Healthcare provision for insect venom allergy patients during the COVID-19 pandemic

Margitta Worm · Barbara Ballmer-Weber · Randolf Brehler · Mandy Cuevas · Anna Gschwend · Karin Hartmann · Thomas Hawranek · Wolfram Hötze necker · Bernhard Homey · Thilo Jakob · Natalija Novak · Julia Pickert · Joachim Saloga · Knut Schäkel · Axel Trautmann · Regina Treudler · Bettina Wedi · Gunter Sturm · Franziska Rueff

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M. Worm (✉)
Department of Dermatology, Venereology and Allergology, Charité—University Hospital Berlin, Berlin, Germany
Division of Allergy and Immunology, Department of Dermatology, Venereology, and Allergology, Charité—Universitätsmedizin Berlin, Charitéplatz 1, 10117 Berlin, Germany
margitta.worm@charite.de

B. Ballmer-Weber
Department of Dermatology, Venereology and Allergology, Cantonal Hospital St. Gallen, St. Gallen, Switzerland

R. Brehler
Department of Dermatology, University Hospital Münster, Münster, Germany

M. Cuevas
Department and Outpatient Clinic for Otorhinolaryngology, Carl Gustav Carus University Hospital Dresden, Dresden, Germany

A. Gschwend
Outpatient Clinic, University Department of Rheumatology, Immunology and Allergology, University Hospital Bern, Bern, Switzerland

K. Hartmann
Allergology and Dermatology, University Hospital Basel, Basel, Switzerland

T. Hawranek
University Department for Pediatric and Adolescent Medicine, Paracelsus Private Medical University, Salzburg, Austria

W. Hötze necker
Department of Dermatology and Venereology, Kepler University Hospital GmbH, Linz, Austria

B. Homey
Department of Dermatology, University Hospital Düsseldorf, Düsseldorf, Germany

T. Jakob
Department of Dermatology and Allergy, University Medical Center Gießen (UKGM), Justus Liebig University Gießen, Gießen, Germany

N. Novak
Department and Outpatient Clinic for Dermatology and Allergology, University Hospital Bonn, Bonn, Germany

J. Pickert
Department of Dermatology and Allergology, University Hospital Gießen and Marburg GmbH, Philipps University Marburg, Marburg, Germany

J. Saloga
Department and Outpatient Clinic for Dermatology, Johannes Gutenberg University Mainz, Mainz, Germany

K. Schäkel
Department of Dermatology, University Hospital Heidelberg, Heidelberg, Germany

A. Trautmann
Department and Outpatient Clinic for Dermatology, Venereology and Allergology, University Hospital Würzburg, Würzburg, Germany

R. Treudler
Department and Outpatient Clinic for Dermatology, Venereology and Allergology, University Hospital Leipzig, Leipzig, Germany

B. Wedi
Department of Dermatology, Allergology and Venereology, Hannover Medical University, Hannover, Germany

G. Sturm
University Department of Dermatology and Venereology, Medical University of Graz, Graz, Austria

M. Worm · F. Rueff
Department and Outpatient Clinic for Dermatology and Allergology, University Hospital Munich, Munich, Germany

M. Worm · F. Rueff
Division of Allergy and Immunology, Department of Dermatology, Venereology, and Allergology, Charité—Universitätsmedizin Berlin, Charitéplatz 1, 10117 Berlin, Germany
Abstract  The population prevalence of insect venom allergy ranges between 3–5%, and it can lead to potentially life-threatening allergic reactions. Patients who have experienced a systemic allergic reaction following an insect sting should be referred to an allergy specialist for diagnosis and treatment. Due to the widespread reduction in outpatient and inpatient care capacities in recent months as a result of the COVID-19 pandemic, the various allergy specialized centers in Germany, Austria, and Switzerland have taken different measures to ensure that patients with insect venom allergy will continue to receive optimal allergy care. A recent data analysis from the various centers revealed that there has been a major reduction in newly initiated insect venom immunotherapy (a 48.5% decline from March–June 2019 compared to March–June 2020: data from various centers in Germany, Austria, and Switzerland). The present article proposes defined organizational measures (e.g., telephone and video appointments, rearranging waiting areas and implementing hygiene measures and social distancing rules at stable patient numbers) and medical measures (collaboration with practice-based physicians with regard to primary diagnostics, rapid COVID-19 testing, continuing already-initiated insect venom immunotherapy in the outpatient setting by making use of the maximal permitted injection intervals, prompt initiation of insect venom immunotherapy during the summer season, and, where necessary, using outpatient regimens particularly out of season) for the care of insect venom allergy patients during the COVID-19 pandemic.

