

Pediatric Periorificial Dermatitis



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PRACTICE POINTS

- Periorificial dermatitis (POD) affects young children and presents as flesh-colored papules around the mouth, nose, and even groin.
- Periorificial dermatitis has been associated with prior use of topical or inhaled steroids.
- Children with POD can be treated with oral erythromycin.

Periorificial dermatitis (POD) has been documented in the pediatric population in patients as young as 3 months, with a slight predominance in girls compared to boys. Many patients have a personal or family history of atopic disorders. Periorificial dermatitis typically presents with erythematous to flesh-colored papules and rarely pustules near the eyes, nose, and mouth. Although the etiology is unknown, many patients have had recent exposure to a topical or less commonly an inhaled or systemic corticosteroid. Although steroids may initially control the skin lesions, disease often rebounds after discontinuing therapy. Diagnosis of POD is clinical. Laboratory tests are not helpful in making the diagnosis, and the histology of POD resembles rosacea. It is important to rule out other acneform diagnoses based on the age of the patient, clinical history, and presentation of the lesions. Topical metronidazole has been successful in the pediatric population. For pediatric patients with extrafacial skin lesions or more severe disease, oral antibiotics such as tetracycline, doxycycline, minocycline, azithromycin, and erythromycin can be used, depending on the age of the patient.

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Perioral dermatitis is an acneform eruption presenting with erythematous papules, vesicles, and rarely pustules clustered around the orifices of the face.¹ Lesions may be found near the eyes, mouth, and nose but typically spare the vermilion border of the lips.² Nguyen and Eichenfield³ preferred the term *periorificial dermatitis* (POD), which has since been adopted by others.⁴ Patients may report pruritus, but there generally are no systemic

symptoms unless patients have comorbid conditions such as atopic dermatitis.⁵ Although this condition has been well examined in the literature on adults, data in the pediatric population are far more limited, consisting of case series and retrospective chart reviews. In 1979, Wilkinson et al⁶ published a study of more than 200 patients with perioral dermatitis, but only 15 patients younger than 12 years were included.

Etiology

Although the exact pathogenesis of POD is unknown, a common denominator among many patients is prior exposure to topical corticosteroids.^{3,7-9} Periorificial dermatitis also has been linked to the use of systemic corticosteroids in pediatric patients.¹⁰ The exact relationship between steroid use and dermatitis is unknown; it may be related to a change in the flora of hair follicles and in particular an association with fusiform bacteria-rich conditions.¹¹ Aside from steroid exposure, POD has been associated with the use of physical sunscreen in pediatric patients with dry skin,¹² rosin in chewing gum,¹³ and inhaled corticosteroids in those with asthma.¹⁴ In one case, a 15-year-old adolescent girl developed POD and swelling of the lips after 2 years of playing a flute made of cocus wood.^{15,16}

Epidemiology

In the largest chart review to date in the US pediatric population, Goel et al¹⁷ examined the clinical course of POD in 222 patients aged 3 months to 18 years at the Dermatology Clinic at the University of North Carolina Chapel Hill between June 2002 and March 2014. Consistent with prior studies, females seemed to be slightly more affected than males (55.4% vs 44.6%).¹⁷ Similarly, the patient population for a study conducted by Nguyen and Eichenfield³ consisted of more females (58% [46/79]) than males (42% [33/79]). Weston and Morelli⁹ conducted a retrospective chart review of steroid rosacea in 106 patients younger than 13 years,

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which included 29 patients younger than 3 years; the study included 46 males and 60 females.

