PEDIATRIC DERMATOLOGY PHOTOQUIZ

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Persistent Scale in the Diaper Area

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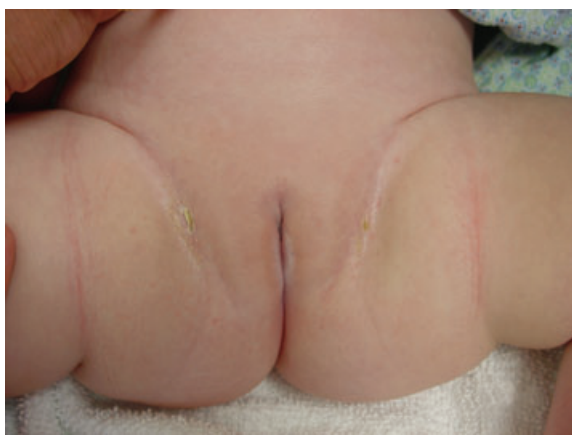
Case Presentation

A 5-month-old girl presented with a persistent "rash" in the diaper area. At 2 months of age, she developed thick, yellow, adherent crusts in both inguinal folds, and in the gluteal cleft. This eruption was originally accompanied by yellow scaling of the scalp and axillae that had cleared within 1 month without specific therapy. Since birth, Weleda Baby Calendula Diaper Care cream (Weleda, Inc., Palisades, NY, USA) containing zinc oxide and several botanical ingredients was applied to the diaper area with every diaper change. Hydrocortisone valerate 0.2% and mupirocin had previously been prescribed with little improvement. She was growing well and meeting her developmental milestones. Her review of systems was remarkable for a recent upper respiratory infection and parental concern for recurrent loose stools. However, with further questioning, it was apparent that the child's stooling pattern was consistent with that of a normal breastfed infant.

Physical examination revealed an alert, healthy, fair-skinned infant without hepatosplenomegaly or lymphadenopathy. Skin examination was remarkable for minimal scale on the vertex of the scalp without associated erythema. Yellow-white, thick adherent scales overlying mildly erythematous skin without petechiae were found in both the inguinal folds (Fig. 1) and the gluteal cleft (Fig. 2). The clinical differential diagnosis included seborrheic dermatitis, psoriasis, superficial mycosis, and Langerhan's cell histiocytosis, given the persistence of the lesions. A biopsy was performed (Fig. 3).

What is the diagnosis?



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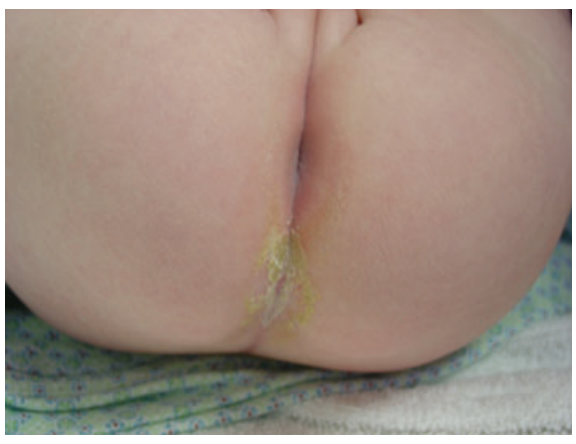

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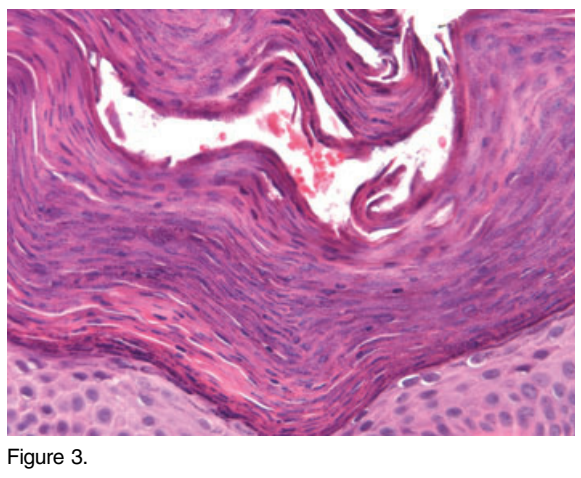

Figure 3.

