

Unilateral Nipple Eczema in Children: Report of Five Cases and Literature Review

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Abstract: Bilateral nipple eczema on the background of atopy is not an uncommon problem and is a minor criterion in some diagnostic systems for atopic dermatitis (AD), but unilateral atopic nipple eczema is under-recognized and often causes clinical concern. We present the first case series of children with unilateral atopic nipple eczema and discuss the clinical aspects of this unusual distribution.

Atopic dermatitis (AD) is generally a symmetrical process, and nipple involvement is no exception. A unilateral eruption of the areola and nipple can cause diagnostic confusion among medical practitioners or raise concerns about a more serious condition, such as infection or Paget's disease. We present a series of five children, all with a family history of atopy and onset of eczema in infancy, who presented to the Oxford Dermatology Department with unilateral nipple eczema.

CASE REPORTS

Patient 1

A 15-month-old girl was referred by her general practitioner (GP) with a 10-month history of a stubborn left nipple rash on a background of mild facial and flexural eczema that had been successfully treated with emollients, oral antibiotics, and weak topical corticosteroids. The nipple had a subtotal response to these treatments and the rash recurred soon after cessation of the creams. Examination

revealed a poorly defined erythematous eruption with scale, excoriations, and oedema across the left areola and nipple. There were no other skin signs.

Patient 2

An 18-month-old boy was referred by his pediatrician with a 1-year history of an episodic pruritic eruption of the right nipple area. He also had a background of mild AD that had not been problematic for some time. There was no response to a course of floxacillin and the use of combined clobetasone, oxytetracycline, nystatin cream. Examination revealed a hyperkeratotic, lichenified right areola (Fig. 1). No other areas were affected. With the below-listed treatment, lichenification and postinflammatory hyperpigmentation took some time to normalize, however, symptoms responded quickly (Fig 2).

Patient 3

A 9-month-old girl was referred by her GP with a 5-month history of a predominantly one-sided nipple

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Figure 1. Initial presentation of patient 2 with an isolated, unilateral, pruritic, lichenified plaque replacing the normal architecture of the right nipple and areola.



Figure 2. Patient 2 in early treatment shows significant improvement of both symptoms and appearance. Improvement continued with further treatment.

eruption associated with two other small areas of rash on the trunk. She had failed multiple trials of topical and oral antibiotics, emollients, topical antifungal agents, and weak topical corticosteroids. Examination of the left nipple revealed erythematous, scaly, papular lesions, coalescing into a plaque, with excoriation in some areas. A fungal scraping performed to exclude dermatophyte was negative.

Patient 4

A 13-month-old boy was referred by his GP with a 3-month history of an itchy swollen nipple. There was no response to topical fusidic acid cream and a course of floxacillin. He had mild atopic eczema that was well controlled with emollients and occasional clobetasone



Figure 3. Close-up of an eczematous eruption restricted to the nipple and areola of patient 4.

butyrate ointment for flares. His parents had been avoiding topical corticosteroids to the nipple area because they were concerned about cutaneous infection. On examination, his left nipple had erythema, oedema, and scale with focal erosions (Figs. 3 and 4). On review 8 weeks after treatment, there was considerable improvement of symptoms, with only a small amount of residual swelling remaining (Figs. 5 and 6). He has remained well controlled with the application of emollients and topical clobetasone butyrate ointment to active eczema as required.

Patient 5

A 2-year-old boy was referred by his GP with a plaque of weepy, excoriated erythema across his right nipple and areola (Figs. 7 and 8) on a background of intermittent mild flexural eczema and a few scattered discoid areas of eczema. His nipple area had a good response to empiric treatment as described below (Fig. 9). He had since been stable on emollient use for the following 3 months.

Treatment Regimen

All patients had a family history of atopy and were otherwise healthy. There were no relevant exposures to contact allergens or physical stressors noted in any of the cases nor any asymmetry in their exposure patterns before being seen in clinic. Unilateral AD was provisionally diagnosed in each patient. There was a lichen simplex chronicus crossover picture in patient 2 and a discoid eczema crossover in patient 5.

A standard skin care regime for eczema was used in each case, including emollients and soap avoidance. Topical corticosteroid was administered by applying fludroxycortide 4 $\mu\text{g}/\text{cm}^2$ impregnated tape to the



Figure 4. Unilateral nipple eruption in patient 4.



Figure 6. Improvement with treatment in patient 4.



Figure 5. Close-up of improvement with treatment in patient 4.

area until it peeled off (3–5 days), with a new piece of tape applied if necessary for up to 2 weeks or until clinical improvement. Alternatively, clobetasol or mometasone 0.1% ointments was applied to the area for 2 weeks. Parents reported good tolerability and satisfaction with the regime and Infant Dermatitis Quality of Life Index scores dropped significantly, reflecting response to this regime in all five patients. The acute symptoms of erythema, edema, crusting, scale, and fissuring responded within the first 1 to 2 weeks in every case, with lichenification and



Figure 7. Unilateral nipple eczema in patient 5.

dyspigmentation taking a number of months to regress in patients 2 and 4. There were no significant recurrences and patients were maintained on regular emollients, with topical corticosteroids used for active eczema in other areas as required for localized flares. Follow-up ranged from 6 weeks to 9 months.