Comorbidities and Family History

Goel et al¹⁷ (N=222) reported the following comorbidities associated with pediatric POD: atopic dermatitis (29.3%), asthma (14.9%), and allergies (9.9%). Steroid exposure was noted in 58.1% of patients.¹⁷ Similarly, Nguyen and Eichenfield³ (N=79) found that the most common comorbidities were atopic dermatitis (14%), keratosis pilaris (14%), viral infections (14%), acne (10%), and seborrheic dermatitis (10%). Family history of atopy was noted in 55% of patients and family history of rosacea was noted in 3%. In a case series of 11 pediatric patients, 3 (27%) had keratosis pilaris, 7 (64%) had a family history of atopy, and 2 (18%) had a family history of rosacea.⁸ Weston and Morelli⁹ found a much higher incidence of familial rosacea (20%) in 106 children with steroid rosacea. It is hard to interpret the role of genetic tendency in rosacea, as different populations have different background prevalence of rosacea and atopic dermatitis (ie, rosacea is immensely more common in white individuals).

Clinical Presentation

Periorificial dermatitis generally presents with small, pink- to flesh-colored papules in a perioral, periorcular, and perinasal distribution. Although many patients are white, a particularly prominent variant has been noted in black children with papules that may be hyperpigmented.¹⁸ In a 2006 chart review in 79 pediatric POD patients aged 6 months to 18 years, Nguyen and Eichenfield³ reported that 92% (73/79) of patients presented for a facial rash with an average duration ranging from 2 weeks to 4 years. Interestingly, although Tempark and Shwayder¹ did not report burning associated with pediatric POD, Nguyen and Eichenfield³ found that 19% of patients reported pruritus and 4% reported burning or tenderness. Seventy-two percent of patients had been exposed to steroids for treatment of their dermatitis. Seventy percent had perioral involvement, 43% had perinasal involvement, 25% had periorcular involvement, and 1% had a perivulvar rash; 64% of patients only had perioral, perinasal, and periorcular involvement. In others, lesions also were found on the cheeks, chin, neck, and forehead. Perioral lesions were more likely to be found in patients younger than 5 years compared to those who were at least 5 years of age. Eighty-six percent of patients had erythema with or without scaling, 66% had papules, and 11% had pustules. Fewer than 3% had lichenification, telangiectases, or changes in pigmentation.³

Boeck et al¹⁹ described 7 pediatric patients with perioral dermatitis. Six (86%) patients had perioral lesions, and 6 (86%) had previously been treated with moderate- to high-potency topical corticosteroids. Skin prick tests were negative in 6 (86%) patients.¹⁹ In one case report, a 6-year-old boy did not present with the

classic acneform lesions but rather sharply demarcated eczematous patches around the eyes, nose, and mouth. The rash began to fade after 2 weeks of using metronidazole gel 1%, and after 4 months he was only left with mild hyperpigmentation.⁴

Periorificial dermatitis was once thought to be a juvenile form of rosacea.⁵ In 1972, Savin et al⁸ described 11 pediatric patients with “rosacea-like” facial flushing, papules, pustules, and scaling over the cheeks, forehead, and chin. In some patients, the eyelids also were involved. At least 8 patients had been using potent topical corticosteroids and had noticed exacerbation of their skin lesions after stopping therapy.⁸

Variants of POD

Several other variants of POD have been described in pediatric patients including childhood granulomatous periorificial dermatitis (CGPD)(also known as facial Afro-Caribbean [childhood] eruption) and lupus miliaris disseminatus faciei. Childhood granulomatous periorificial dermatitis presents in prepubertal children as dome-shaped, red to yellow-brown, monomorphous papules around the eyes, nose, and mouth; there are no systemic findings.^{20,21} It occurs equally in males and females and is more commonly seen in dark-skinned patients. Childhood granulomatous periorificial dermatitis usually resolves within a few months to years but may be associated with blepharitis or conjunctivitis.²⁰ Urbatsch et al²⁰ analyzed extrafacial lesions in 8 patients (aged 2–12 years) with CGPD. Lesions were found on the trunk (38% [3/8]), neck (25% [2/8]), ears (25% [2/8]), extremities (50% [4/8]), labia majora (38% [3/8]), and abdomen (13% [1/8]). In addition, 2 (25% [2/8]) patients had blepharitis.²⁰

