Nappy rash

Most babies will at some time suffer from some degree of nappy rash. The rash is usually not difficult to treat but has a tendency to recur as long as the patient continues to wear nappies. More severe forms are decreasing owing to the use of highly absorbent disposable nappies.

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Nappy rash most often affects babies who are in nappies at all times, but older children with enuresis who still wear night nappies and incontinent adults who wear pads and absorbent underwear may also suffer from nappy rash.

What causes nappy rash?

An eruption under a nappy is very often multifactorial: an endogenous tendency to dermatitis often coupled with superinfection and aggravation by a variety of topical treatments.

Loss of barrier function

It was once believed that ammonia in urine was the cause of nappy rash, and in early textbooks it was termed 'ammoniacal dermatitis'. However, this has been disproved. It is now accepted that overhydration of skin under the nappy coupled with heat and friction is the most likely basis for nappy rash. Some children are more prone to this than others, and this susceptibility seems to increase with age, so that older children and adults who wear nappies appear to have more skin problems than babies.

Faeces and urine

Pancreatic and bacterial enzymes found in faeces are undoubtedly skin irritants. Bottle fed babies may be more prone to nappy rash than breast fed babies because of an increase in enzyme-producing bacteria. Increased urinary pH may be relevant but only because it increases the activity of irritant faecal enzymes rather than as a result of a direct effect on skin.

Irritating substances

The same substances that tend to aggravate dermatitis often play a role in nappy rash. These include bubble baths and soaps. Most parents start treating nappy rash themselves with over-the-counter barrier creams and medications from the chemist. The effects of these may not always be helpful and may complicate the clinical picture because of increased redness and irritation. True

IN SUMMARY

- **The commonest cause of nappy rash is overhydration, heat and friction under the nappy.**
- ***Candida albicans* usually colonises nappy rash, and antifungal creams improve outcome.**
- **Some rare but serious conditions can present as nappy rash unresponsive to treatment.**
- **Nappy rash can ulcerate. This is not a sinister sign, and recovers with the usual treatment.**
- **When nappy rash involves the flexures, consider an underlying dermatosis such as psoriasis.**
- **Seborrhoeic dermatitis is common in young babies, and looks much worse than it is.**
- **Any persistent perianal rash should be cultured for the presence of beta-haemolytic streptococci.**
- **A pustular rash under the nappy may be due to *Staphylococcus aureus*.**
- **Most parents are very concerned about the use of topical corticosteroids, and will need firm reassurance that they are a safe, appropriate treatment for this condition.**

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continued

contact allergy is rare in babies, but is seen in older children and adults. Commercial wet wipes commonly contain perfumed products that are also irritating.

Nappies

Considering the importance of maceration, heat and friction as causes of nappy rash, it is easy to appreciate that cloth nappies are usually more of a problem than disposable nappies. Cloth nappies are usually used with nappy liners, plastic pants and overpants, all of which contribute. Many studies have demonstrated that the introduction of absorbent gel materials in good quality disposable nappies has led to a decrease in nappy rash. The most recent advances in nappy technology include the use of nappies to deliver dermatological formulations to the skin under the nappy; however, this is still in the experimental stage.

Underlying dermatological conditions

Some children who have no other skin problems seem to have a tendency to nappy rash. Although some texts suggest that atopic dermatitis may present as a rash in the nappy area, this is in fact uncommon in atopic babies with dry skin, where the nappy area may be the only part spared because of increased hydration. By contrast, older atopic children are often irritated by night nappies.

There are several dermatoses that may present as nappy rashes. Very rarely, severe systemic diseases may present in this way. These are considered in more detail later in this article.

Candida albicans and other infections

The presence of *C. albicans* plays an important role in nappy rash. It is frequently isolated from macerated genital skin in babies and adults, although not in prepubertal children. There is a correlation between the severity of nappy rash and levels of *C. albicans* in faeces. *Candida* is more often a colonist that aggravates an underlying dermatitis than a true pathogen, although the latter can certainly occur.

It is uncommon for other infections to cause nappy rash, but *Staphylococcus aureus* may cause folliculitis or impetigo of the nappy area. *Streptococcus pyogenes* may cause a persistent perianal rash and sometimes acute vulvitis or balanitis. Herpes simplex virus may cause a very painful, ulcerated rash. Dermatophyte infections can occur, often causing nonspecific but difficult to treat rashes. Rarely, congenital syphilis may present with a nappy rash.

