

positive for *Helicobacter pylori*. The androgen was substituted by danazol eradicating therapy for his *H. pylori* infection was instituted. At the time of discharge, the coagulation study showed normal values and findings.

On August 4, 1999, left heart catheterisation and coronary angiography were performed, with a diagnosis of two-vessel coronary disease. PTCA with coronary stenting was carried out on the right coronary artery, with apparently good results.

Twelve days later the patient was again admitted to the Internal Medicine Service because of abdominal pain, acral livid patches, severe atherosclerosis with multi-organ involvement and rapidly progressive renal failure not amenable to substitutive therapy and with fatal outcome, probably as a consequence of the coronary catheterisation.

Discussion

Patients with hereditary angioedema frequently evidence digestive tract manifestations. Frequent among them are abdominal pain, nausea, vomiting and abdominal defence, which may occasionally be difficult to distinguish from an acute abdomen; for this reason, they not infrequently undergo unnecessary surgical interventions. Other more exceptional gastroenterological manifestations have also been reported, such as pancreatitis¹, intestinal intussusception², ascites^{3,4}, pseudotumour⁵ or worsening of the angioedema through concomitant *Helicobacter pylori* infection⁶.

Haematologic changes have also been reported, such as thromboembolic disease⁷ and changes simulating disseminated intravascular coagulation (DIC)⁸, the latter being more frequent in the elderly.

Our patient evidenced, in the course of his evolution, atypical digestive manifestations such as intestinal pseudotumour, ascites and *H. pylori* infection; the latter may have contributed to the deterioration in the control of his disease. Coagulation changes resembling a DIC were also observed.

The effect of the long-term maintenance therapy with attenuated androgens in these patients is still unclear; although many possible or theoretical side effects have been described, we have only found one double-blind study in FHA patients⁹, in which the only significant differential data between untreated cases and patients treated with attenuated androgens for over ten years were menstrual alterations, weight gain and high blood pressure, no significant differences being observed in the laboratory data between both groups.

In the light of the present case, and with independence of the presence of other risk factors, the possibility

should be considered that long-term maintenance therapy with attenuated androgens might promote the development of atheromatosis.

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ANAPHYLAXIS DUE TO SARONI

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ALLERGY TO SAUSAGES

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The case is presented of a female patient who came on repeated occasions to the Emergency Outpatient Clinic re-

porting symptoms ranging from digestive to dermatologic manifestations and anaphylaxis (on one occasion), being referred for this reason to the Allergy Unit. The allergological anamnesis disclosed a possible causal relationship with the ingestion of sausages of different types (frankfurters, bologna and "chopped"). The patient tolerates pork and veal meat and homemade sausages. The allergy study performed confirmed hypersensitivity to frankfurters, "chopped" and bologna. The manufacturer was contacted and the various additives (sixteen in all) reported in the manufacture of those industrial sausages were tested, revealing sensitization to soybean flour. Conclusion: We present a case of hypersensitivity to sausages secondary to soybean flour sensitisation. When considering allergic manifestations in which food allergy is suspected, the possibility of soybean flour as the causative agent must always be kept in mind, as this represents an occult source of exposure in many industrially manufactured foodstuffs.

Key words: Food allergy. Anaphylaxis. Sausages. Soybean.

ALERGIA A EMBUTIDOS

Presentamos la historia clínica de una paciente que acude en repetidas ocasiones a Urgencias con síntomas que varían desde manifestaciones digestivas a dermatológicas y de una anafilaxia, motivo por el que es remitida a la consulta de Alergia. Al realizar una anamnesis alergológica encontramos una posible relación causal con la ingesta de embutidos tipo mortadela, "chopped" y salchicha al estilo de Frankfurt. La paciente tolera carnes de cerdo y ternera, y embutidos de fabricación casera. En el estudio realizado, encontramos en las pruebas alergológicas efectuadas una sensibilización a la salchicha tipo Frankfurt, "chopped" y mortadela. Tras ponernos en contacto con el fabricante y testar los diferentes aditivos que utilizan en la fabricación de estos embutidos industriales, encontramos al realizar pruebas cutáneas con dieciséis sustancias que se añaden a estos alimentos una sensibilización a la harina de soja. Ante cuadros de alergia en los que sospechamos una etiología alimentaria, es necesario tener presente la harina de soja, al ser esta una fuente oculta de exposición en muchos alimentos de elaboración industrial.