Lupus miliaris disseminatus faciei, which occurs in adolescents and adults, commonly involves the eyelids and central areas of the face such as the nose and upper lips. Patients typically present with erythematous or flesh-colored papules.¹

Diagnosis

Diagnosis of POD is made clinically based on the observation of papules (and sometimes pustules) around the orifices of the face, sparing the vermilion border, together with a lack of comedones.¹⁷ Laboratory tests are not useful.⁵ Biopsies rarely are performed, and the results mimic those of rosacea, demonstrating a perifollicular lymphohistiocytic infiltrate, epithelioid cells, and occasionally giant cells.^{5,22,23} Early papular lesions can show mild acanthosis, epidermal edema, and parakeratosis.²³ Biopsies in patients with CGPD reveal noncaseating perifollicular granulomas.²⁰

Treatment and Clinical Outcome

Although topical corticosteroids can improve facial lesions in pediatric POD, the eruption often rebounds when therapy is discontinued.¹ One therapy frequently used in adults is oral tetracyclines; however, these agents

must not be used in patients younger than 9 years due to potential dental staining.⁴ The standards are either topical metronidazole twice daily with clearance in 3 to 8 weeks or oral erythromycin.⁷

In the review conducted by Goel et al,¹⁷ treatment included azithromycin (44.6%), topical metronidazole (42.3%), sodium sulfacetamide lotion (35.6%), oral antibiotic monotherapy (15.3%), topical agent monotherapy (44.6%), and combined oral and topical agent therapy (40.1%). Of those patients who presented for a follow-up visit (59%), 72% of cases resolved and 10.7% showed some improvement. For those patients who returned for follow-up, the average duration until symptom resolution was approximately 4 months. The most common side effects were pigmentation changes (1.8%), worsening of symptoms (1.8%), gastrointestinal upset (0.9%), irritant dermatitis (0.9%), and xerosis (0.5%).¹⁷

Changes were made to the treatment plans for 16 patients, most often due to inadequate treatment response.¹⁷ Five patients treated with sodium sulfacetamide lotion also were started on oral azithromycin. Four patients treated with oral antibiotics were given a topical agent (metronidazole or sodium sulfacetamide lotion). Other modifications included replacing sodium sulfacetamide lotion with topical metronidazole and an oral antibiotic (azithromycin or doxycycline, n=3), adjusting the doses of oral or topical medications (n=2), adding tacrolimus (n=1), and replacing topical metronidazole with sodium sulfacetamide lotion (n=1). Of the patients who underwent a change in treatment plan, 5 experienced symptom recurrence, 4 had mild improvement, and 1 patient had no improvement. Six patients were lost to follow-up.¹⁷

In the study conducted by Nguyen and Eichenfield,³ follow-up visits occurred approximately 3 months after the first visit. Fifty-two percent of patients used metronidazole alone or with another medication; for most of these patients, the POD cleared an average of 7 weeks after starting treatment, ranging from 1 to 24 weeks. The use of topical calcineurin inhibitors, sulfacetamide, hydrocortisone, or antifungal therapies was associated with persistence of the rash at the follow-up visit. In contrast, the use of metronidazole and/or oral erythromycin was associated with resolution of the rash at the follow-up visit. The investigators recommended the following regimen: topical metronidazole for 1 to 2 months and, if necessary, the addition of oral erythromycin.³

In the case series by Boeck et al,¹⁹ all patients were started on metronidazole gel 1% applied once daily for the first week, and then twice daily until the lesions resolved. All patients showed improvement after 4 to 6 weeks, and eventually the disease cleared between 3 and 6 months. All patients were still symptom free during a 2-year observation period.¹⁹

Manders and Lucky⁷ described 14 patients with POD (aged 9 months to 6.5 years). Eight patients used only metronidazole gel 0.75%, while 5 used the gel in

combination with topical corticosteroids (21% [3/14]), oral erythromycin (7% [1/14]), or topical erythromycin (7% [1/14]); 1 patient remained on hydrocortisone 1% and cleared. Patients responded well within 1 to 8 weeks and were symptom free for up to 16 months. Mid- to high-potency steroids were discontinued in all patients.⁷