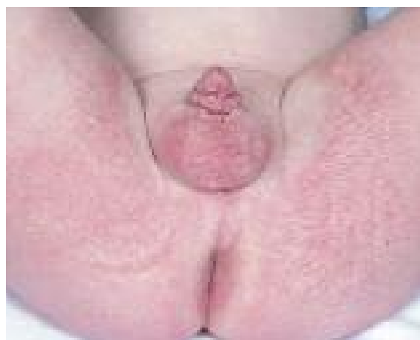

Figure 1. Irritant nappy rash.

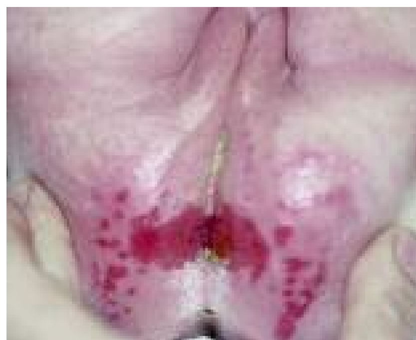

Figure 2. Eroded nappy rash.

Clinical presentation and diagnosis

Irritant (flexural sparing) nappy rash

Irritant nappy rash is the commonest form of nappy rash, most often seen between 1 and 12 months of age. The usual clinical features are confluent erythema and scaling of the convex surfaces that come into contact with the nappy (Figure 1). The groin flexures are typically normal ('flexural sparing'). In some children the rash occurs only at the margins of the nappy around the waist and thighs where most friction is encountered. Particularly in young babies, the rash may be confined to the perianal area.

This sort of rash is a dermatitis and shows the characteristic signs of erythema, scale and weeping. As the problem becomes more severe, erosions and ulcers may occur and the appearance may become quite alarming (Figure 2), raising the possibility of herpetic ulceration or even child abuse. The baby is often distressed by being bathed and passing urine. Acute retention of urine may occur.

If the rash is longstanding, lichenification may occur. In the healing phase, desquamation is common.

Nappy rash in the older child

The clinical presentation in the older child differs from the classic rash seen in babies. The rash in the older child is not usually acutely inflamed, but presents as a low grade dermatitis often with miliaria or folliculitis on the buttocks. Friction lines at the edge of the nappy are often involved.

'Nappy' rashes in incontinent adults

These present as persistent, low grade dermatitis of the vulva or balanitis and erythema of the scrotum and adjacent groin, which seems resistant to treatment. Adults are often embarrassed by incontinence and do not volunteer during history taking that they wear absorbent underwear. On examination, the skin is often macerated. In immobile, incontinent people in nursing homes, this can be an intractable problem. Candidal and staphylococcal superinfections are common.

Miliaria

Miliaria, a very common condition in babies, is also known as heat rash because it results from mild inflammation around sweat gland orifices due to sweat retention when the baby is hot because of hot

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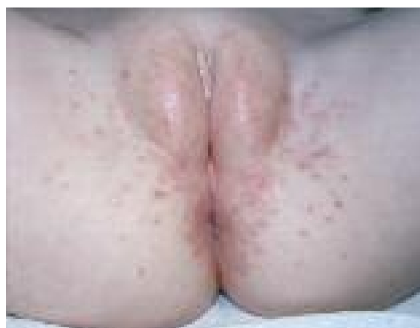

Figure 3. Acute candida.

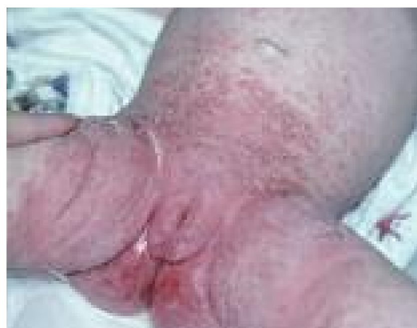

Figure 4. Seborrhoeic dermatitis.

