden).

Specific IgG Antibodies

Specific IgG antibodies to bee and wasp venom were measured using a RAST-like procedure with another Pharmacia kit. The results were within the normal range for bee (18.94%) and wasp (18.03%) venom.

Immunopathological Investigations

The direct immunofluorescence investigation of the sting area was negative for IgG, IgM, IgA, C4d, C4c, C3, and fibrinogen.

Mast Cell Tryptase

In the postmortem serum, mast cell tryptase was detectable in a concentration of 5.4 mg/ml, whereas it is normally unde-

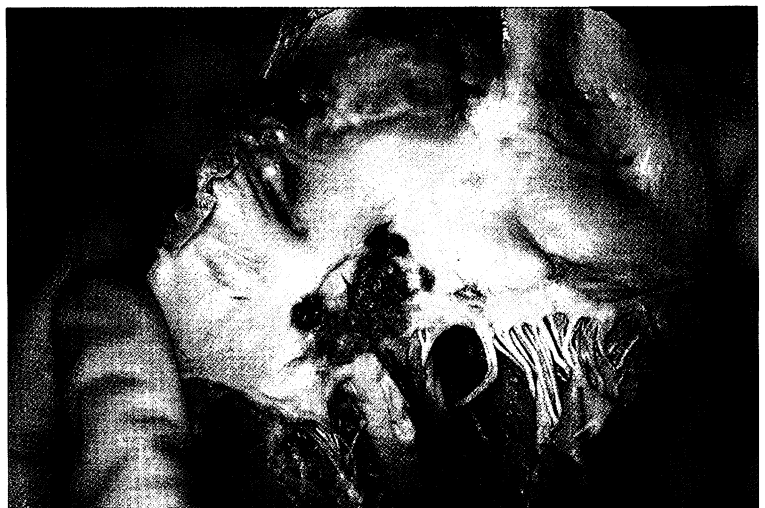


Figure 1: Dilated heart (autopsy specimen) of patient M.L. dying after one wasp sting.

tectable (Radioimmunoassay, Pharmacia, Uppsala).

Discussion

On the basis of these findings, the question regarding the cause of death can only be answered speculatively.

? Allergy

The assumption that M.L. suffered from allergy to wasp venom is based on his medical history, where an earlier reaction to a wasp sting is reported. No further diagnostic procedures were mentioned (laboratory test, skin test) in the history and he was obviously not treated by hypsensitization. Following the earlier sting event, M.L.'s family doctor had prescribed an Italian "Bentelan fiale" which is a betamethasone preparation for self-injection. In fact, the intramuscularly applied steroid was not helpful in this case.

Laboratory findings (IgE, specific IgE, specific IgG, immunofluorescence) did not confirm an allergic cause of either type I or III. Although it is known that allergen exposure can lead to a transient disappearance of allergen-specific antibodies [13], in this man, these negative findings can only be explained partially by this observation and the diagnosis of a wasp venom allergy remains questionable. The elevated levels of mast cell tryptase argue strongly for an anaphylactic reaction to be the cause of death.

? Cardiac Failure Due to Cardiac Disease

According to his wife, the heart disease of the young man had been known to him for some time. It is therefore likely, but not proven, that the severe heart condition alone or in addition to the venom was responsible for the death, whereby a vasovagal reflex due to the excited reaction to the sting and the ensuing stress could have affected the already damaged heart. Myocardial involvement in anaphylactic reactions ("cardiac anaphylaxis") is not uncommon. Histamine receptors are also to be found in the heart [5].

? Therapy

Most likely the immediate therapy with betamethasone intramuscularly was inefficient.

Conclusion

Death after a single insect sting is most commonly caused by an IgE-mediated allergy. In the present case, a possible allergy together with an underlying severe heart disease may be discussed as possible causes of a fatal reaction to a wasp sting. It is likely that one of the mentioned factors or the coincidence of both caused the death of this young man. It seems fair to state that in spite of earlier knowledge about a possible hymenoptera venom hypersensitivity, this man had not been diagnosed or advised correctly. Allergy tests obviously had not been done.

The recommended emergency therapy should have included antihistamines, β -adrenergics (aerosol), or epinephrine. However, due to the underlying severe heart disease, epinephrine may have been contraindicated. It remains open whether the life of this young man could have been saved.

The rather mild winter of 1989/90 may once again lead to a high occurrence of wasps and other insects in the following summer. In view of the fact that most sting events are not the consequence of an unmotivated aggression by the insect but result from incorrect human behavior, appropriate rules of conduct for sting prevention should be followed. Any suspicious reaction to insect venom should be diagnosed by an experienced allergist. The determination of mast cell tryptase in postmortem sera may serve as a new diagnostic tool in forensic medicine.

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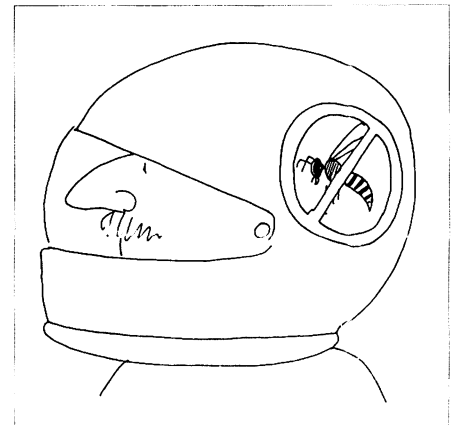
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