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Importance of Epidemiologic Surveillance in Contact Dermatitis: Spanish Surveillance System on Contact Allergies

J. García-Gavín,^{a,*} J.C. Armario-Hita^b V. Fernández-Redondo,^a
J.M. Fernández-Vozmediano,^c J. Sánchez-Pérez,^d J.F. Silvestre,^e W. Uter,^f
A.M. Giménez-Arnau^g

^aServicio de Dermatología, Complejo Hospitalario Universitario, Facultad de Medicina, Santiago de Compostela, Spain

^bServicio de Dermatología, Hospital Punta de Europa, Algeciras, Universidad de Cádiz, Cádiz, Spain

^cServicio de Dermatología, Hospital Universitario de Puerto Real, Universidad de Cádiz, Cádiz, Spain

^dServicio de Dermatología, Hospital Universitario de la Princesa, Madrid, Spain

^eSección de Dermatología, Hospital General Universitario de Alicante, Alicante, Spain

^fDepartment of Medical Informatics, Biometry and Epidemiology, University of Erlange-Nürnberg, Erlangen, Germany

^gServicio de Dermatología, Hospital del Mar, Universitat Autònoma de Barcelona, Barcelona, Spain

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Abstract The high prevalence of contact dermatitis means that this common medical problem has considerable personal, societal, and economic impact. Clinical and epidemiologic research is needed if we are to shed light on the real situation of contact dermatitis in Spain. In this article we will look at epidemiologic research from a practical point of view and analyze the role of the dermatologist in planning and designing studies. The advantages of multicenter studies are discussed, along with the roles of national and international surveillance networks. We present the Spanish Surveillance System on Contact Allergies, which serves as a bridge between Spanish dermatologists and the European Surveillance System on Contact Allergies. The present and future aims of the Spanish network are described.

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PALABRAS CLAVE

Eczema de contacto;
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Importancia de la vigilancia epidemiológica en el eczema de contacto. La Red Española de Vigilancia de Alergia de Contacto

Resumen El eczema de contacto es un problema médico frecuente, con una prevalencia poblacional elevada. Esto implica un importante problema de salud con un impacto a nivel personal, social y económico. Por ello, es necesario invertir esfuerzos en iniciativas

*Corresponding author.

E-mail address: juangavin@gmail.com (J. García-Gavín).

de investigación clínica y epidemiológica que nos ayuden a conocer la realidad del eczema de contacto en España. En el presente trabajo se aborda la investigación epidemiológica del eczema de contacto desde el punto de vista práctico, analizando el papel del dermatólogo a la hora de planificar y diseñar estudios en este campo. Se discuten además las ventajas de los trabajos multicéntricos y el rol de las redes de vigilancia epidemiológica tanto a nivel nacional como internacional. Finalmente, se presenta la Red Española de Vigilancia de Alergia de Contacto, nexo entre los dermatólogos españoles y la *European Surveillance System in Contact Allergies*, definiendo sus objetivos presentes y futuros.

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Introduction

Allergic contact dermatitis is a common medical problem caused by sensitization to a wide range of chemical substances of low molecular weight that act as allergens.¹ The prevalence of contact sensitization to one or more allergens in the general population is estimated to be 20% in developed countries,² making contact allergies an important health problem with considerable personal, social, and economic impact. Allergic contact dermatitis is known to have a very negative impact on the quality of life of affected patients.³ Moreover, since the clinical manifestations are often incompatible with the patient's normal working life, the condition gives rise to prolonged sick leave and in some cases changes of occupation.⁴ The cost of diagnosing and treating these dermatoses is also very high, as is the investment required to implement expensive primary and secondary prevention.⁵ For all these reasons, it is important to have epidemiologic data on contact allergies, both to try to ascertain the exact extent of the problem and to implement strategies aimed at minimizing its social impact.⁶

Preliminary Considerations

The function of a patch test is to diagnose contact sensitization to a specific allergen. However, the clinical management of allergic contact dermatitis is a much more complex process that includes a detailed medical history, a complete dermatologic examination, and clinical assessment of the results of patch testing.

