

Atopic Dermatitis Exclusively Localized on Nipples and Areolas

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Abstract: We present an 11-year-old girl, with celiac disease, and a 9-month history of itchy and erythematous-edematous lesions with vesicles and exudation on her nipples and areolas. No other lesions or signs of scratching were present on her face or folds. She had no specific lesions of atopic dermatitis in typical sites nor in other body surface during her life. Patch tests showed a positive reaction to nickel and thimerosal that was not significantly related to the clinical appearance.

This presentation documents the clinical relevance of atopic dermatitis minor diagnostic criteria. We discuss the importance of nipple eczema in AD and its differential diagnosis.

Atopic dermatitis (AD) is a chronic relapsing disorder which is most prevalent in childhood. The major diagnostic criteria proposed by Hanifin and Raika are 1) visible flexural dermatitis; 2) family or personal history of atopy; 3) itching; and 4) intermittent course of disease (1–2). Minor diagnostic criteria for AD are numerous, and include hand eczema, infraorbital folds, intolerance to wool, itch when sweating, palmar hyperlinearity, pityriasis alba, and keratosis pilaris (1–2). In our opinion, the presence of these minor criteria is particularly important for the physician when some of the major signs are lacking. Our patient demonstrates the diagnostic relevance of a minor criterion such as nipple eczema.

CASE REPORT

An 11-year-old girl presented to our department with a 9-month history of itchy and erythematous-edematous lesions with vesicles and exudation on the nipples and

areolas. These lesions were temporarily responsive to topical and systemic antibiotics and relapsed on suspension of the therapy. On examination, she had erythematous-infiltrative lesions with numerous, small, exudative erosions on the nipples and areolas (Figs. 1, 2). She also had spread papules on the lower portions of the breasts and on the chest. No other lesions or signs of scratching or eyelid dermatitis were seen. She had a family history of atopy (her mother had allergic oculorhinitis). The patient was a menstruating pubertal girl. However, the nipple eczema was not associated to her menses. Furthermore, our patient was affected by celiac disease, diagnosed at the age of 3, and since then she had followed a gluten-free diet.

Laboratory investigations revealed leucocytosis ($15.3 \times 10^3/\text{mm}^3$), total IgE increase (327 KU/l) and a high concentration of specific IgE [gramineae (8.97 KU/l) and cat epithelium (6.73 KU/l)]. IgA antiendomysium, antitransglutaminase, and antigliadin antibodies were absent. Patch tests with the European standard series

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Figure 1. Erythemato-edematosus lesions with numerous, small, exudative erosions on the nipples and areolas.



Figure 2. Close-up of the lesions.

showed a positive reaction to nickel and thimerosal. Culture examination, performed on a small exudating vesicle on the right areola showed the presence of numerous colonies of *Staphylococcus aureus*, sensitive to erythromycin [minimal inhibitory concentration (MIC) ≤ 0.25].

A biopsy specimen from a lesion on the right nipple was submitted for routine histology, which documented spongiosis and a perivascular and interstitial infiltrate of lymphocytes and monocytes with rare eosinophils in the superficial dermis. Direct immunofluorescence (IF) performed on perilesional skin was negative.

On the basis of clinical, histologic, and immunopathologic findings, the diagnosis of atopic dermatitis exclusively localized to the nipples and areolas in a patient with celiac disease and sensitization to nickel and thimerosal, was made.

The patient was treated with topical corticosteroids and emollients with complete healing, followed by a relapse after 3 months.

DISCUSSION

Nipple eczema represents the most common presentation of atopic dermatitis (AD) of the breast (3). Although this is not a specific indicator of disease, it has been considered by Hanifin and Rajka in 1980 (1) as a minor criterion in the diagnosis of AD (3–6). At the moment it is not included in the diagnostic minor criteria of AD (2). In our opinion, nipple eczema should be reevaluated as an important diagnostic sign of AD, especially during prepuberty (7) and breastfeeding (8) and when it is not associated with other typical lesions of AD (morphologically and topographically), as in our patient. Three of the four major criteria of AD were present in our patient 1) family history of atopy; 2) itching; and 3) intermittent course of disease.

The clinical manifestations of nipple eczema may be erythema, scale, crusting, fissures, vesicles, erosions, or lichenification (3–4). Both nipples are commonly involved. Usually, the nipple involvement is associated to other specific cutaneous lesions, e.g., lichenification of flexural areas. These lesions never appeared during our patient's life. Therefore, nipple eczema should be considered as an important sign of AD. Furthermore, our patient had other minor criteria of AD, such as xerosis and itching after sweating. Management of nipple eczema includes avoidance of any known triggers, topical steroids, lubricants and, in some instances, antibiotics.

The differential diagnosis includes allergic contact dermatitis (9–11), irritant dermatitis ("jogger's nipple") (12), lichen simplex chronicus, candida infection (during lactation) (8), and Paget's disease (when unilateral and confined to the nipple area) (13). Allergic contact dermatitis of the breast is less common, but presents with a clinical appearance similar to that of AD. Contact dermatitis to lanolin, beeswax emollients, and chamomile ointments has been reported in the literature (9,10). All are ingredients used for nipple protection during breast feeding. Nail polish has also been reported to cause contact dermatitis of the breast (7). In our patient, the patch test positive reaction to nickel and thimerosal was not significantly related to the clinical appearance. Nickel may be found in the metal shoulder loops of bras, while thimerosal occurs in eyewash and other optical products and in vaccines. These two haptens could not cause a nipple eczema, because there was no contact in this specific site.

The demonstration of *S. aureus* on lesional skin could represent the source of superantigens that are known to induce a polyclonal activation of T lymphocytes. Probably also in our patient, this documented infection activated the immune response and should be considered an important trigger and location factor of disease (14).

We present this patient because of the rarity of the exclusive involvement of nipples and areolas, without any other specific lesions of AD in typical sites or on other body surfaces during her lifetime.

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