Mucosal Nodules in a Teenager

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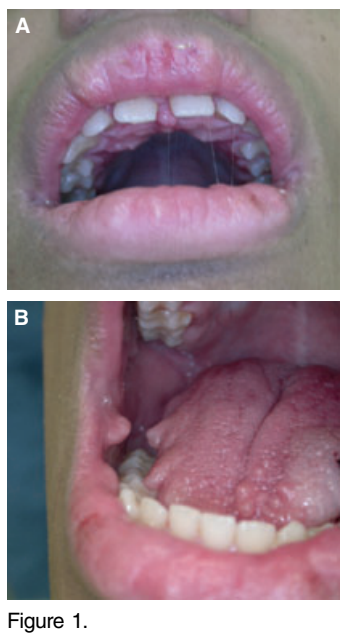
Case Report

A 17-year-old white boy was seen at the outpatient clinic of the Discipline of Stomatology, São José dos Campos Dental School-UNESP, complaining of the presence of nodules in the mouth, nasal, and palpebral mucosae, unaltered since birth. Clinical examination revealed painless mucosal nodules of variables sizes on the lips, buccal mucosa, and lateral borders of the tongue and palate, whose color was similar to that of the adjacent mucosa (Fig. 1). Papules were also present in the nasal mucosa and on the left lower eyelid (Fig. 2). The lips had been submitted to cosmetic surgery years before but without histopathological analysis of the removed material. Physically, the patient exhibited a tall stature and evidently elongated upper and lower limbs, in addition to manifestations of scoliosis. The patient was otherwise apparently well with no systemic symptoms and had no other dermatologic lesions.

A biopsy was taken from one of the nodules located on the left lateral border of the tongue and sent for histological analysis (Fig. 3).

What is the diagnosis?



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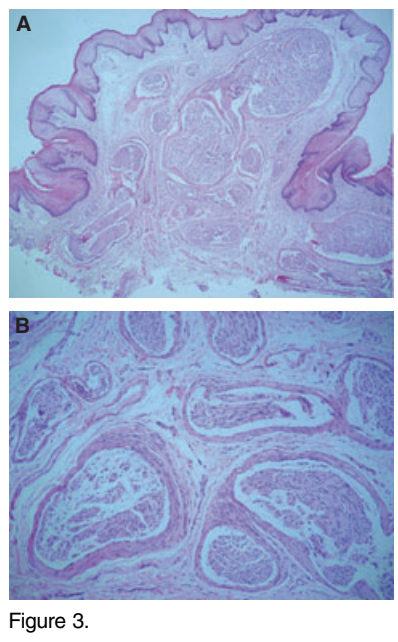

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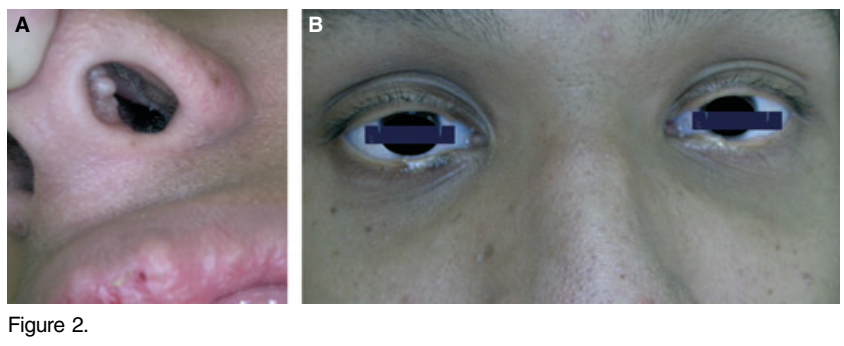

Figure 2.