Epidemiologic Investigation of Allergic Contact Dermatitis

The epidemiology of allergic contact dermatitis can be investigated through either population-based or clinical studies. The advantage of population-based studies is that the results can be extrapolated to the general population. The clinical aspects of allergic contact dermatitis are usually investigated by way of epidemiologic surveys of samples selected as being representative of the general population. The study of patterns of sensitization to different allergens is more complicated. To identify such patterns, a sample representative of the general population must be selected and patch tested.⁷ In all cases, these studies are the work of epidemiologists in collaboration with dermatologists

who assess the cases and perform the patch testing. In practice, these population studies are difficult to carry out because they require a vast coordination effort and absorb considerable economic resources. Furthermore, they are affected by 2 major problems. Firstly, patch testing is associated with a number of known risks and adverse effects (the best known of which is active sensitization), and such risks can only be justified in the case of suspected disease.⁸ The existence of these potential risks has led to low participation in such studies because only a small percentage of the selected population agrees to testing.⁹ Moreover, this type of study has been shown to underestimate the frequency of sensitization to rare allergens.¹⁰ Finally, population-based studies only provide information on the rates of sensitization and it is difficult to establish the clinical relevance of the results when testing is not motivated by suspicion of a contact allergy. In view of these problems, epidemiologic research on allergic contact dermatitis has traditionally been based on clinical studies.

Importance of Clinical Epidemiology in the Study of Allergic Contact Dermatitis

Clinical research involves studying patients with a disease with a view to improving their care.¹¹ The participants in such research are patients with suspected allergic contact dermatitis who have been studied in skin allergy clinics and have undergone patch testing.^{12,13} Obviously, the dermatologist plays an important role in the study design and the data management.¹⁴ The aim is to obtain information on patients with a view to drawing conclusions that can be rapidly applied to clinical practice. The disadvantage of clinical epidemiologic studies is the inevitable presence of a selection bias if we wish to extrapolate the results to the general population. As the bias is unavoidable, the results must always be interpreted in the context of the population of patients with suspected disease.² However, there are now methods that can be used to extrapolate the findings of clinical epidemiological research to the general population when the sample is sufficiently large and representative. One example of such a design is the clinical epidemiology and drug-utilization research (CE-DUR) method, which has been used successfully in Germany and Denmark. The CE-DUR approach combines clinical epidemiological data with the sales data for the material used in patch tests.¹⁵⁻¹⁷ As a result, clinical studies are now considered a simple and valid method for researching the epidemiology of allergic contact dermatitis

as the usefulness of the approach in detecting trends and preventing epidemics has been demonstrated.^{13,14,18}

In clinical research, multicenter studies provide greater statistical power. Larger study populations and more representative samples are possible when data collection is coordinated. Likewise, the ability to detect trends increases because data can be analyzed separately for each area as well as in a single dataset of pooled data from all centers.¹² Moreover, careful analysis of the differences between participating centers makes it possible to evaluate different work methods and promote quality control and standardization.¹⁹ This situation has led in recent years to the creation of European research and surveillance networks dedicated to the epidemiology of contact allergies, the most well known of which is the European Surveillance System on Contact Allergies (ESSCA).

Epidemiologic Monitoring: ESSCA and the Spanish Surveillance System on Contact Allergies (REVAC)

ESSCA was founded by Axel Schnuch during the Jadassohn Centennial Congress held in London in 1996; its purpose is to monitor the epidemiology of contact allergies in Europe (<http://www.essca-dc.org>). The data collected provides a basis for European Union (EU) legislation on allergens, and between 2001 and 2003 the initiative was funded by an EU grant (QLK4-CT-2001-00343). ESSCA is now an active working group in the European Society of Contact Dermatitis, and the results of its work are published in major journals.^{6,13,19} The group's epidemiologic research on contact allergy is based on the analysis of data supplied by a network of skin allergy departments in hospitals throughout Europe. There are currently 30 participating departments in 10 countries. One of the aims of ESSCA is to study the frequency of sensitization both overall and for each country.

The Spanish Surveillance System on Contact Allergies (Red Española de Vigilancia de Alergia de Contacto [REVAC]) was set up to collect and standardize epidemiologic data from the Spanish dermatology departments that wished to participate in the European network. REVAC is an independent initiative administered by Spanish dermatologists and initially coordinated by Dr Ana Maria Giménez-Arnau and Dr Wolfgang Uter, the chairman of ESSCA. This project was set up within the Spanish Contact Dermatitis Research Group (Grupo Español de Investigación en Dermatitis y Alergia de Contacto [GEIDAC]), and membership is open to all centers that carry out patch testing and fulfill the minimum criteria for inclusion in ESSCA (<http://www.ivdk.gwdg.de/essca/doc/minidat8-2003-06.pdf>). Current members of the Spanish group include the skin allergy units of the Hospital General Universitario in Alicante, the Hospital del Mar in Barcelona, the Hospital de la Princesa in Madrid, the Hospital Universitario in Puerto Real, and the Complejo Hospitalario Universitario in Santiago de Compostela.