In some pediatric patients with CGPD, recovery occurs faster with the use of oral macrolides or tetracyclines, either alone or in combination with topical antibiotics or sulfur-based lotions.²⁰ Extrafacial lesions associated with CGPD do not appear to negatively impact treatment response or duration of disease. In the review conducted by Urbatsch et al,²⁰ 7 of 8 (88%) CGPD patients with extrafacial lesions were treated with oral agents including erythromycin, hydroxychloroquine, cyclosporine, minocycline, and azithromycin. Most of these patients also were using topical agents such as triamcinolone acetamide, desonide, metronidazole, and erythromycin. The time to resolution ranged from several weeks to 6 months.²⁰

Weston and Morelli⁹ described a treatment regimen for steroid rosacea. The study included data on 106 children (60 females, 46 males) who had been exposed to mostly class 7 low-potency agents. All patients were advised to immediately stop topical steroid therapy without gradual withdrawal and to begin oral erythromycin stearate 30 mg/kg daily in 2 doses per day for 4 weeks. Patients who were unable to tolerate erythromycin were advised to use topical clindamycin phosphate twice daily for 4 weeks (n=6). Eighty-six percent of patients showed resolution within 4 weeks, and 100% showed clearance by 8 weeks. Twenty-two percent of patients had clearance within 3 weeks. There was no difference in the duration until resolution for those who had used oral or topical antibiotics.⁹ A different study suggested that low-potency topical steroids can be used to control inflammation when weaning patients off of strong steroids.⁵

Differential Diagnosis

The differential diagnosis should include acne vulgaris, allergic contact dermatitis, irritant contact dermatitis, seborrheic dermatitis, impetigo, dermatophyte infection, rosacea, and angiofibromas.⁴

Acne vulgaris commonly is found in older adolescents, and unlike POD, it will present with open or closed comedones.² In patients aged 1 to 7 years, acne is a reason to consider endocrine evaluation. Allergic contact dermatitis is extremely pruritic, and the lesions often are papulovesicular with active weeping or crusting. Patients with irritant contact dermatitis often report burning and pain, and papules and pustules typically are absent. A thorough history can help rule out allergic or irritant contact dermatitis. Seborrheic dermatitis presents with erythema and scaling of the scalp, eyebrows, and nasolabial folds; it tends to spare the perioral regions and also lacks papules.² The lesions of impetigo typically have a yellow-brown exudate, which forms a honey-colored crust.²⁴ Tinea faciei, unlike the other tinea infections, can have

an extremely variable presentation. Lesions usually begin as scaly macules that develop raised borders with central hypopigmentation, but papules, vesicles, and crusts can be seen.²⁵ Potassium hydroxide preparation can help diagnose a fungal infection. Rosacea presents with flushing of the central face regions, sometimes accompanied by papules, pustules, and telangiectases.² Although rare, physicians must rule out angiofibromas. Typically found in patients older than 5 years, angiofibromas are pink or flesh-colored papules often found on the nasolabial folds, cheeks, and chin.² Many angiofibromas can be associated with tuberous sclerosis.

Conclusion

Diagnosis of POD is clinical and rests upon the finding of erythematous papules on the face near the eyes, mouth, and nose. Extrafacial lesions also have been described, particularly in pediatric patients with CGPD. Many patients will report a history of atopic dermatitis and asthma. Therapy for POD includes both topical and systemic agents. For those with mild disease, topical metronidazole commonly is used. For patients requiring oral antibiotics, tetracyclines or macrolides can be prescribed based on the age of the patient. Many pediatric patients who begin with both oral and topical agents can later be maintained on topical therapy, sometimes with a low-dose oral antibiotic. Periorificial dermatitis has an excellent prognosis and most pediatric patients show marked improvement within weeks to months.

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