Keywords  Venom · Allergy · Immunotherapy · SARS-Co-2 · Lockdown

At a population prevalence of 3–5%, insect venom allergy is common and can potentially trigger life-threatening allergic reactions [1]. Therefore, patients who have experienced a systemic allergic reaction to an insect sting should be referred to an allergy specialist for diagnosis and treatment. In addition to patient history taking, where the symptoms and concomitant circumstances of the reaction are recorded, the standard procedure includes titrated skin prick testing and, if necessary, intracutaneous testing and/or determination of specific immunoglobulin (Ig)-E antibodies to insect venom and, where appropriate, their components to identify immediate-type allergy (Fig. 1). For a better risk assessment, especially after the onset of severe reactions, the determination of basal serum tryptase is also recommended. If the above-mentioned findings are positive and the patient has a clear history of a systemic allergic reaction in the context of a venom sting, the initiation of allergen-specific immunotherapy with the relevant insect venom is recommended [2].

The failure to initiate specific immunotherapy in at-risk patients in a timely manner, leads to an increase of their health risks and may result in an in-

![Fig. 1  Diagnostic algorithm for insect venom allergy (from [2]). IgE immunoglobulin E, sIgE specific immunoglobulin E](image-url)
Increased need of emergency care for insect sting reactions. Such situations should be avoided during possible healthcare shortage. The significance of the COVID-19 pandemic for allergology has recently been discussed in a number of position papers [3, 4]. Due to the widespread reduction in outpatient and inpatient care capacities in recent months as a result of the COVID-19 pandemic, the various allergy specialists from Germany, Austria, and Switzerland have taken different measures to ensure that patients with insect venom allergy continue to receive optimal allergy care. However, overall, there has been a large reduction in newly initiated insect venom immunotherapy (Table 1) during the lockdown. A survey among large allergy centers with regard to newly initiated venom immunotherapy (VIT) revealed an almost 50% reduction for the months March–June 2020 compared to the similar period in 2019 (Fig. 2). This decline was related to reduced hospital capacities, but also the fact that patients considered to visit a physician or a hospital as a high-risk due to the COVID-19 pandemic.

Thus, the authors propose measures to ensure allergy care for insect venom-allergic individuals during times of emergency regulations in the healthcare system, such as during the COVID-19 pandemic (Table 2).

Table 1  Overview of the number of VIT initiated in the period March–June 2019 and 2020 at a number of different centers

| Centers                                                                 | Initiated VIT March–June 2019 | Initiated VIT March–June 2020 |
|-------------------------------------------------------------------------|-------------------------------|-------------------------------|
| Allergology and Dermatology, University Hospital Basel, Switzerland    | Not specified                 | Not specified                 |
| Department of Dermatology, Venereology and Allergology, Charité—University Hospital Berlin, Germany | 28                             | 9                             |
| Outpatient Department, University Department of Rheumatology, Immunology and Allergology, University Hospital, Switzerland | ~30                           | 12                             |
| Department and Outpatient Clinic for Dermatology and Allergology, University Hospital Bonn, Germany | 28                             | 21                             |
| ENT Department and Outpatient Clinic, Carl Gustav Carus University Hospital Dresden, Germany | 23                             | 25                             |
| Department of Dermatology, University Hospital Düsseldorf, Germany     | Not specified                 | Not specified                 |
| Department of Dermatology and Allergology, University Hospital Gießen and Marburg, Germany | 76 (36 G, 40 M)               | 42 (33 G, 9 M)                |
| University Department of Dermatology and Venereology, Medical University of Graz, Austria | 50                             | 2                             |
| Department of Dermatology, Allergology and Venereology, Hannover Medical University, Hannover, Germany | 89                             | 18                             |
| Department of Dermatology, University Hospital Heidelberg, Germany     | 15                             | 17                             |
| Department and Outpatient Clinic for Dermatology, Venereology and Allergology, University Hospital Leipzig, Germany | 35                             | 33                             |
| Department of Dermatology and Venereology, Kepler University Hospital, Linz, Austria | 31                             | 16                             |
| Department and Outpatient Clinic for Dermatology, Johannes Gutenberg University Mainz, Germany | Not specified                 | Not specified                 |
| Department and Outpatient Clinic for Dermatology and Allergology, University of Munich, Germany | 87                             | 53                             |
| Department of Dermatology, University Hospital Münster, Germany         | 61                             | 40                             |
| University Department for Pediatric and Adolescent Medicine, Paracelsus Private Medical University, Salzburg, Austria | 29                             | 17                             |
| Department of Dermatology, Venereology and Allergology, Cantonal Hospital St. Gallen, Switzerland | 20                             | 5                              |
| Department and Outpatient Clinic for Dermatology, Venereology and Allergology, University Hospital Würzburg, Germany | Not specified                 | Not specified                 |