Palabras clave: Alergia alimentaria. Anafilaxia. Embutidos. Soja.

Case report

The patient was a 57-year-old woman, who worked

in the packing area in a chocolate factory. In her past history she reported tonsillectomy during childhood, but no previous history of rhinoconjunctivitis, bronchial asthma or drug allergy. She was referred to our Allergology outpatient clinic because of having required emergency treatment in four or five occasions over the last six months. The first few instances had been episodes of digestive symptoms (nausea, vomiting and diarrhoea without fever) suggestive of food poisoning; in later ones she had evidenced a sensation of heat together with urticariform rash, angioedema and generalised pruritus that had remitted upon administration of parenteral steroids and antihistamines. In the last occasion prior to referral she had developed anaphylaxis with dermatological and digestive symptoms in association to dizziness, hypotension and palpitations, requiring the administration of adrenalin.

In the allergological history, the salient feature was the ingestion of sausages (frankfurters, Bologna, "chopped") prior to the various episodes, although she tolerated pork and veal meat, homemade sausages and cured and cooked ham, as well as nuts and legumes.

Studies performed

The skin tests with environmental allergens, including house dust and storage mites, animal danders, pollens and moulds, were negative. Skin tests with a panel of alimentary allergens including cow's milk, egg, various meats, nuts, legumes, fruits she usually consumed, fish and *Anisakis simplex*, were generally negative; they were only positive to peanut, and doubtful to lentils and beans.

The complete blood count was normal; the ESR was 23 mm. The metabolic, renal and hepatic test profiles, as well as the ionogramme, were also normal. The *Echinococcus*, hepatitis B and C and *Toxoplasma* serologies were negative. The microscopic examination of the faeces disclosed no ova or parasites. The study of the complement fractions (C₃, C₄, C₁INH) and of the immunoglobulin (IgA, IgG, IgM) concentrations yielded normal results; the total serum IgE was 291 IU/ml. The quantification of 5-hydroxy-indoleacetic acid, vanilylmandelic acid and methylhistamine in 24hour urine showed values within the normality ranges. The plain films of the chest and abdomen and the abdominal ultrasound scan were reported as normal.

In the light of the above results, and considering the absence of any parameter that might be suggestive for an aetiological diagnosis of her anaphylaxis, skin tests (prick-by-prick) were performed with the products supposedly related to her symptoms, with the following results: Frank-



Fig. 1. Foodstuffs with which the prick-by-prick tests were performed.

Table I. Composition of the Frankfurt-type sausages of one industrial brand

• Sodium isoascorbate	• Sodium citrate
• Tripolyphosphate	• Dextrose
• Wheat starch	• Meat aroma
• Carrageenate (E-407)	• Sodium nitrite
• Carrofin gum (E-410)	• Spice extract
• Carboxymethyl-cellulose	• Sodium glutamate
• Cardamom	• Soybean (three compounds)

furt-type sausages (three brands), +++; "chopped" (two brands), ++; Bologna (two brands), industrial red sausage (*chorizo*), cooked ham and cured ham, all negative (Fig. 1). Similar tests were performed on a control patient group, with negative results in all cases.

We thereupon contacted three Spanish sausage manufacturers with the request for small samples of their products and of the actual composition of the Frankfurt-type sausages. Only one of them accepted cooperating. Table I lists the components (besides pork and veal meat) of that brand of sausages. The skin tests with the panel of components of the Frankfurt-type sausage (1/10 dilution) were positive for three soybean-containing compounds, and negative for the remainder (Fig. 2).

The explanation for the greater clinical sensitivity to Frankfurt-type sausage as compared to "chopped" may be the different soybean concentration in the two: according to the manufacturer, the soybean content was 4% in the former and 2% in the latter. The *in vitro* studies demonstrated Class II specific IgE (Pharmacia CAP-system, Pharmacia, Uppsala, Sweden) to soybean, lentil and peanut, Class I for *Anisakis*, and Class 0 for almond, *Ascaris* and *Echinococcus*.