Erythematous Crusted Plaques in a Pediatric Transplant Recipient

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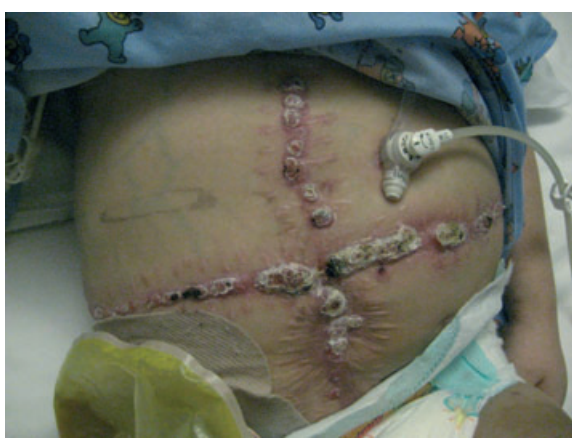
Case Presentation

A 3-year-old boy presented with a 6-week history of painful, erythematous, crusted plaques on his abdominal incisions. These lesions were draining serosanguinous fluid, and there was no history of fever. His medical history was significant for short gut syndrome as well as a liver and small bowel transplant 5 months prior for gastroschisis and cholestasis associated with total parenteral nutrition. Medications included clarithromycin, tacrolimus, cyproheptadine, filgrastim, lansoprazole, metoclopramide, nystatin, prednisone, ursodiol, and a multivitamin.

Physical examination revealed erythematous, crusted plaques overlying extensive abdominal incisions (Fig. 1). An incisional biopsy was obtained and sent for histopathologic examination (Fig. 2).

What is the diagnosis?



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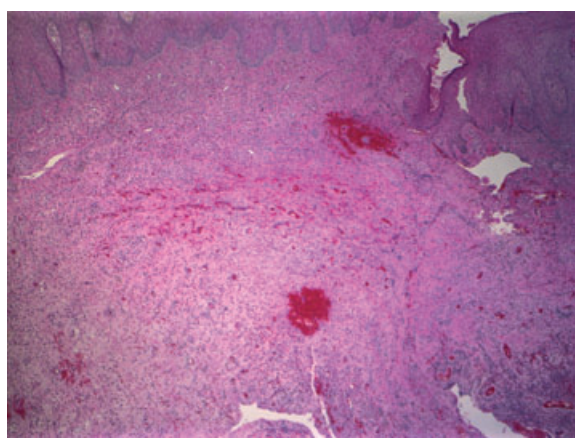

Figure 2.

Persistent Scale in the Diaper Area

Diagnosis: Granular parakeratosis

Discussion

Histologic sections showed a thick layer of confluent parakeratosis with numerous, retained keratohyalin granules, characteristic of granular parakeratosis (GP). The remainder of the epidermis and dermis was normal, lacking inflammation or an infiltrate. The degree of parakeratosis exceeded what is typical for seborrheic dermatitis, and a PAS stain was negative for fungal elements.

Granular parakeratosis is an acquired skin change with characteristic histologic findings that has been reported to primarily affect the intertriginous areas of adults, predominantly women in the fifth decade of life (1). The typical clinical presentation is variably pruritic, red–brown, hyperkeratotic papules, and thin plaques involving the axillae and groin. From 2002 to 2004, 12 pediatric cases of GP were reported by various authors (2–7). Eleven of these were healthy infants with an eruption affecting the diaper area, beginning between the ages of 4 days and 14 months (2–6). A common theme in the morphology of infantile GP is hyperkeratotic papules and plaques. In some cases, the lesions have been described as red–brown or hyperpigmented (2–4), and in others the color was not noted. The findings of pruritus and underlying erythema of the skin have varied.