VIT venom immunotherapy, G Gießen, M Marburg

Fig. 2  Number of initiated VIT (total from 14 centers in Germany, Austria, and Switzerland) between March and June in 2019 compared to 2020. VIT venom immunotherapy
Successful to this end [5, 6]. They have the advantage be performed as ultra-rush therapy under medical su-cidental sting. Treatment initiation should preferably posed to the risk of a repeat severe reaction to an ac-
poning initiation therapy during the summer season

Table 2  Recommended measures for the care of insect venom allergy sufferers during the COVID-19 pandemic

| Increased use of telephone and video appointments |
| Rearranging waiting areas and implementing hygiene measures and social distancing rules at stable patient numbers |
| Collaboration with practice-based physicians with regard to primary diagnost-ics (determination of bee/wasp sIgE) |
| Rapid COVID-19 testing (preadmission or on admission) |
| Unrestricted outpatient continuation of already-initiated insect venom immunotherapy (except in patients suffering from COVID-19 themselves) by making use of the permitted injection intervals |
| Prompt new initiation of insect venom immunotherapy during the season; if necessary, use of outpatient protocols, especially out of season |
| Explicitly addressing the COVID-19 situation with patients (either personally or in the scheduling letter) |
| In the case of shortages, triage according to the severity of the sting reac-
tion |
| Adapting departmental organization, e.g., collaboration with other depart-
ments, extended outpatient clinic times, up-titration at weekends |

Continuation of already-initiated insect venom immunotherapy

Allergen-specific immunotherapy with insect venom that has already been initiated should be continued as consistently as possible, despite eventual limita-
tions in medical resources, by making use of the per-missible length of intervals (see also [3]). Interrupting specific immunotherapy can cause a loss of protection and leads to unnecessary expense at a later point as a result of having to re-start therapy if the treatment interval has been exceeded. If the patient has COVID-19 themselves, a pause in treatment is recommended until recovery. Following recovery, the dose should be re-up-titrated (if still within the permitted interval) or allergen-specific immunotherapy newly initiated if necessary. In some cases, it may be beneficial to con-tact the patient by telephone or telehealth appoint-
ment prior to their personal visit for the immunother-
apy injection in order to rule out current contraindi-
cations to the injection, thereby potentially saving the patient an unnecessary visit.

New initiation of insect venom immunotherapy

It is possible to postpone the new initiation of insect venom immunotherapy out of season, assuming the time window is taken into account (see also [3]). Post-
poning initiation therapy during the summer season should be avoided, in order that the patient is not ex-
posed to the risk of a repeat severe reaction to an ac-
cidental sting. Treatment initiation should preferably be performed as ultra-rush therapy under medical su-

venom allergy patients and show good results in terms of safety [7]. However, they require a longer initiation phase (7 weeks), implying that such treatment proto-
cols should be preferred out of the season.

In summary, the diagnostic work-up of insect venom allergy, including the patient history and skin testing, should be adapted to the prevailing condi-
tions. Initiation of immunotherapy should continue to be started with ultra-rush protocols and, above all, not postponed during the summer season. During the out-of-season period and in case of shortages of inpatient resources, or in case of certain regional require-
ments, an up-titration can be performed in an outpatient setting. A shortened, 7-week protocol for vespid venom allergy patients has been recently pub-
lished [7]. Whenever possible, outpatient up-
titration should be performed at a center experienced with this therapy and is able to provide emergency medical care.

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