Challenge tests with soybean flour were not performed,

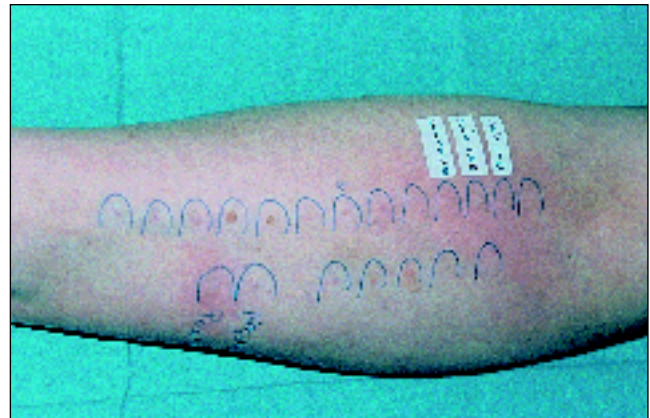


Fig. 2. Skin tests with the components of the Frankfurt-type sausage.

Table II. Alimentary forms in which soybean may be contained in foodstuffs

• Soybean oil (oils, margarine, etc.)
• Soybean lecithin (E-332, emulgent)
• Soybean flour (coadjuvant to wheat flour)
• Soybean as a legume (green beans, seed plant)
• Soybean protein (soybean milk and formulas, soybean curd, ice creams)

as the clinical manifestations were considered to be sufficiently severe to preclude again subjecting the patient to such stress.

Evolution

A diet was instituted excluding all soybean-containing products (bakery and confectionery products, pizzas, manufactures meat products); six months later, the patient was asymptomatic. At the following semestral control visit she reported urticaria after the ingestion of peanuts, so that this product was also excluded. Later on she developed a new anaphylaxis episode requiring emergency treatment after eating batter-fried shrimp (*gambas en gabardina*).

A new allergologic study was thereupon performed for investigation of an eventual seafood hypersensitivity; such a sensitization was ruled out by skin tests and specific IgE. We therefore believe that the batter used in this particular seafood preparation was the responsible agent, and soybean flour the occult allergen. It was impossible to assess the actual composition of the batter, as the flour used for it was a "white" brand from a large supermarket.

In conclusion, we have reported a case of allergy to industrial sausages secondary to soybean flour sensitization. It is noteworthy that the patient was an adult with no

Table III. Foodstuffs that may contain soybean products

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- Bread, biscuits, cookies, confectionery
 - Industrial desserts
 - Pizza
 - Soup preparations
 - Chocolates
 - Ice creams
 - Meat preserves (sausages, "chopped")
 - Meat pastries
 - Minced meat
 - Shrimp fried in batter (gambas en gabardina)
-

Table IV. Allergenic fractions in soybean

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- Inhalatory sensitisation
- Gly m 1 A (7.5 kDa)
 - Gly m 1 B (7.0 kDa)
 - Gly m 2 (8.0 kDa)
- Oral/digestive sensitization
- 85% globulins and albumin: β -conglycinin and glycinin (15S 11S 7S 2S)
 - Serum: trypsin inhibitor
-

previous history of atopy. Soybean flour may be contained in a large variety of alimentary products and represent an unsuspected source of allergenic exposure.

Discussion

Soybean (*Glycine max*) is a universally distributed legume, of which over 7,300 species exist. In the U.S. it represents the fifth foodstuff in order of sensitization frequency.

The allergic manifestations soybean may elicit are variable, ranging from gastrointestinal symptoms or intolerance symptoms similar to those of cow's milk protein intolerance to dermatologic manifestations such as urticaria, angioedema or atopic eczema. It also may induce respiratory manifestations such as rhinoconjunctivitis or asthma, representing an occupational disease in bakers and other workers using it in the manufacture of alimentary supplements. In Spain, epidemic bouts have been reported (in Barcelona, in 1981-1987) that were attributed to the inhalation of soybean powder released while unloading ships carrying this foodstuff. Table II summarises the various forms in which soybean may be present.

Oral sensitization to soybean is known since long ago. In some studies, mainly in the U.S. where soybean-

based milk substitutes and formulas are much more prevalent, it has been reported that up to 0.5% of the infants receiving such preparations become intolerant¹. Those infants who develop cow's milk protein intolerance and who thereupon are switched to a soybean-based formula may develop intolerance in up to 15-43% of the cases^{2,3}. However, Bock⁴, in a double-blind placebo-controlled challenge study, found a prevalence of up to 8%.

