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PEDIATRICS (R SIDBURY, SECTION EDITOR)

A Practical Guide to Outpatient Wet Dressings for Pediatric Atopic Dermatitis

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Abstract Pediatric atopic dermatitis (AD) is one of the most common skin disorders in children. AD affects all aspects of a child's well being and impacts the child's family as well. For treatment of atopic dermatitis, the application of topical corticosteroids under occlusion via wet dressings is a safe and effective treatment. However, wet dressings may be underutilized due to lack of familiarity with the technique. This article aims to supply providers with a practical guide to the use of wet dressings in the outpatient setting.

Keywords Pediatric dermatology · Atopic dermatitis · Wet dressings

Introduction

Pediatric atopic dermatitis (AD) is one of the most common skin disorders in children, affecting 10-20 % of children [1, 2]. Pediatricians, dermatologists, and general practitioners are all called upon to assist children and their families with this chronic condition. Although atopic dermatitis is a common problem, providers often struggle with the management of this relapsing disorder.

Atopic dermatitis affects the child, as well as the child's family. Children with moderate to severe atopic dermatitis may struggle with sleep difficulties, behavioral problems, and emotional disturbances [3, 4••]. Some children with severe atopic dermatitis describe social stigma and exclusion. Adequate treatment and control of atopic dermatitis therefore is important to improve the quality of life of these children.

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Treatment of Atopic Dermatitis in Children

The first step in the treatment of atopic dermatitis is to educate families about the importance of sensitive skin care measures. Outlining the pathophysiology of atopic dermatitis often helps patients and parents understand the importance of maintaining the skin barrier. The faulty skin barrier in atopic dermatitis leads to transepidermal water loss [1] and must be replaced. Daily bathing in lukewarm water, the use of appropriate soap, and liberal application of emollient at least twice daily is essential for the treatment of all patients with atopic dermatitis. Bacterial colonization and impetiginization, which can exacerbate dermatitis, also must be addressed. Written materials and individualized instructions should be provided for the patient and family. In our practice, we also provide an educational video outlining wet dressing technique.

For mild flares of dermatitis, the first-line treatment for most body areas includes topical corticosteroids. Corticosteroids provide an anti-inflammatory effect, which is enhanced by emollients and occlusion. A low- to mid-potency corticosteroid often is sufficient for all body areas. High- and very high-potency steroids should be used judiciously in areas of occlusion (such as intertriginous skin) and thin skin (face, genitals) [1]. To minimize the risk of atrophy and systemic absorption, class 6 or 7 steroids are usually used on the face and skin folds. The more recent introduction of topical calcineurin inhibitors (e.g., pimecrolimus, tacrolimus), which provide anti-inflammatory effect without the side effects of topical corticosteroids, has provided a safe and effective treatment for these sensitive areas. Topical calcineurin inhibitors are currently FDA-approved for use in children older than 2 years of age and may cause a burning sensation [1, 5].

For moderate to severe flares of atopic dermatitis, treatment regimens include phototherapy, steroid-sparing immunosuppressants (such as methotrexate, cyclosporine, mycophenolate mofetil, etc.), and topical corticosteroids under occlusion with

wet dressings (often referred to simply as "wet dressings"). In numerous studies, wet dressings have been shown to be safe with minimal systemic absorption of corticosteroid, leading to transient and inconsequential effects on cortisol levels [4••, 6]. In contrast, phototherapy is time and labor intensive and can be cost-prohibitive, while exposing the patient to ultraviolet radiation. Systemic corticosteroids are frequently administered for atopic dermatitis flares, yet provide only a temporary solution to a chronic problem. The use of systemic medications can be associated with serious adverse effects and usually require close clinical monitoring. For the treatment of this relapsing and remitting disease, long-term immunosuppressants provide continuous treatment, while the patient may only need intermittent treatment for flares. Wet dressings provide families with a tool that can be used as needed for flares of atopic dermatitis, allowing the family to treat more aggressively only as needed during exacerbations.

