Case Presentation

A case of delayed cutaneous *Serratia marcescens* after rhinoplasty

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Abstract

Serratia marcescens is an uncommon cause of cutaneous infections, especially in immunocompetent individuals. We present a 31-year-old woman with a chronic erythematous nodule on the nasal supratip, three years post-rhinoplasty. Initial treatments, including intralesional corticosteroids, oral doxycycline, and topical metronidazole, failed to resolve the infection. Initially thought to be a contaminant, repeat tissue culture confirmed the presence of *S. marcescens*. The patient's abscess resolved following a course of levofloxacin, but surgery was required to remove remnant scar tissue. This case underscores the importance of considering atypical pathogens in chronic cutaneous infections following cosmetic procedures, even in immunocompetent patients. Increased awareness among clinicians can aid in prompt diagnosis and targeted therapy.

Introduction

Serratia marcescens is a Gram-negative bacillus within the *Enterobacteriaceae* family. It is a well-known cause of nosocomial infections, urinary tract infections, lower respiratory tract infections, and endocarditis.[1-3] It predominantly affects hospitalized patients, immunocompromised patients, intravenous drug users, and patients with implanted devices.[1-5] Cutaneous infections involving *S. marcescens* are rare, particularly in immunocompetent individuals.[1-5] These infections can manifest acutely as cellulitis and abscess or chronically as nodules and ulcers.[1] In this paper, we present a unique case of *S. marcescens* cutaneous abscess in an immunocompetent patient who had undergone rhinoplasty three years prior to presentation.

Case Synopsis

A 31-year-old woman presented to our dermatology clinic with a 1.0x0.9cm erythematous-to-hyperpigmented nodule with a central crust located on the nasal supratip (Figure 1). The lesion had been present for approximately one year without notable growth or the development of new lesions. Previous treatments, including intralesional corticosteroids, oral doxycycline, and topical metronidazole cream, failed to provide any improvement. The patient reported the nodule occasionally expressed purulent fluid upon manipulation and was mildly tender to palpation. She denied fevers, chills, nausea, vomiting, headache, or other systemic symptoms of any kind. The patient had no significant past medical history. Her surgical history included a rhinoplasty in Thailand three years before the onset of the nodule.

A shave biopsy of the nodule was performed, with histopathology revealing acute inflammation with neutrophil infiltration, abscess formation in the dermis, and surrounding chronic inflammation. Additionally, focal parakeratosis overlying the epidermis with psoriasiform acanthosis and pseudoepitheliomatous hyperplasia were noted (Figure 2). The following stains were performed with negative results: Fite, Ziehl-Neelsen, periodic acid-Schiff, Grocott methenamine silver, and varicella and HSV I/II stains. Owing to the absence of identifiable microorganisms, tissue culture was recommended. Three weeks later, the patient returned to the clinic with the lesion having regrown to its original size. The nodule was removed via personna blade and bisected for histopathologic re-evaluation, bacterial tissue culture, acid-fast bacillus culture, and fungal culture. Histopathologic evaluation once again showed pseudoepitheliomatous hyperplasia with suppurative granulomatous inflammation (Figure 3). Mycobacterial polymerase chain reaction, acid-fast bacillus, and fungal cultures were negative, but bacterial tissue culture was positive for *S. marcescens.* Initially, bacterial growth was considered a contaminant owing to its rarity as a cause of cutaneous infections.

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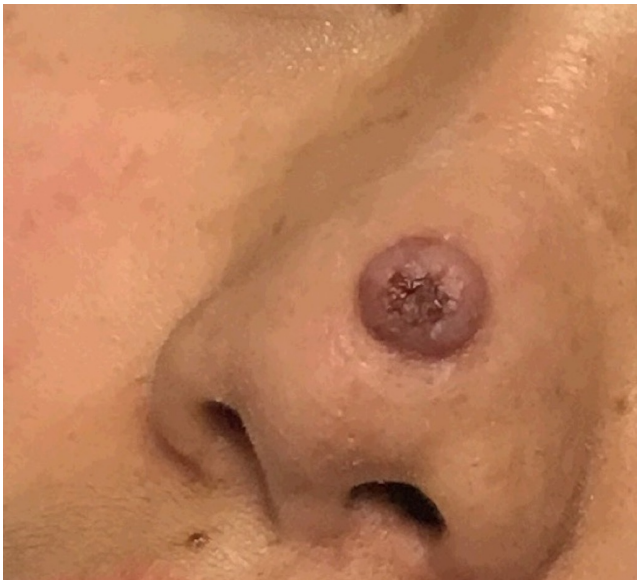