The aims of the REVAC are as follows:

- To identify the national and regional peculiarities of sensitization in Spain.
- To detect trends early in their development and monitor the epidemiology of allergens that may be emerging.
- To participate in the multicenter epidemiologic studies of ESSCA in order to improve our knowledge about the situation within the EU and to provide evidence to support EU legislation.
- In this context, to help groups of experts to plan and execute clinical measures (such as the elaboration and modification of the standard series) and public health programs.
- To promote standardization and quality control in contact allergy research, which are both an outcome of the scientific analysis of data and a prerequisite for excellent epidemiologic study.²⁰

Need for a Database: The WinAlldat/ESSCA System

A database management system is necessary for epidemiologic research on allergic contact dermatitis.²¹⁻²³ Computerized database systems are currently the most widely used option. The fact that each dermatology department usually has its own proprietary system makes the integration of data from different centers extremely difficult. Additional planning is therefore required for many departments wishing to take part in a multicenter study, sometimes raising an obstacle to participation in such projects. However, the use of a common database application to record and store data does simplify the integration of data from different hospitals.

The software used by REVAC and most of the members of ESSCA is the WinAlldat application, which was created in 2002 to facilitate the collection of epidemiologic data within the EU at the local level and their anonymous export to a central system for statistical analysis.²⁴ A number of different versions of the software have since been developed, and the application has been translated into several languages, including Spanish. The use of WinAlldat is supported by the EU (project ESSCA-DC, contract QLK4-CT-2001-00343) and the application fulfills all the quality control standards that ensure the safety and protection of the data collected and stored. Since WinAlldat is based on Microsoft Access, its use requires a computer running that software (version 97 or later) under the Microsoft Windows operating system (XP or later).

The experience gained through many years of use has shown that WinAlldat's main advantage, the use of a single computer application to introduce all the data, is the first step towards standardization between centers. Standardization is particularly important in the study of contact allergies, because the very nature of the allergens, which are prepared in different concentrations and vehicles, means that scrupulous and painstaking handling are required to minimize bias when results are being analyzed. However, potential users should not overlook the fact that the decision to use this application also entails the investment of time in a number of tasks, such as learning to use the software, entering data, and so on. Consequently, using the WinAlldat application is not an indispensable requisite for

- Epidemiologic surveillance of contact allergies in Spain to establish the prevalence of sensitization to different allergens and identify local and seasonal variations.

participating in the epidemiologic surveillance projects of the ESSCA, although it is essential to have an orderly and structured database system.

Need for a Coordinating Data Center for Spain

The usual practice in the clinical epidemiology of contact allergies is for each participating center to collect and analyze its own data and publish the results.^{14,25} However, this practice is not viable in multicenter studies. Multicenter studies require a data center to coordinate the work of all the participants for the benefit of the group. The functions of the coordinating center are as follows²⁰:

- To verify all the data collected. To detect and resolve errors.
- Quality control. To promote standardization and detect possible anomalies.
- To label and store all data.
- To analyze the data statistically, both for each participating department and overall.
- To respond to requests for information from members of the surveillance system.
- To foster and support research projects and the publication of results.

The next objective of REVAC is to promote the creation of a national data center to liaise between the Spanish and European surveillance networks. One of the functions of this data center would be to satisfy the demand for technical support and information from participating dermatologists.

Conclusion

Although allergic contact dermatitis is a common and important problem, its real prevalence in Spain is unknown. The multicenter studies that would provide the data required to construct a clear picture of the actual situation are lacking. Likewise, no sustained work has been done to provide the information on patterns of allergen sensitization needed to facilitate epidemiologic surveillance. The clinical research and epidemiologic surveillance networks promoted by the European Society of Contact Dermatitis and coordinated by ESSCA aim to fill these gaps. The small core group of REVAC researchers would like to encourage any colleagues interested in the study of contact allergies to join the project and contribute to the development of clinical epidemiologic research in Spain.

Conflict of Interest

The authors declare that they have no conflict of interest.

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