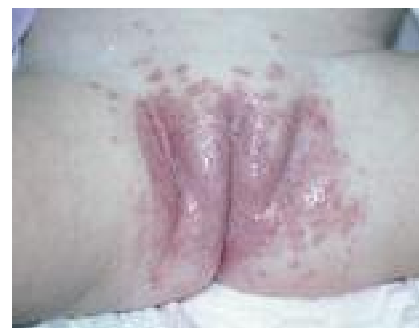

Figure 5. Psoriasis.

weather, excessive clothing or fever. Miliaria may complicate or predominate in any nappy rash. The eruption, which is usually asymptomatic, consists of tiny vesicles or pustules on an erythematous base. Miliaria is harmless but can cause diagnostic confusion, particularly with folliculitis. It is self-limiting and responds to any measure that diminishes overheating.

Rashes that involve the flexures

When rashes are due to underlying dermatoses or infection, rather than irritation to the skin from the nappy, the typical sparing of the groin folds is lost. There are so many causes that loss of flexural sparing is only a diagnostic clue insofar as it indicates that something more than common irritant nappy rash is occurring.

Acute candidiasis

Most nappy rashes are colonised by *C. albicans* and respond better to treatment that includes an antifungal agent. However, *Candida* may become a true pathogen, often for no apparent reason. In this situation, the rash involves the flexures, often becomes much more inflammatory, and is surrounded by small peripheral pustules or 'satellite lesions' (Figure 3). The infection is easily proven with a bacterial swab (which is able to pick up *C. albicans*).

Infantile seborrhoeic dermatitis

Infantile seborrhoeic dermatitis is a relatively common skin condition of small babies, which usually involves the nappy area but often other parts of the skin as well. The onset is usually in the first two months of life. The first areas involved are the nappy area, face and scalp. The eruption may then generalise, involving the axillae, umbilicus and neck. Discoid lesions may involve the skin of the trunk.

The rash is erythematous and scaly (Figure 4). The scale tends to have a greasy feel in hairy areas. Although the rash may look quite dramatic, the baby is well and not distressed or itchy.

The long term prognosis of children with this clinical presentation is variable, and it is important not to prognosticate too soon. Studies have shown that about half the cases have an idiopathic condition that is self-limiting, resolving by about 4 months of age. Simple dermatitis treatment is all that is needed.

However, seborrhoeic dermatitis may also be the first sign of either psoriasis or atopic dermatitis. If the rash persists, these diagnoses should be considered. Eventually the true nature of the child's problem will declare itself.

Napkin psoriasis

When psoriasis appears for the first time in infancy it usually localises to the nappy area, scalp and face and around the ears. The onset of the eruption may be quite acute, and may rapidly generalise to involve other parts of the skin. The appearance may be indistinguishable from seborrhoeic dermatitis, but it may also be typical of psoriasis, with bright pink plaques with dry white scales.

In the nappy area, it appears as a bright red, glazed, slightly raised plaque (Figure 5). The pattern is bilaterally symmetrical and the flexures are involved. There is little or no scale. Sometimes the whole area in contact with the nappy is persistently red.

There is often a family history of psoriasis. Clues to the diagnosis include cradle cap, postauricular rashes and nail changes (such as pitting).

Contact dermatitis

True contact allergy is unusual under nappies, partly because infants are too young to have been sensitised. Potential allergens are most often over-the-counter medications, antifungal creams and latex gloves. Occasionally, chemicals in the nappy itself seem to cause a problem.

Irritancy from applied substances is much more common. Potential irritants include wet wipes, soaps, shampoos, bubble baths, creams and even substances that the carer has applied to his or her hands.

Contact dermatitis presents with a dramatic weeping, eroded rash, but irritant contact dermatitis simply presents as a worsening of previous nappy rash or lack of response to treatment.

Other infections of the nappy area

Staphylococcal folliculitis

S. aureus is the commonest bacterium to cause skin infections, and although it is

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continued

much less common as a cause of infectious nappy rash than *C. albicans* it may be responsible for folliculitis and impetigo in this area.

Folliculitis presents with multiple pustules usually on the buttocks, but these can occur anywhere under the nappy (Figure 6). The rash may wax and wane, but there are usually a few lesions present. It tends to be itchy rather than tender, and the child is well. The diagnosis is easily confirmed on culture.