Figure 1. *Initial skin exam of a 1.0x0.9cm erythematous-to-hyperpigmented nodule with a central crust located on the nasal supratip.*

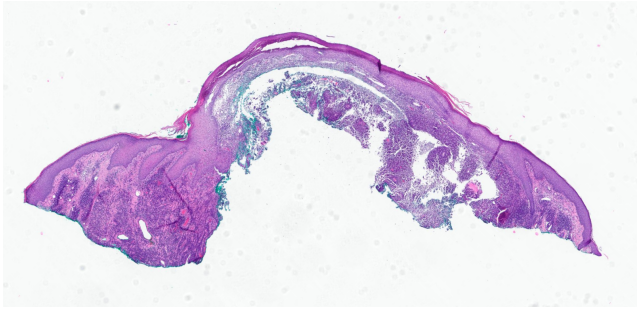

Figure 2. *Shave biopsy of the nodule showing pseudoepitheliomatous hyperplasia at 10x magnification.*

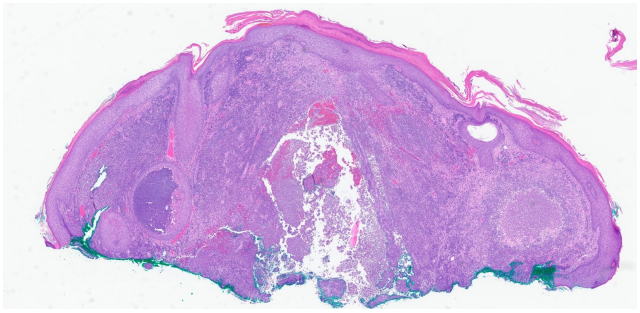

Figure 3. *Repeat shave biopsy showing pseudoepitheliomatous hyperplasia with suppurative granulomatous inflammation at 10x magnification.*

Six weeks later, the nodule had again returned with notable purulent drainage (Figure 4). A repeat bacterial tissue culture again indicated the growth of *S. marcescens.* The patient was subsequently started on a 10-day course of oral levofloxacin. A magnetic resonance imaging was ordered to evaluate the extent of abscess

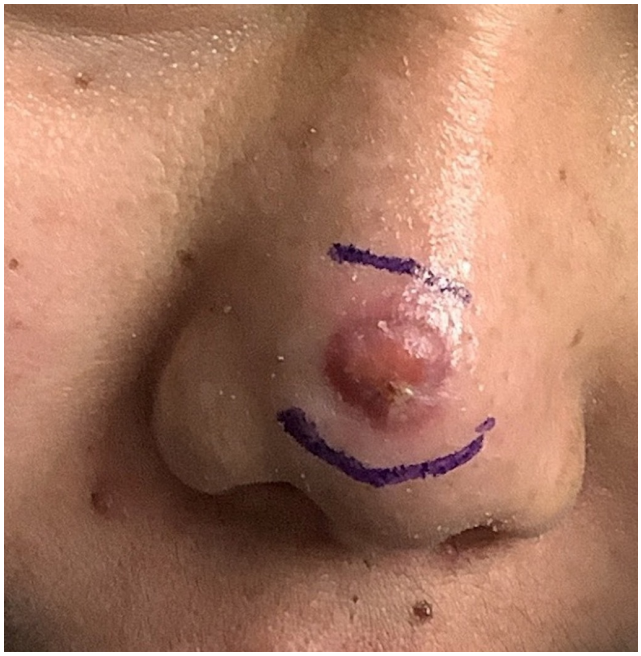

Figure 4. *Recurrence of erythematous nodule on nasal supratip, now with purulent drainage.*

infiltration and to evaluate for presence of foreign body, given the patient's history of rhinoplasty. Magnetic resonance imaging results showed a ring-enhancing lesion in the soft tissues near the tip of the nose, consistent with an abscess or inflamed epidermal inclusion cyst.

