

Subcutaneous Immunotherapy Induced Local Skin Necrosis



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Subcutaneous immunotherapy (SCIT) is a mainstay of allergic rhinitis and asthma treatment. SCIT adverse reactions are typically local, but systemic reactions uncommonly occur. Here, we report 3 cases of unusual reactions including skin necrosis associated with SCIT, a phenomenon that has not been previously reported.

Patient 1: A 37-year-old woman was on maintenance SCIT for 9 years. Within minutes of injection, she experienced mild local bleeding, a large local wheal and flare, throat pruritus, and mild chest tightness, and was treated with oral antihistamines after evaluation. Over 48 hours, she developed painful arm swelling and was placed on cephalexin by primary care for possible cellulitis. Her skin symptoms progressed, and she was prescribed trimethoprim-sulfamethoxazole in urgent care. Subsequently, the swelling resolved but 2 small necrotic papules developed, diagnosed as superficial skin necrosis by dermatology (Figure 1, A). At 2-month follow-up, the site was healing with residual scarring. The patient discontinued SCIT and continued to have scarring over 6 years later.

Patient 2: A 56-year-old woman developed local burning immediately following a SCIT maintenance dose. Betamethasone 0.1% cream was applied and the site was covered with a cold pack for roughly 15 minutes. After pack removal, the surrounding skin was reddish brown, and a triangular, erythematous, swollen, and hyperpigmented area was at the injection site. The next day, the site was vesicular with a sharp triangular border measuring approximately 3 cm by 3 cm by 1 cm (Figure 1, B). After a topical clobetasol course, the site subsided to a more evenly distributed brownish discoloration. The patient continued SCIT for over a year without similar complications. The triangular discoloration faded over several months, with no significant permanent scarring.

Patient 3: A 73-year-old man on maintenance SCIT for approximately 3 years experienced severe arm pain during an injection. He soon had widespread itching, flushing, coughing, and increased throat clearing. He received cetirizine and epinephrine intramuscularly, with rapid resolution of itching and flushing. His throat clearing resolved over 45 minutes. Over

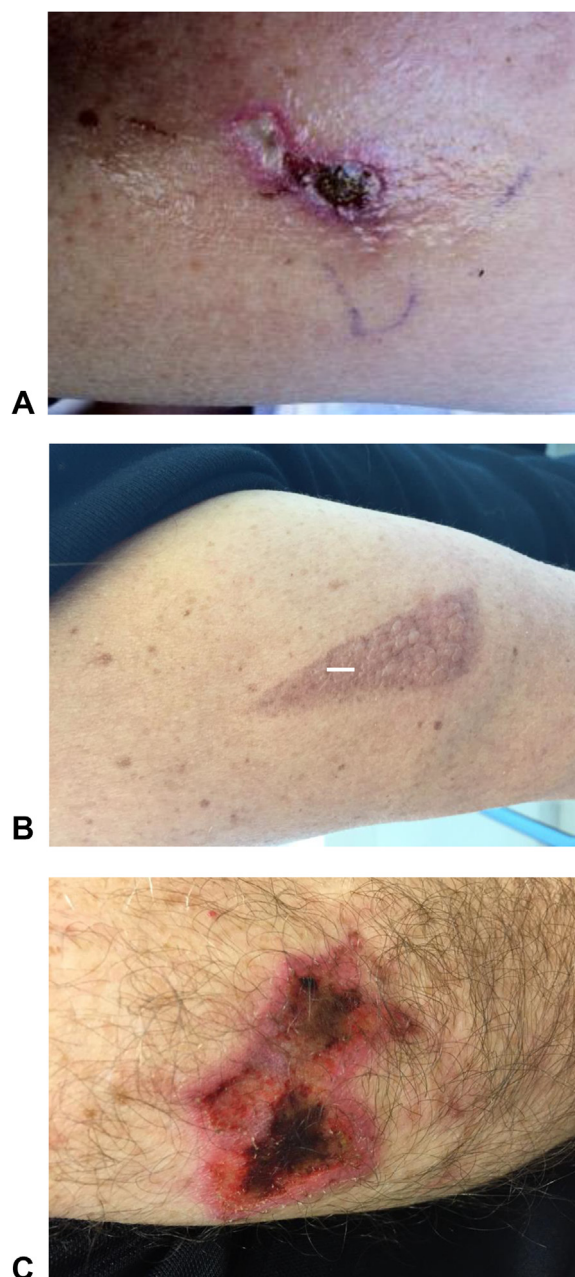


FIGURE 1. Local reactions seen on follow-up for patient 1 (A), patient 2 (B), and patient 3 (C).

subsequent days, he developed increasing injection-site pain accompanied by ecchymosis measuring approximately 30 mm in diameter and a large area of necrosis (Figure 1, C). At 1 week, the

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erythema was improving but pain was worsening. He was prescribed cephalexin for presumed cellulitis. At 1 month, the site was healing but long-term scarring ensued. The patient subsequently discontinued receiving SCIT.

CONCLUSIONS

These cases describe significant local reactions to SCIT including injection-site pain and local superficial necrosis of the skin of unclear etiology. Some signs of mast cell degranulation were present, and mast cell–derived TNF- α has shown an ability to induce cytotoxic responses.¹ Alternatively, an extravasation-like injury is possible, where solution volume and physicochemical

properties (eg, pH and osmolarity) lead to inflammation and cellular injury.² This risk is perhaps amplified if injections are given superficially. In summary, the necrotic complications experienced by these patients represent unusual complications to immunotherapy not previously reported. Further investigation into possible mechanisms is perhaps warranted.

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