

Protein contact dermatitis - Case report*

Dermatite de contacto proteínica - Relato de caso

Ana Rita Rodrigues Barata¹

Luis Conde-Salazar²

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Abstract: Protein contact dermatitis is a skin condition not well known and underdiagnosed by dermatologists, resulting from an IgE-mediated allergic reaction. Clinically it presents as a chronic hand and/or forearms eczema of occupational origin, especially in professionals who work as food handlers. Epicutaneous tests are negative, and to diagnose this condition it is necessary to perform immediate-type allergy tests. The most sensitive and practical is the prick-by-prick test with food that the patient refers to cause intense itching after immediate skin contact. Treatment is symptomatic, and it is mandatory to avoid the responsible allergen, wearing plastic gloves and even sometimes leaving the workplace for symptom resolution.

Keywords: Dermatitis, contact; Food hypersensitivity; Hand; Hypersensitivity, immediate; Latex

Resumo: A dermatite de contacto proteínica é uma condição pouco conhecida e infra-diagnosticada pelos dermatologistas, resultante de uma resposta alérgica de tipo imediato, mediada por IgE. Clinicamente apresenta-se como um eczema crónico em mãos e/ou antebraços de origem ocupacional, sobretudo em profissionais que trabalham manipulando alimentos. As provas epicutâneas são negativas e para realizar o diagnóstico desta condição há que realizar testes alérgicos de tipo imediato, sendo o mais sensível e rápido, o prick-by-prick test com os alimentos que o paciente refere causar-lhe prurido intenso e imediato ao seu contacto. O tratamento é sintomático, sendo necessário evitar o alérgeno responsável, utilizar luvas de plástico e em ocasiões abandonar o posto de trabalho para a sua resolução.

Palavras-chave: Dermatite de contato; Hipersensibilidade imediata; Manipulação de alimentos; Mãos; Proteínas

INTRODUCTION

Protein contact dermatitis is a not well known skin condition underdiagnosed by dermatologists. It corresponds to an immediate-type occupational contact dermatitis (type 1, mediated by IgE antibodies) characterized by an itching sensation immediately after contact with the responsible substance.

It presents with the clinical appearance of a subacute or chronic dermatitis, usually located on the hands or forearms, with a chronic and recurrent course.¹

It is produced by food-related protein products and should be suspected in patients who work as food handlers.

Epicutaneous patch tests are usually negative and immediate type skin tests must be performed in order to make a diagnosis. The most practical and sensitive diagnostic test is the prick-by-prick test, performed with the food that the patient feels is responsible for the condition.

CASE REPORT

A 37-year-old female, with a personal history of intrinsic asthma, treated with salbutamol, and who worked as a cook, was referred to our Center for evaluation of skin lesions on the dorsum of the hands and forearms, which had started 2 years before. On physical examination eczematous plaques were observed on the

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* Work carried out at the Department of Occupational Dermatology, Instituto de Salud Carlos III - Madrid, Spain

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¹ MD, Specialist in Dermatology - Instituto de Salud Carlos III - Madrid, Spain.

² MD, Professor of Dermatology, Honorary Member of the Brazilian Society of Dermatology (Sociedade Brasileira de Dermatologia) - Service Head of the Department of Occupational Dermatology, Instituto de Salud Carlos III - Madrid, Spain

dorsal aspect of both forearms and hands, including fingers and interdigital surfaces, with the presence of fissures (Figure 1). She had previously been treated with moderate potency topical corticosteroids without improvement.

The patient worked as a cook at a Japanese restaurant, and daily handled food based on fish and vegetables (Figure 2). She used protective latex gloves during her daily routine and reported that during vacations or rest days she experienced major improvement, as well as worsening when she returned to work.

Given the clinical aspect, location of the lesions and the patient's occupation, we decided to conduct patch testing with the baseline series of the Spanish Group for Research of Allergy and Contact Dermatitis and the rubber series (True Test and Chemotechnique Diagnostics), in addition to prick-by-prick tests with all the raw food that the patient handled daily at her workplace. All patch tests were negative. Regarding the prick-by-prick tests, positive results were observed to crab, tuna fish, salmon, scallop, eel, shrimp and butterfish (Figure 3). Additionally IgE levels were measured in serum, with high levels of total IgE (326 IU / ml), shrimp IgE (0.52 KU / L) and crab IgE (0.52 KU / L).

