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CASE FOR DIAGNOSIS

Skin Rash on an Infant Exantema en un Lactante

Clinical History

We present the case of a 6-month-old girl who was brought to our outpatient clinic for perioral erythema that had developed some hours earlier and that had spread to the trunk and arms, coinciding with the introduction of the first bottle of formula milk. There were no respiratory or gastrointestinal symptoms and her general health was unaffected. The infant had only received breast milk since birth. There was a past history of atopic dermatitis (AD) and a family history of allergic rhinoconjunctivitis in the father and AD in the mother. The day before the visit, the child had been administered the vaccine scheduled at 6 months:

diphtheria-tetanus-pertussis, hepatitis B, *Haemophilus influenza B*, and meningococcal meningitis C.

Physical Examination

There was erythema in the perioral region, on the trunk, and on the arms (Figure 1), extending onto the posterior aspect of the neck, the left ear (Figure 2), and upper limbs, sparing the hands.

Additional Tests

Blood tests were performed, including measurement of specific immunoglobulin (Ig) E to cow's milk and its fractions (cow's milk, 6.96 kU/L; lactalbumin, 5.15 kU/L; lactoglobulin, 4.02 kU/L; and casein <0.35 kU/L). Prick tests were performed in the child allergy clinic of the pediatrics department: cow's milk negative, lactalbumin 12×5 mm, lactoglobulin 15×7 mm, and casein 5×4 mm.



Figure 1



Figure 2

What Is Your Diagnosis?

Diagnosis

Cow's milk protein allergy (CMPA).

Clinical Course and Treatment

The symptoms resolved a few hours after the administration of a dose of hydroxyzine. A cow's milk protein-free diet was recommended, using soya milk as a substitute. Since that time, the child has shown a marked improvement of her atopic dermatitis and has not developed any further episodes similar to the one described.

Discussion

Adverse reactions to cow's milk protein are grouped into nonallergic hypersensitivity (intolerance) and immunoglobulin IgE-mediated (immediate or late) or non-IgE-mediated allergic reactions.¹ Between 5% and 15% of children develop symptoms related to cow's milk, though the prevalence of CMPA is estimated at between 2% and 7.5%.² The main allergens are β -lactoglobulin, casein, α -lactalbumin, and seroalbumin.³ Food allergens can pass from the mother to the fetus through the placenta and via the breast milk, triggering the production of specific IgE antibodies.

Symptoms often start to appear with the introduction of formula milk, with immediate onset (58% in less than 2 hours, usually as urticaria, angioedema, acute episode of AD, or vomiting) or late onset (42% after more than 2 hours, usually as AD or gastrointestinal symptoms).² The morphology and site of the erythema are variable. It often appears on the chin or in the area of contact with the allergen (as in our case). The symptoms may be isolated or appear in association with systemic alterations (rhinoconjunctivitis, wheeze, stridor, anaphylactic shock).

The diagnosis is based on the medical history and on well-defined criteria: a significant reduction in the symptoms after the exclusion of cow's milk, exacerbation after rechallenge, and resolution after renewed dechallenge, and tests to detect the presence of specific IgE antibodies to cow's milk protein (prick test and radioallergosorbent test for specific serum IgE).^{4,5} These tests are very sensitive (>90%) but with a relatively low specificity (50%), as they detect the presence of antibodies (sensitization) but this does not necessarily indicate that the food will cause clinical reactions.⁴ According to the American College of Allergy, Asthma, and Immunology, the threshold values for specific IgE are ≥ 5 kIU/L in children under 2 years of age

and ≥ 15 kIU/L in older children.¹ For the *prick test* to have an acceptable sensitivity of 75%-95% and a specificity of at least 30%-60%, a threshold value of +++ or a papule ≥ 3 mm is recommended.¹⁻⁴

Tolerance develops in the majority of children before age 3. Persistence of clinical allergy to milk over 4 years of age and of elevated concentrations of serum IgE to casein are poor prognostic indicators.⁶ The relationship between AD and food allergy has been discussed at length. AD can be provoked or exacerbated by CMPA, but the true prevalence of food allergies in children with AD is still undefined.⁴

We present a case of CMPA, a disorder that we need to be aware of and to consider in the differential diagnosis of skin rash in infants.

Conflicts of Interest

The authors declare no conflicts of interest.

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