Staphylococcal folliculitis can look very similar to the satellite pustules of candidiasis, but the difference is that in folliculitis all the lesions are pustules, whereas in candidiasis the pustules are usually seen on the edge of a zone of solid erythema.

Impetigo

Bullous impetigo may occur in the nappy area. The eruption consists of thin-walled blisters that erode to leave moist raw areas. The diagnosis is confirmed by bacterial culture. In neonates, bullous impetigo can generalise and lead to sepsis.

Staphylococcal scalded skin syndrome

This is not a common condition, and is seen almost exclusively in young children. It results from infection with a toxin-producing *S. aureus*. The infection may not be in the nappy area, but the rash may start there with a tender, nonspecific erythema with superficial blistering. At this stage, a very high index of suspicion is needed. If left untreated, the rash will generalise to involve the other flexures and the perioral and perioricular areas with blistering and a generalised erythema. The child will become irritable and unwell because the rash is painful and tender.

Streptococcal dermatitis

Beta-haemolytic streptococci group A may cause rashes in the nappy area, particularly in the perianal region. This problem is not confined to babies in nappies and should be kept in mind in any child with a persistent perianal eruption. It is commoner in males.

The tender, itchy rash usually has the appearance of a scaly or weeping erythema surrounding the anus, but it may extend several centimetres and may be complicated by painful fissuring that leads to constipation. Bleeding and discharge may occur. The rest of the nappy area is normal, but the same organism may cause a balanitis or vulvitis either concurrently or on another occasion.

This condition, which is not uncommon, is easily missed unless a bacterial culture is performed. A 10-day course of penicillin (or an equivalent antibiotic in children allergic to penicillin) is essential for effective treatment. If penicillin dosing is difficult to comply with, amoxycillin is as effective and easier to administer.

Bacterial superinfection in nappy rash

When a previously responsive nappy rash becomes difficult to treat, the cause may be bacterial infection. Both staphylococcus (Figure 7) and streptococcus may be isolated. The appearance may be indistinguishable from candidal nappy rash, but a bacterial swab will easily differentiate bacterial superinfection from a simple candidal rash. Children who suffer from atopic eczema are prone to staphylococcal infections.

Herpes simplex nappy rash

Herpes simplex is a rare cause of rashes in the nappy area. The infection is usually with herpes simplex virus type 1, and is usually acquired from the caregiver. A type 2 infection may be acquired congenitally from an infected mother or as a result of child abuse. Children with atopic eczema are more prone than others to herpetic skin infections.

During an initial attack, small grouped vesicles appear on an erythematous base. The initially clear vesicles rapidly become purulent and often erode to cause shallow ulcers (Figure 8). Oedema is often present, and the baby is irritable and unwell as these lesions are painful. Regional lymphadenopathy is present. The diagnosis is confirmed with viral culture and/or rapid immunofluorescence or PCR. There is usually spontaneous clearing in two weeks.

In children with atopic eczema, usually of a severe degree, generalisation and persistence may occur. If infection occurs in the neonatal period, systemic dissemination is a serious concern. These conditions require intravenous treatment with aciclovir (Aciclovir, Acihexal, Zovirax Intravenous Infusion).

Figure 6. Folliculitis.

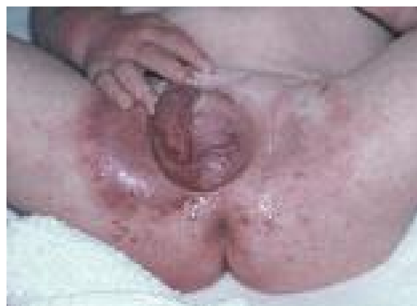

Figure 7. Staphylococcal superinfection.

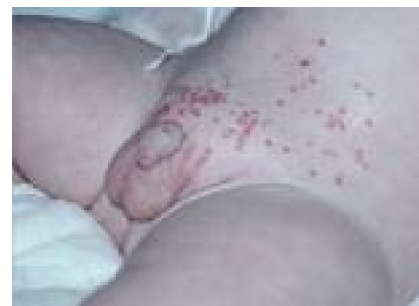

Figure 8. Herpes simplex.

