A rare case of microblading-induced preseptal cellulitis

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INTRODUCTION

Cosmetic tattooing has gained popularity over the past several decades. Microblading is a method of semipermanent eyebrow tattooing that has become mainstream in recent years. With this technique, individuals are provided with eyebrow pigment that lasts longer and is more convenient than the traditional eyebrow pencil. Other forms of semipermanent makeup include lip blush, eyebrow tattoos, eyeliner tattoos, freckle tattoos, and scar camouflage. Infection is a rare but major complication of cosmetic tattooing that is rarely documented in the literature. Here, we report a case of preseptal cellulitis secondary to microblading in a middle-aged woman with sickle cell disease (SCD).

CASE REPORT

A 39-year-old woman with SCD presented to the emergency department (ED) with an acute vaso-occlusive pain episode. She was also found to have a significant periocular facial eruption and denied any history of allergies, photosensitivity, or similar skin eruptions. Three weeks before this current ED presentation, she underwent an initial microblading procedure for both eyebrows. She was advised by aestheticians to cleanse the area with baby soap and water. One day later, she developed pustules in the malar area of the right cheek, which progressed to bilateral periorbital edema and pustules draining purulent exudate that was noted during a virtual urgent care visit 10 days after the initial procedure. During the virtual appointment, cephalexin and mupirocin 2% ointment were prescribed. She denied ophthalmoplegia, pain with eye movements, or blurry vision.

Abbreviations used:

ED: emergency department
SCD: sickle cell disease

A few days later, the periorbital cutaneous eruption had worsened, and she was encouraged by an ambulatory physician to visit the ED. She presented to the ED at an outside hospital where she was treated with broad-spectrum intravenous antibiotics for presumed cellulitis and sent home with at least a 1-week course of oral clindamycin and a prednisone taper. Initially, the patient noticed an improvement in her eyebrow eruption; however, a few days after discharge, a periocular and perinasal erythematous, scaly, and pruritic eruption developed. She presented to the ED for a second time with a primary concern of an acute pain episode and was found to have bilateral periorbital hyperpigmentation, edema, erythema, crusting, and pustules with involvement of the malar area of the cheeks (Fig 1, *A* and *B*) and was subsequently admitted to the hospital.

Upon arrival to the inpatient service, the patient was disoriented, afebrile, and tachycardic with a heart rate of 109. Laboratory studies were significant for a white blood cell increase from 17 to 25 $\times 10^3/\mu$L (reference range, 4.0-10.0 $\times 10^3/\mu$L). Venous blood gas showed evidence of metabolic acidosis (pH, 7.21; pCO2, 47; HCO3, 18.8; lactate, 6.8). She was initially treated for empiric sepsis with intravenous fluids, vancomycin, and piperacillin-tazobactam. Blood cultures were negative. Intravenous morphine was administered for pain both secondary to the facial eruption and from SCD.

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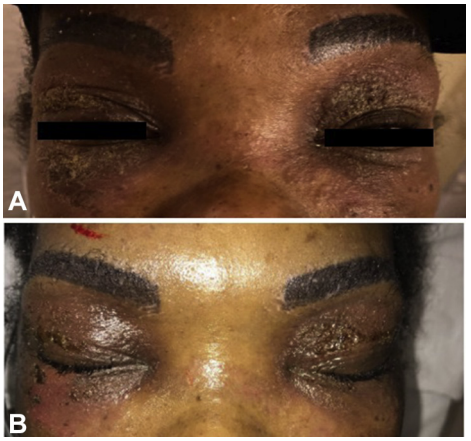

Fig 1. A, Periorbital hyperpigmentation, crusting, and pustules lesions with involvement of malar cheeks. **B**, Periorbital hyperpigmentation, edema, and erythema.

A head computed tomography scan and brain magnetic resonance imaging showed no septal involvement of cellulitis. After a rapid improvement in mental status, she was transitioned to a 7-day course of oral sulfamethoxazole/trimethoprim and cephalexin. Dermatology was consulted, and on clinical examination she was found to have periorbital hyperpigmented and mildly erythematous desquamative eczematous patches without erythema, induration, pustules, vesicles, or bullae (Fig 2).