The cause of GP is not well understood. In adults deodorants have been implicated as etiological agents, and the warm, occlusive environment of intertriginous areas may also be a factor. A consistent correlation among infants is the frequent use of zinc oxide-containing diaper creams, with resolution of the scale occurring within 1 week to 10 months after discontinuation of the offending agent as the main intervention (2–4,6). After the diagnosis of GP was made in our patient, the parents were instructed to stop the diaper cream and instead use petrolatum. The scale cleared completely in less than a week. In contrast, removing the offending agent in adult patients does not necessarily lead to clinical improvement. Treatment options for GP in adults include removal of the proposed offending agent, topical steroids, retinoids, and keratolytics, each with variable efficacy (1).

The histologic findings of GP are typical, regardless of the biopsy site. The stratum corneum is thickened and uniformly parakeratotic, with an abundance of basophilic, keratohyalin granules. Based on a variety of pathologic analyses of affected skin, Metze and Rutten (1) have proposed that GP is caused by a defect in processing profilaggrin to filaggrin, resulting in a failure to degrade keratohyalin granules and to aggregate keratin intermediate filaments during cornification. The exact role of zinc oxide in the pathogenesis of infantile GP is unclear. Zinc oxide-containing diaper creams are widely used, usually without incident. However, given the prompt resolution of skin findings after discontinuing its use in many cases, a pathogenic effect seems likely, at least in certain individuals.

Although uncommonly reported, infantile GP may be a relatively common albeit unrecognized, skin change. Parents or primary care providers may change a child's diapering routine when minor skin changes are noted, leading to resolution of mild cases. GP should be considered in the differential diagnosis of persistent scale in the diaper area, especially when skin care includes the frequent application of a zinc oxide-containing diaper cream.

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Mucosal Nodules in a Teenager

Diagnosis: Multiple endocrine neoplasia type 2B (MEN-2B)

Investigations and Progress

The histopathology showed a lesion consisting of numerous nerve fiber bundles forming circular or elongated structures delimited by layers of spindle-shaped cells and long eosinophilic fibers, findings that led to the diagnosis of oral neuroma. On the basis of the histologic diagnosis of oral neuromas, associated with the marfanoid aspects shown by the patient upon retrospective analysis, the diagnosis of MEN-2B was suspected and further investigations were undertaken. An assay of serum calcitonin showed a concentration of 77.6 pg/mL, approximately ten times the reference value of 8.4 pg/mL. This was compatible with the presence of medullary carcinoma of the thyroid, the predominant tumor in MEN-2B. Serum and urinary levels of catecholamines were within normal limits and thus did not indicate the presence of pheochromocytoma, a possible neoplasm related to MEN-2B.

The patient was referred for endocrinological assessment which led to the recommendation of total thyroidectomy. Histopathological analysis confirmed the diagnosis of medullary thyroid carcinoma (MTC). I^{131} scintigraphy revealed uptake in thyroid remnants and metastases in the left lower limb. However, after 2 years of follow-up the patient remains clinically well.

Discussion

Multiple endocrine neoplasia syndromes are autosomal dominant diseases whose pathogenesis is related to the activation or inactivation of genes involved in the process of cell proliferation. This group of syndromes includes MEN type 1 (MEN 1) and type 2 (MEN 2), von Hippel-Lindau syndrome, neurofibromatosis type 1 and Carney complex (1–5). MEN 2 is subdivided into types A and B. MEN-2A can be associated with MTC, pheochromocytoma and adenoma or hyperplasia of the parathyroid, with the occurrence of hyperparathyroidism in 25% of cases (2). MEN-2B is characterized by manifestations of visceral ganglioneuromatosis and oral neuromas in 100% (6), MTC in 90% of cases, marfanoid habitus in 65%, and pheochromocytoma in 45% (2–5). MEN 2 syndromes are caused by mutations in the RET proto-oncogene (7).