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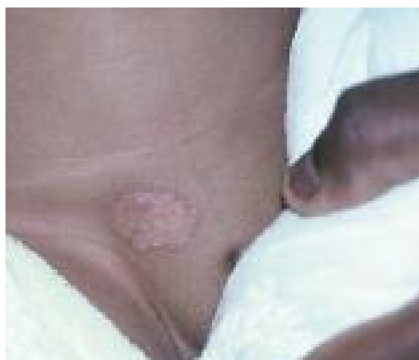

Figure 9. Tinea.

Figure 10. Vulval haemangioma.

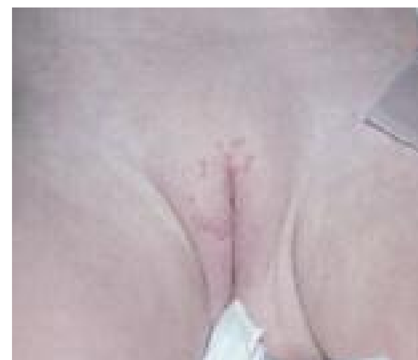

Figure 11. Epidermal naevus.

Varicella

Sometimes varicella may present in the nappy area, generalising later. It is less common, although possible, for lesions to be confined to the nappy area. The typical appearance – clear vesicles evolving to umbilicated pustules and then crusts – is present, but diagnostic confusion with herpes simplex and staphylococcal infections may occur.

Tinea

True dermatophyte infections of the nappy area are very unusual and always puzzling. The typical signs of tinea are rarely seen, and the rash may present as a difficult-to-treat scaly eczematous eruption that waxes and wanes, continually changing appearance. The clue is that there is a relatively sharp edge to the rash (Figure 9), unlike eczema (which blends into the surrounding skin). A fungal scraping will confirm the diagnosis.

Rare conditions that may present as a nappy rash

Congenital naevi of the nappy area

Almost any congenital naevus can occur in the nappy area, including haemangiomas, epidermal naevi and pigmented naevi. Haemangiomas are the most frequent of these lesions in babies, usually appearing after birth within the first month of life. In the nappy area (Figure 10), unless they form a typical nodule, they may be mistaken for nappy rash. Ulceration is quite common in this site, and may be extensive enough to obliterate most of the original lesion.

An extensive epidermal naevus may also be confused with nappy rash, and this isn't made any easier by the fact that these lesions can be itchy. Epidermal naevi are rare, and may not be present at birth. They may have the appearance of a scaly, skin coloured or slightly pigmented plaque (Figure 11), but are usually more raised than a simple rash. If they are causing a great deal of trouble under a nappy, for example around the anus, they may have to be excised.

Infantile gluteal granuloma (perianal pseudoverrucous papules)

These raised lesions are an unusual presentation in which red-brown or purple oval nodules appear on a background of typical nappy rash. The nodules are seen most often on the buttocks. Although this has been attributed to the use of potent topical corticosteroids on the nappy area, gluteal granuloma has been reported in the absence of topical corticosteroids and is also seen in older children and incontinent adults. This may indicate that it is a hyperplastic reaction seen in macerated skin exposed to irritants in faeces and urine.

Although these lesions have an alarming appearance, the prognosis is excellent and they regress with appropriate nappy rash treatment.

Zinc deficiency

Zinc deficiency is a rare condition that can occur in babies, either because they have an inability to absorb zinc from food or because they are fully breastfed and their mothers' milk is low in zinc.

The highly characteristic rash is a brightly erythematous, eroded rash with a well defined edge. There is a similar perioral eruption, and the rash is resistant to all treatment. It recovers rapidly with zinc supplementation.

Langerhans cell histiocytosis

This rare condition presents in babies and has a predilection for the nappy area, flexures, ears and scalp. It is usual for it to present as a recalcitrant nappy rash or seborrhoeic dermatitis. Careful examination reveals that there are elements of purpura, pustules and erosions in the rash. Diagnosis is by skin biopsy.

Although this condition is not considered a true malignancy, it is treated with chemotherapy.

Kawasaki's disease

This potentially serious condition of infants and young children is relatively rare, but is one to be very aware of because of the implications of leaving it undiagnosed. A prodrome of high fevers for five days or more is followed by cervical lymphadenopathy, conjunctivitis, redness of the lips and mouth, oedema of the hands and feet, and a rash. The

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rash is variable but can be confined to the nappy area only. The child is systemically very unwell, and coronary occlusion is the most serious complication. In the recovery phase, peeling of the hands, feet and perianal area is common.