Five weeks after completing the antibiotic course, the patient reported resolution of purulent drainage (Figure 5). At that time, physical exam revealed a 0.7x0.7cm pink to hyperpigmented firm papule on the nasal supratip, with no further purulent drainage. The patient was referred to the plastic surgery department for evaluation and surgical management of suspected scar tissue or epidermal inclusion cyst. Surgical excision was performed with pathology revealing subcutaneous tissue with acute and chronic inflammation, granulation tissue, and surrounding scarring fibrosis, with no evidence of dysplasia, malignancy, or foreign body.

Discussion

Serratia marcescens is an uncommon cause of cutaneous infections, especially in immunocompetent individuals. *Staphylococcus aureus, Streptococcus* species, and *Pseudomonas aeruginosa* are more frequently implicated.[6] One case report by Ryu et al identified *S. marcescens* as the causative agent in a nasal abscess that developed two months after augmentation rhinoplasty in an immunocompetent woman.[7] This procedure addresses the aesthetic and functional impairments caused by a deficient nasal dorsum.[8] Of note is that the young woman's rhinoplasty used combined silicone and plastic implants. Research indicates that silicone implants increase the risk of infection related to biofilm formation.[8]

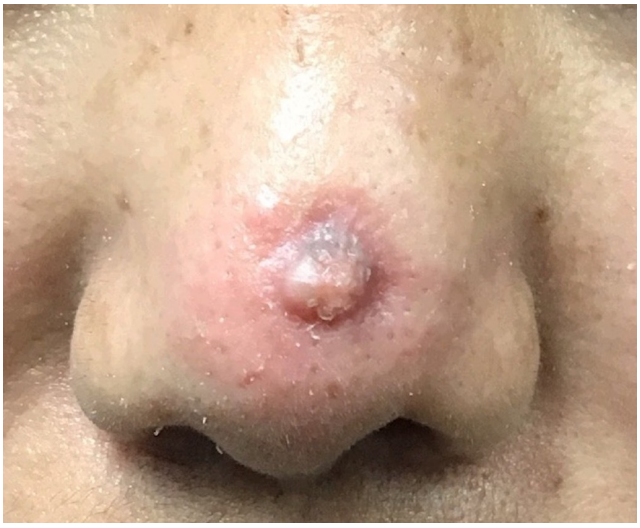

Figure 5. *0.7x0.7cm pink to hyperpigmented firm papule on the nasal supratip, with a resolution of purulent drainage, 5 weeks after antibiotic treatment.*

This case is unique in that the *S. marcescens* abscess developed three years after rhinoplasty in an immunocompetent individual. With the increasing popularity of rhinoplasty and other cosmetic procedures, it is crucial to emphasize infection prevention. Silicone implants are particularly associated with a higher risk of infection and subsequent implant extrusion, especially at the nasal tip.[7] Studies have shown that combined silicone and cartilage grafts tend to have more favorable outcomes.[9] Additionally, the routine use of pre- and postoperative antibiotic therapy is strongly recommended, given the nasal cavity's susceptibility to bacterial contamination.[10] Meticulous control of intraoperative bleeding, stringent maintenance of the sterile field, and cautious selection of implants are essential for preventing postoperative infections.

Conclusion

This case highlights the challenge of diagnosing infections caused by rare or atypical organisms. As cosmetics procedures become more common, dermatologists and other health care providers must consider atypical pathogens, such as *S. marcescens*, as potential causative agents.

Potential conflicts of interest

The authors declare no conflicts of interest.

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