Pheochromocytomas manifest as arterial hypertension associated with the triad of headache, profuse sweating, and palpitations. The biochemical diagnosis is based on an increase in serum and urinary levels of vanilmandelic acid, adrenaline, and noradrenaline, and urinary levels of metanephrine and normetanephrine (8). The marfanoid habitus is characterized by unusually long fingers, arms and legs, joint hyperextensibility, and epiphyseal anomalies, sometimes associated with spine scoliosis or lordosis (2).

In this case the hypothesis of neurofibroma was not included in the differential diagnosis of the nodular lesions observed on the lip, nose, and eyelids of the present patient. The lesions were limited to the face and we did not detect melanotic spots on the skin.

Screening of family members is important in this autosomal dominant disorder. RET mutations were not identified in any of the immediate family members of our patient.

The treatment of MEN-2B is directed at each of its components. The prognosis of patients with MEN-2B depends on the stage of MTC, the age of the patient at the time of diagnosis, and the clinical form of the disease. Medullary thyroid carcinoma is more aggressive in patients with MEN-2B diagnosed at an early age, with the rapid development of metastases and premature death due to the tumor (1–4).

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Erythematous Crusted Plaques in a Pediatric Transplant Recipient

Diagnosis: *Mycobacterium abscessus* wound infection

Investigations and progress

Histopathological examination revealed pseudoepitheliomatous hyperplasia with a diffuse dermal infiltrate composed of granulation tissue and numerous macrophages and foci of caseating necrosis (Fig. 2). Fite and AFB special stains were positive for numerous filamentous organisms (Fig. 3). Wound culture revealed *M. abscessus*. Multiple abdominal CT scans revealed no fluid collection in the abdomen. Linezolid, clarithromycin, and amikacin were administered.

Two months later, the patient developed a fever and abdominal fullness with incisional drainage. Two intraabdominal abscesses were found, and the patient underwent incisional wall drainage and revision. At this time, the antibiotic regimen was switched to amikacin, azithromycin, and cefoxitin. After 8 months of antibiotic treatment, the abscesses appear to have resolved and the patient is showing marked improvement.

Discussion

Mycobacterium abscessus is a rapidly-growing nontuberculous mycobacterium that is often treatment resistant and highly pathogenic. *Mycobacterium abscessus* is present in soil and water from natural sources, municipal supplies, and sewage. While formerly considered a subspecies of *Mycobacterium chelonae*, current taxonomy now classifies *M. abscessus* as a separate species (1).

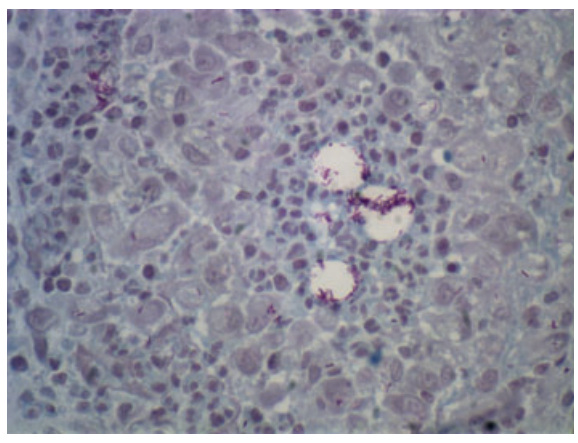

Figure 3.

The most common *M. abscessus* soft tissue infection is associated different mechanisms of penetrating trauma to the skin (1). Deeper infections may occur following trauma or in association with chronic disease or immunosuppression (1,2). Subcutaneous infections have been reported in liver, heart, lung, and kidney transplant patients (3–8). A recent retrospective study of 45 patients with *M. abscessus* infection identified 20% as solid organ transplant recipients and an additional 40% on immunosuppressive medications for other reasons (2).

Mycobacterium abscessus is often resistant to many antibiotics but is naturally sensitive to amikacin and clarithromycin/azithromycin. Treatment of *M. abscessus* infection typically consists of multi-antibiotic therapy, abscess drainage, and surgical removal of necrotic tissue and foreign bodies (1).

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