Magnolfi *et al.*⁵, among patients with a positive prick test and evidencing atopic dermatitis, observed clinical reactivation of the dermatologic condition in 6% of the cases after a challenge with soybean. Table III lists those foodstuffs in which soybean flour may be contained.

The allergenic proteins in soybean are different depending on the route of allergen sensitization (digestive or inhalatory). Table IV presents the characteristics of the allergenic fractions in relation to the sensitization route.

Industrial meat preserves and sausages (*chorizo*, ham, sausages), so frequent in our diet, are occasionally the cause of allergic or pseudo-allergic reactions; however, the identification of the actual aetiological agent is difficult, and the clinical manifestations are most often ascribed to histamine release by "additives and preservatives" used in their manufacture. We have reported one further case of allergy to industrial sausages in which soy was detected as an unsuspected allergenic source, even though this possibility has been previously reported abroad⁷, and in Spain by Vidal *et al.*⁸.

Finally, we would like to draw attention to soybean as the first transgenic foodstuff, which, in order to obviate its deficiency in methionine, has been enriched with genes from the Brazil nut (*Bertholletia excelsa*) that provide new allergenic proteins, so that patients with a sensitization to that nut may evidence allergic manifestations after exposure to transgenic soybean⁹.

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PREVALENCE OF ALLERGIC DISEASE IN A COOKIE FACTORY

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MITES IN SALAMANCA AND ZAMORA HOMES

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Dust samples were collected in domestic households in Salamanca and Zamora for identification of the mites present in them. One or more mites from six different species were identified in 19 out of the 37 samples from Zamora (51.35%); the most frequent mite was Dermatophagoides pteronyssinus, followed by Euroglyphus maynei. Eighty dust samples were collected in Salamanca, and in 36 of them (45%) mites were positively identified belonging to eleven different species; D. pteronyssinus was again the most frequently identified mite, followed in this location by Tyrophagus putrescentiae. Our results stress the need to consider the possibility of sensitization to mites other than D. pteronyssinus, which are not often included in the usual skin test panels, before considering that a sensitization to these allergens is ruled out.

Key words: Mites. *D. pteronyssinus*. *Euroglyphus maynei*. *Tyrophagus putrescentiae*.

ÁCAROS EN VIVIENDAS DE SALAMANCA Y ZAMORA

Se recogieron muestras de polvo doméstico en domicilios de Salamanca y Zamora para realizar la identificación de ácaros presentes en las mismas. De las 37 muestras recogidas en Zamora, en 19 (51,35%) se identificaron uno o más ácaros de seis especies diferentes; Dermatophagoides pteronyssinus fue el ácaro que se encontró con más frecuencia, seguido de Euroglyphus maynei. En Salamanca se recogieron 80 muestras, y en 36 (45%) se identificó la presencia de ácaros de once especies diferentes. D. pteronyssinus fue el ácaro que se encontró en la mayoría de las muestras positivas, seguido de Tyrophagus putrescentiae. Por lo tanto, se debe considerar posible la sensibilización a otros ácaros diferentes de D. pteronyssinus y que no se suelen incluir en las pruebas cutáneas habituales antes de descartar sensibilización a este alérgeno.

Palabras clave: Ácaros. *Dermatophagoides pteronyssinus*. *Euroglyphus maynei*. *Tyrophagus putrescentiae*.

The causes that have induced the increase in allergic disorders and asthma in the last few decades are not fully known. Increased exposure to acarine allergens because of better-isolated households with more effective energy sources (heating) has been considered to play an important role in this increase. Consequently, improved knowledge of the biology of mites is essential for the prevention of asthma and allergic diseases.

House dust was identified as a cause of allergy already in the '20s. Mites were mentioned as a possible source of allergens inducing asthmatic reactions, but it was not until 1964 that mites of the genus *Dermatophagoides* were clearly implicated as the main allergen source in house dust¹. Multiple investigations have been carried out since then on the clinical manifestations, the allergens and the cross-reactivity between mites. However, there is a considerable lack of studies on the biology of mites, in Spain in general and of course in our own area. One of the few such studies has been that of the "Rio Hortega" Hospital group in Valladolid, which was published in this same Journal². We therefore decided to accept cooperating with the Chair of Parasitology of the Complutense University in Madrid when they proposed us, through the mediation of IPI, to carry out a collection of house dust samples in the cities where we work, namely Salamanca and Zamora. Similar