DISCUSSION

Classical cases of AD, especially when chronic, can be easily recognized, and clinicians infrequently refer to



Figure 8. Close-up of the eruption on the right nipple of patient 5.



Figure 9. Improvement in patient 5 with treatment.

formal criteria to confirm the diagnosis, but various scoring systems exist, mostly to facilitate a benchmark for study design. Although not listed in more modern incarnations, the original criteria that Hanifin and Raika described in 1980 included nipple eczema as a minor criterion, which other groups have validated (1,2).

Nipple involvement in AD is usually bilateral and associated with other clinical features such as pruritus, recurrent episodes, involvement of other sites, and a family history of atopy. In this setting, especially when the morphology is typically eczematous, even unilateral nipple disease is easily identified, but when it is the only problem, the diagnosis of AD of the nipple may not be so intuitive. The different color and texture of the areola and nipple skin alters the classic eczematous appearance, which serves to compound the confusion. In our series, children were treated

unnecessarily with antibiotics, and appropriate therapy was delayed.

A large number of other skin conditions can affect the nipple area, but in children they are all uncommon or rare. The differential diagnosis includes other eczemas. For example, in adults, reports of ill-fitting brassieres and “joggers,” “cyclists,” and “surfers” nipples exist in the literature (3–6). These relate to the irritant effects of abrasive physical forces, moisture, and temperature on the skin. Breastfeeding mothers can also have form of irritant nipple eczema.

Although more commonly bilateral, contact allergy can also present with unilateral nipple eczema. Reactions to medications (propolis, beeswax, lanolin, chamomile ointments) and nail varnish have been described in this distribution (7). We considered the possibility of allergic contact dermatitis in each of our cases, but we did not feel that patch testing was necessary. This is because all of our patients had a positive personal and family history of atopy and no likely allergens were unilaterally applied to the nipples, apart from topical over-the-counter preparations and medicaments. Allergy to these topicals was excluded because all our cases had been using these treatments elsewhere on the body with no adverse reactions. There had generally been avoidance of topical treatments to the nipple area because of concerns about side effects. Moreover, there was improvement with emollients and appropriate topical corticosteroids, and there have been no reports of rebound after cessation of treatment. Therefore allergy to vehicles, medications, and corticosteroids is unlikely.

In summary, although contact allergy can occasionally be indistinguishable from AD, a lack of relevant exposure on history, the unilaterality of the lesions, and the absence of reactions in other areas argues against this. Patch testing can be performed on toddlers, but the available body surface for testing is limited and the practicalities remain a challenge. Therefore, because of strong diagnostic suspicion of undertreated atopic eczema, patch testing was considered unnecessary.

The differential diagnosis includes other inflammatory dermatoses such as seborrheic eczema. Impetigo or herpes simplex virus can superinfect existing eczema, although they may also erupt on normal skin. Dermatophyte infection and fixed drug eruptions are also typically unilateral and can be limited to the nipple. Psoriasis is uncommon in this distribution and age group and is also usually symmetrical.

The most sinister connotation of unilateral nipple rash is neoplastic change, but this is exceedingly rare

in this population. Atypical features such as underlying masses, induration, and disproportionate bleeding should be excluded. Some authors insist on biopsy of unilateral erythrosquamous rashes in adults. This is predicated on descriptions in the literature of Paget's disease mimicking dermatitis by spontaneously remitting and then relapsing (8), but Paget's is so uncommon in children that a trial of empiric therapy in this age group is warranted, with the cases that do not respond going on to biopsy.

Occasionally breast tumors that are rare in childhood, such as papillary adenoma of the nipple, can arise in infants (8). Neoplasms other than Paget's disease have imitated eczema in adults (9). Lastly, congenital or genetic lesions may occasionally be confused with eczema on the nipple. For example, one type of hyperkeratotic nipple disease relates to an underlying epidermal nevus, whereas another type relates to ichthyoses (8).

CONCLUSION

Unilateral skin eruptions of the nipple in children are not common, but they exist in clinical practice and, as we have shown in our experience, are not rare. There is limited recognition of this condition and no previous reports in the literature. Although practitioners should keep in mind that a number of rare conditions may present with unilateral nipple disease, an atypical presentation of AD is still the most likely. To the best of our knowledge, this is the first

description of this unusual distribution of AD. Skin swabs and a fungal scraping should be collected where indicated, but patch testing can be reserved for cases that have a poor response to topical treatments, and invasive investigations such as biopsy are usually not required. In our experience, unilateral nipple eczema is generally due to undertreatment of AD and a trial of aggressive empiric treatment is warranted.

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