Congenital syphilis

Congenital syphilis is very rare in our community. Although the affected infants may have no external sign of the disease at birth, it may present in the neonatal period with a rash consisting of round or oval scaly lesions most often in the nappy area, face, palms and soles. Condylomata lata (moist perianal wart-like lesions) may occur. The infant may become unwell, with fever, hepatosplenomegaly, lymphadenopathy and rhinitis. A high index of suspicion is the key to making this diagnosis, which is confirmed by serology.

Immune deficiencies

Some serious primary immune deficiencies may present with eczematous rashes that seem difficult to treat, and this can include nappy rash. The child is often unwell with recurrent infections, and diagnosis is usually made because of systemic problems.

Managing nappy rash

What to do about nappies

As the cause of most cases of nappy rash is the combination of overhydration, friction and heat, the aim of treatment is to reverse or minimise these factors. The simplest way to do this is to use good quality disposable nappies that contain absorbent polymers that trap water molecules under the surface so that the layer next to the skin is dry. It has been shown that this type of nappy maintains the skin's normally slightly acidic pH, thus protecting it from activation of faecal enzymes. Another advantage is that disposable nappies are less likely to result in overheating. This is because they are thinner than cloth nappies and can be used without the plastic overpants and 'fluffies' that are so often used to stop leakage and to hold cloth nappies in place.

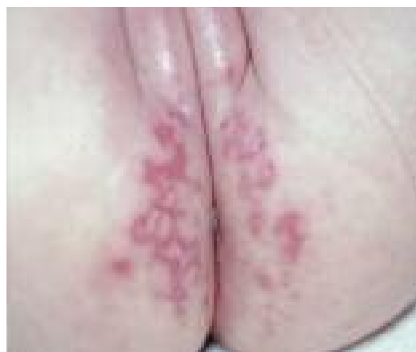

Figure 12. Healing erosions.

Many parents express a concern about environmental issues with regard to disposable nappies. Others find that the good quality ones that are required are prohibitively expensive. In these cases, parents may be encouraged to use disposable nappies just in situations where it will be difficult to change the baby very frequently, such as overnight or when outside the home.

If cloth nappies are to be worn, they need to be changed as soon as they become wet. Plastic pants and occlusive nappy liners should not be used. The nappies should be machine washed in hot water and well rinsed to remove laundry products – and dried in a tumble dryer because this makes them softer.

Nappies of any sort should be changed immediately the child defaecates, because of the irritancy of faeces. This may involve having to wake the baby at night. It is often the best sleepers who have the worst nappy rash.

Leaving a baby out of nappies altogether is helpful but rarely practical, particularly in winter.

Protecting the skin in the nappy area

As most cases of nappy rash are dermatitic, the general principles of treating dermatitis apply. It is important to find out what the parents have been using and eliminate anything that may have aggravated the situation. Soaps, bubble baths, perfumed products, antiseptics, wet wipes and powder should be avoided. Shampooing hair while the child sits in the bath results in exposure to detergent as the child sits in the shampoo-filled water.

Although the concept of using a 'barrier cream' is popular, there is no cream capable of creating a highly effective barrier between the skin and the nappy. Products such as zinc and castor oil cream have gained popularity because of this concept, but their value is as emollients. Emolliation is important in treating all types of dermatitis, because it prevents the skin cracking and fissuring that allows infection to supervene. Emollients should be applied at every nappy change. Any greasy product is satisfactory, including zinc and castor oil cream, Eucerin, vaseline, emulsifying ointment and products containing sorbolene (the latter may sting, however). If the baby screams in pain when the cream is applied, the cream should be discontinued. Where erosion or ulceration has occurred Orabase (an emollient paste) is helpful to protect these areas and promote healing (Figure 12).

When bathing the baby, a dispersible bath oil is helpful, and when changing the nappy a damp washer with some emollient or soap-free cleanser is preferable to commercial wipes, which contain potential irritants and will probably cause discomfort.