Wet Dressings for Treatment of Pediatric Atopic Dermatitis

For treatment of moderate to severe flares, wet dressings are an effective adjunct to the application of topical steroids [4••, 6–8]. The application of wet dressings over topical corticosteroids is likely effective through many mechanisms, including vasoconstriction, increased penetration of topical medications, treatment of impetiginization, and physical blockade of excoriation [4••]. Wet dressings are a safe and effective therapy, with few adverse effects.

Despite the advantages of wet dressings, we believe that wet dressings are underutilized. Most likely this is due to lack of provider and patient familiarity with wet dressing technique. At first, the application of wet dressings may seem like a daunting task for patients and families. Providers may find it too cumbersome to outline wet dressing technique during an office visit. We aim to supply providers with an approachable outline of the wet dressing technique, so that they may feel more comfortable in educating patients and families.

Depending on the severity of the patient's dermatitis, wet dressings may be applied by the patient or parents at home, in an outpatient day hospital, or in an inpatient hospital setting. Atopic dermatitis is the most common pediatric condition treated by inpatient dermatologists [7]. Although administration of intensive wet dressings in the hospital can lead to rapid improvement [4••], the facilities and nursing expertise necessary for this treatment are not widely available. Thus, most patients require treatment in an outpatient setting and must be taught by their provider. Herein, we will focus on the use of wet dressings for pediatric atopic dermatitis in the outpatient setting.

Wet Dressing Technique

While educating patients on the use of wet dressings, sensitive skin care measures must first be emphasized (see above). Wet dressings should be an addition to sensitive skin care measures, and one dressing should be performed after the daily bath.

The first step in the application of wet dressings is application of topical corticosteroids to all surfaces with active dermatitis. For flares of moderate or severe AD, we typically recommend triamcinolone 0.1 % cream to body surfaces and hydrocortisone 2.5 % cream to face, skin folds, and genitals. For younger children, or for mild to moderate flares, hydrocortisone 2.5 % cream to body surfaces, with hydrocortisone 1 % cream to face, skin folds, and genitals may be considered. Other regimens, such as mometasone 0.1 % and 0.005 % fluticasone [8], may be tried. At our institution, creams are favored over ointments due to the lipophilic nature of creams, which we believe is enhanced by the technique of wet dressings. For areas not actively involved with dermatitis, we recommend application of an emollient, which will allow uninvolved skin also to gain benefit from the dressings.

In the outpatient setting, dressing materials include well-fitted cotton pajamas or long underwear. In the inpatient setting, gauze or buoys (towel-like material) are used; however, this is usually impractical in the outpatient setting, particularly for the treatment of active children. Dressings are dampened with either tap water or an antiseptic solution. If no evidence of impetiginization is evident, then tap water wet dressings are appropriate. If the patient has evidence of impetiginization or multiple open areas, then an antiseptic solution is recommended. We prefer acetic acid (plain white vinegar), diluted in warm water at a concentration of 1:32 or 1:64. If patients complain of stinging with the dressings, the more dilute concentration (1:64) should be tried.

After topical corticosteroids and emollient are applied, dressings should be wrung out and placed over the child. When pajamas or long underwear are used, we recommend an additional layer of dry cotton or flannel pajamas over the top of the dressings, which will maintain moisture, keep the child warm, and protect surroundings from the damp dressings. A waterproof mattress pad may be helpful to protect the child's bed. Additional blankets or towels may be required to keep the child warm. Refer to Fig. 1 for an outline of these instructions.

Dressings are typically left on for 1 to 3 hours, although the final dressing may be left on overnight while the child sleeps. Sometimes shorter durations are required due to intolerance, but even these shorter dressings are likely beneficial. Wet dressings in the outpatient setting are typically initiated at a frequency of two to three times daily. This is in contrast to the hospital setting, where dressings are applied as frequently as every 3 hours, with alternating application of corticosteroid and emollient-only dressings.

Fig. 1 Brief outline of the wet dressing technique

Twice to thrice daily wet dressings are continued in the outpatient setting until the patient experiences significant improvement in symptoms, particularly pruritus. Only after the patient has improved significantly should taper of the dressing frequency be attempted.