Clinical improvement in dermatitis and pruritus was observed (Fig 3) following the initiation of 2.5% hydrocortisone cream twice a day for 1 week and petroleum jelly daily. The pain was well controlled after initiation of hydromorphone patient-controlled analgesia and transition to oral ibuprofen and oxycodone-acetaminophen. She was discharged from the hospital after 1 week and lost to outpatient dermatology follow-up.

DISCUSSION

Generally, cosmetic tattooing is thought to be a safe procedure with minimal side effects. Few adverse reactions from permanent or semipermanent makeup were reported to the Food and Drug Administration before 2003.[1] However, between 2003 and 2004, over 150 complaints from permanent makeup were received by the Food and Drug Administration.[1] Mild side effects of cosmetic tattoos include swelling, tenderness, and bleeding. However, allergic, granulomatous, and hyperplastic reactions to cosmetic tattoo inks have been described.[2] Proper hygienic practices are particularly important to reduce the spread of bacterial infections. Although rare, cases of atypical mycobacterial infection in the setting of permanent makeup

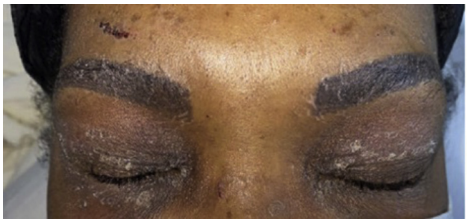

Fig 2. Periorbital hyperpigmentation and mildly erythematous eczematous patches.

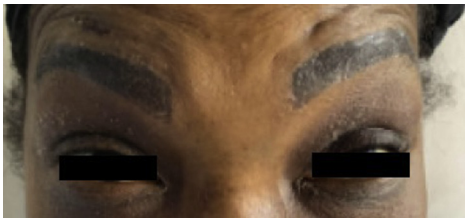

Fig 3. Periorbital hyperpigmentation with resolution of erythematous eczematous patches.

application to the eyebrows have been reported.[3,4] Our patient represents an interesting clinical case of preseptal cellulitis secondary to microblading in an adult woman with SCD.

Preseptal or periorbital cellulitis is an infection of the tissue anterior to the orbital septum and should be suspected in patients with a history of sinusitis or periorbital trauma who present with periorbital erythema and eyelid swelling, especially unilaterally. In contrast, orbital cellulitis is infection and inflammation of the soft tissue posterior to the septum. To diagnose preseptal cellulitis, clinical signs of orbital involvement, such as proptosis, diminished visual acuity, painful eye movement, and ophthalmoplegia with diplopia must be excluded.[5] If the uncertainty of the diagnosis remains or orbital cellulitis is suspected, computed tomography with contrast of the septum and orbits is indicated.

Treatment of preseptal cellulitis requires initiating empiric antibiotics to cover common organisms, such as methicillin-resistant *Staphylococcus aureus*, *Streptococcus* spp., and anaerobic bacteria.[6] Given the rise in antibiotic resistance, combination therapy with sulfamethoxazole/trimethoprim or clindamycin plus amoxicillin, cefdinir, or cefpodoxime for 5-7 days is recommended.[7] If clinical improvement is not seen within 24-48 hours after antibiotic initiation, hospitalization, intravenous antibiotics, and imaging to rule out orbital cellulitis are required.[6]

Prompt evaluation and treatment of preseptal cellulitis are essential as it may progress to orbital cellulitis with more life-threatening complications, including orbital abscess, cavernous sinus

thrombosis, and encephalomeningitis.[8] This case highlights the potential risks associated with cosmetic tattooing practices, which are especially important to consider if improper sanitation and hygiene are present. It is important to seek immediate medical attention if periorbital erythema, swelling, or cutaneous eruptions, such as vesicles or pustules develop. In addition, people with SCD are at an increased risk for infections, but there are currently no recommendations to administer prophylactic antimicrobial treatment before performing cosmetic tattooing in these individuals. Therefore, additional counseling regarding risks should be provided by the aesthetician or other cosmetic personnel before initiating any tattoo procedure.

Conflicts of interest

None disclosed.

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