Use of topical corticosteroids

Mild topical corticosteroid is the treatment of choice for nappy rash in general, and hydrocortisone ointment 1% should be applied three times daily until the eruption has cleared. The preparation is then used as required, for recurrences and exacerbations. Topical anticandidal agents are usually used concurrently (see below). More potent topical corticosteroids are rarely required, and carry the risk of inducing atrophy, striae or gluteal granuloma.

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Never underestimate the reluctance many parents feel about using topical corticosteroids on their child. Most have heard stories of the danger of these products, and doubt their safety even when prescribed by a doctor. Strong reassurance about the safety of 1% hydrocortisone is worth giving when prescribing the product. Beware of suggesting that parents use the preparation carefully or sparingly. It is unnecessary to be sparing and such a suggestion sends a message that it is hazardous, which may result in noncompliance.

Complications of topical therapy

All topical preparations, even corticosteroids, have the potential to cause allergic reactions, and this presents usually with a gradual worsening of the rash to a severe, weeping dermatitis that is so severe that oral prednisone (Panafcort, Sone) may be required.

A much more common situation is irritancy rather than true allergy. The child may scream whenever the medication is applied because of stinging, and the rash may look more erythematous.

Allergy to topical corticosteroids can be very subtle and present only with a failure of the rash to respond to treatment.

Treatment of infection

Because of the frequency with which nappy rash is colonised with *C. albicans*, it is convenient to concurrently use a topical antifungal, such as an imidazole or nystatin (Mycostatin, Nilstat), with the topical corticosteroid. Although clioquinol plus hydrocortisone was previously widely used and highly effective, there has recently been concern regarding its potential for neurological toxicity and it is no longer recommended for treatment of nappy rash.

If the addition of an antifungal cream makes no difference, it is time to take a swab. If there is oedema, ulceration or vesicles, viral culture should be performed. If tinea is suspected, a fungal scraping should be done.

If infection with *S. aureus* is encountered, treatment with topical mupirocin (Bactroban) is as effective as oral antibiotics and often better accepted by parents. However, for bullous impetigo that is widespread or in a neonate, oral flucloxacillin (Flopen, Floxapen, Flucil, Staphylex) is the drug of choice. Staphylococcal scalded skin syndrome should be similarly treated. *S. pyogenes* infections should be treated with oral penicillin, amoxycillin or erythromycin for 10 days, and the concurrent use of mupirocin ointment will help to prevent recurrence.

Advice for the parents and carers

Noncompliance is a major factor in failure of nappy rash management. Nappy rash is such a common problem that virtually everyone will have advice for your patient. As a result, many different treatments

MedicineToday PATIENT HANDOUT

How to prevent and manage nappy rash

Prevention

Nappy rash results from your baby's skin being kept too hot and damp by the nappy. An easy way to prevent this is to use good quality disposable nappies, which keep the skin cooler and drier.

If you prefer to use cloth nappies, you must do the following:

- Change the nappy every two hours.
- Do not use plastic overpants.
- Avoid double nappies.
- Do not use nappy liners.
- Machine wash and rinse the nappies in hot water.
- Tumble dry the nappies.

These measures can be very difficult overnight or when away from home. Consider using disposable nappies in these situations.

Always change the nappy as soon as it is soiled with faeces. Long contact with faeces is irritating to a baby's skin.

Treatment

If your baby has developed nappy rash the following treatment is needed:

- Discard all powders and creams other than the ones recommended by your doctor. Use a bland, nonperfumed emollient cream on your baby's skin at every nappy change.
- Do not use soap or bubble bath.
- Avoid commerccial wet wipes. Instead use a damp washer with a bland emollient.
- Change nappies as soon as they become wet or soiled.
- Apply 1% hydrocortisone ointment plus an antifungal cream, or a hydrocortisone–antifungal mixture, three times a day.
- Do not be concerned that the hydrocortisone is too strong for your baby, or is likely to thin the skin. This sort of cortisone is very safe.

Once the skin has recovered you can stop the hydrocortisone and antifungal cream, but continue to do all the other things above, or the rash may come back.

Nappy rash tends to recur. If this happens, just use your hydrocortisone and antifungal again. Do not use stronger corticosteroid creams, ointments or lotions. If the rash does not improve, see your doctor.

Some babies never have completely normal skin until they are out of nappies, both day and night. Aim for comfort rather than a perfect appearance.