Increasing the Tolerance of Wet Dressings in Pediatric Patients

Parents often describe difficulty in complying with wet dressings. One factor that may limit compliance is an active child, particularly in the toddler period. In general, we encourage parents to treat wet dressings and skin care as part of the child's daily routine, rather than a chore or punishment. Occasionally, though, parents need or choose to offer incentives to encourage their child to comply with wet dressings. One suggestion would be the have the child select a special pair of pajamas or long underwear that is used only for wet dressings. While children usually tolerate overnight dressings well, daytime dressing applications may be more frustrating for the busy child. In general, children are able to go about their usual activities with dressings on, but parents may try offering special activities (games, books, etc.) for children who refrain from usual play while in dressings. Additionally, patient comfort is important; therefore, parents should be certain dressings are warm when applied and the child stays warm for the dressing duration.

Parents also ask about incorporating wet dressings into the family's busy schedule, particularly for school-age children. While dressings often are recommended in the morning and evening for adults, accomplishing the morning dressing with a busy household is daunting. In lieu of a morning dressing, application of corticosteroid creams and moisturizers only may suffice. Twice daily wet dressings are then performed after school (at home or daycare) and again at bedtime to be left on overnight. Patients and parents often find this regimen easier to incorporate into a hectic schedule.

Tapering Wet Dressings

Wet dressings should be continued until the patient experiences significant improvement in symptoms, usually pruritus. If wet dressings are suddenly stopped, the patient's atopic dermatitis may rebound. Instead, we recommend tapering wet dressings. After several days to weeks of dressings, the patient and family note significant improvement. At that time, the family may begin tapering dressings. The first step in tapering dressings is to discontinue one application of wet dressings and replace that dressing with application of corticosteroid creams and emollient only. Patients should continue with this for approximately 1 to 2 weeks before further tapering. The patient will then replace another dressing application with application of topical corticosteroids and emollient. If the patient was performing thrice daily dressings, the next step is to discontinue the final wet dressing. The patient should then be applying topical corticosteroids to involved areas twice daily, followed by application of emollient to all skin.

At any time, if the patient flares during tapering, they should return to the previous step and remain at that step for at least 1 week before attempting to taper once again. The subsequent taper should be performed more slowly (at about half of the pace previously trialed). Often if patients initiate wet dressings at the onset of a flare, they are able to taper more quickly, remaining at each step for only a few days before proceeding with the taper. If patients are trialing wet dressings for the first time after a long-standing flare, then the taper should be performed more slowly, allowing at least 1 to 2 weeks per step.

Partial Wet Dressings

Often, patients present with a limited area of dermatitis that is highly symptomatic or not responding to topical corticosteroids. In these instances, partial wet dressings are indicated. The wet dressing technique is similar, but limited to only the affected area. Dressings may be composed of towels and secured with tape, gauze wrap, safety pins, or an overlying sleeve of cloth. Partial wet dressings often are indicated for hand or foot dermatitis and are performed by applying the topical corticosteroid, covering with a damp towel, cotton glove, or sock, and applying a second dry glove or sock for maintenance of moisture. For patients with chronic hand or foot dermatitis, cotton socks or gloves may be sewn onto pajamas to keep wet dressings in place overnight.

Conclusions

Although the technique may initially seem daunting, wet dressings are a safe and effective treatment for atopic dermatitis in children. The lack of provider familiarity with wet dressings may limit their use, and we provide this practical resource to educate providers and patients. The use of wet dressings for AD can limit the reliance on systemic medications, which have more adverse effects compared with wet dressings. Learning the skill of wet dressing application empowers families to treat exacerbations of atopic dermatitis without seeking provider input for each flare. In addition, we believe that enabling patients and parents to participate actively in the treatment of this chronic condition can lead to improved quality of life.

Compliance with ethics Guidelines

Conflict of Interest Jennifer J. Schoch declares that she has no conflict of interest.

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Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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