With the diagnostic test results and the patient's clinical and occupational history, the diagnosis of protein contact dermatitis was established. The patient was advised to avoid contact with prawns, shrimp and crab, both handling and ingestion, and to wear protective plastic gloves. Prompt improvement was observed.

DISCUSSION

Protein contact dermatitis (PCD) is an uncommon skin condition, underdiagnosed by many dermatologists for not knowing how to recognize its existence. Hjorth and Roed-Petersen coined the term in 1976, describing the condition as a new type of occupational contact dermatitis. There have been several publications on the subject ever since.¹⁴

The etiologic agents responsible for PCD are usually proteinaceous and food-related: animal and vegetable proteins, cereal grains, flours, and enzymes.^{5,6}

The occupational groups more exposed to these substances have food handling occupations: cooks, catering workers, bakers, butchers, fishmongers, fruit and vegetable packers, fish cleaning and freezing workers, etc.

Latex protein should be considered as an etiologic agent, despite the fact that immediate hypersensitivity to latex usually manifests itself much more frequently as a contact urticaria.⁷ In this scenario other occupational settings can be affected (healthcare workers, chemists, hairdressers, etc.).

There are several factors that favor the development of skin lesions, like continued exposure to the allergen, chronic scratching, moisture, presence of a preexist-



FIGURE 1: Erythematous-desquamative lesions presented by the patient when she came for the first appointment



FIGURE 2: Several fish manipulated by the patient at her place of work on a daily basis



FIGURE 3: Results of skin prick tests performed

ing irritant or allergic contact dermatitis, or prior history of atopic dermatitis.^{5,8}

Regarding the pathogenic mechanism, PCD is included in the scope of immediate-type allergic reactions such as contact urticaria. Both skin diseases are characterized by itching sensations immediately after contact with the responsible substance, despite the fact that in PCD the skin lesions resemble eczema while in contact urticaria lesions consist of hives.²

Clinically, this condition presents as a subacute or chronic dermatitis, located on the hands and/or forearms, indistinguishable from an irritant or allergic contact dermatitis. Subjectively, the patient complains of itching or tingling few minutes after contact with the responsible product. Occasionally the clinical lesions may extend to the facial region, by touching with contaminated hands or due to an airborne mechanism.^{2,8} Additionally, other manifestations can be seen, such as chronic paronychia, pulpitis and nail dystrophy. Some patients may have an "oral allergy syndrome" consisting of mouth itching, lip swelling and dermatitis after ingestion of the allergen.

The resolution of the dermatitis on vacation or resting days, and the immediate recurrence when returning to work is the norm. This fact is highly suggestive of

PCD. The final diagnosis is made after clinical evaluation, particularly location of the lesions and the patient's occupation, in addition to skin tests, which are the fundamental tool for diagnosing the condition: prick test and prick-by-prick test, scratch test, rub test on the affected areas, and determination of specific IgE serum levels.⁹

The prick-by-prick test with the food that patients think is responsible for the skin lesions is the most sensitive, fast and simple test to perform, among the several allergic skin tests for diagnosis of this entity.

To improve the prognosis of this condition, the first step is to identify and avoid the responsible allergen. PCD is a chronic process, with periods of improvement during holidays and deterioration when back to work, as previously mentioned. We should recommend wearing plastic gloves and avoiding rubber ones, due to the risk of developing a PCD or allergic contact dermatitis to this product. In certain cases, the abandonment of patient's occupation is the only effective measure to solve this skin condition.

In conclusion we can say that PCD is an underdiagnosed skin condition that dermatologists and specialists in occupational medicine should be aware of in order to make a correct diagnosis of many cases of chronic hand and forearms eczema. □

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MAILING ADDRESS:

*Ana Rita Rodrigues Barata
Pabellón 8 Universidad Complutense
28040 Madrid, Espanha.
E-mail: rita.rodrigues.md@gmail.com*

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