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When to refer

- When you may need to use a stronger product than hydrocortisone on the nappy area – this is rarely necessary, but the situation may arise if the child is allergic to hydrocortisone or when psoriasis is present.
- When, despite all treatment strategies, there is no response – the baby may have a rare condition such as zinc deficiency or Langerhans cell histiocytosis.
- When the parents are reluctant to use topical corticosteroids – they may require extra reassurance from a specialist that using such products is safe.
- When the baby seems unwell and febrile, and the rash is of sudden onset – a serious condition such as staphylococcal scalded skin or Kawasaki's disease may be present.
- If you suspect a herpetic infection – aciclovir may be required.
- If there is a lump or a lesion or you suspect an underlying haemangioma – ulcer dressings or surgical treatment may be necessary.

may have been tried, but few persevered with. As in all dermatitic conditions, there is a tendency to relapse when treatment is ceased, and unless this is clearly explained, patients interpret relapse as treatment failure. Make sure parents understand the benign self-limiting nature of this condition but also its chronicity in many cases. Keeping it simple is a vital part of making treatment a success, and emphasis on the need for ongoing treatment is also essential.

A useful handout for patients is printed on page 45.

What to do if treatment fails

Check compliance

Have the parents been following advice, or is there a reluctance to use prescribed medications? Has extra advice from well meaning friends and relatives complicated the issue? Did the parents persevere with treatment for more than a few days?

Rule out allergy and irritancy

A true acute contact dermatitis is not usually subtle and presents with an acute weeping deterioration of the rash. However, contact irritation may occur with virtually any topical preparation, and this includes antifungal and corticosteroid creams, emollients, wet wipes and topical antibiotics.

If you suspect that one of the preparations being used is causing a problem, stop all topical therapy and change to only one or two different preparations. Also, hydrocortisone cream should be changed to ointment that is preservative free.

Rule out infection

Take a bacterial swab from the skin surface. This sort of swab will pick up *C. albicans* as well as bacteria. If vesicles are present, take a viral swab as well. In a recalcitrant, scaly rash, a fungal scraping should be taken to rule out tinea.

Refer to dermatologist

The box above lists instances when the patient should be referred to a dermatologist.

Prognosis

The prognosis of nappy rash is usually excellent. In most cases there is a rapid response to simple treatment. The course of the condition may remit and exacerbate, however, and some children are never completely free of it until they are out of all nappies, including night nappies. In this situation, it is important to reassure the parents of the self-limiting nature of the condition and encourage them to aim for the comfort of the child rather than a perfect-looking nappy area.

In cases where the underlying condition is psoriasis or atopic eczema, the prognosis is more guarded. These patients may sometimes go on to have persistent problems in the genital area. It is not possible in early childhood to predict whether this will happen, and follow up is recommended.

Conclusion

Nappy rash is one of the commonest dermatological conditions in childhood. Most cases can be managed successfully in general practice with simple advice regarding use of nappies, good skin care practices and treatment with mild corticosteroids and antifungals. Even unusual presentations that may seem alarming, such as ulceration or gluteal granuloma, respond to simple measures.

Occasionally a case is seen where there is continuing deterioration despite treatment. In this situation, superinfection or allergy to a topical medication may have occurred, but more often the parent is simply confused about advice and unable or unwilling to comply. If there has been no response to a reiteration of initial advice and a change of medication, or if an unusual or serious diagnosis is suspected, referral to a dermatologist is justified. MT

Further reading

1. Odio M, Friedlander SF. Diaper dermatitis and advances in diaper technology. Curr Opin Paediatr 2000; 12: 342-346.
2. Akin F, Spraker M, Aly R, Leyden J, Raynor W. Effects of breathable disposable diapers: reduced prevalence of *Candida* and common diaper dermatitis. Pediatr Dermatol 2001; 18: 282-294.
3. Berg RW, Milligan MC, Sarbaugh FC. Association of skin wetness and pH with diaper dermatitis. Pediatr Dermatol 1994; 11: 18-20.
4. Odio MR, O'Connor RJ, Sarbaugh F, Baldwin S. Continuous topical administration of a petrolatum formulation by a novel disposable diaper: effect on skin condition. Dermatology 2000; 200: 238-243.

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