CASE REPORT

Recurrent blistering distal dactylitis due to *Staphylococcus aureus* in an immunocompetent elderly woman

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SUMMARY

An 86-year-old woman presented with marked blistering of her left index fingertip and ulceration of the left middle fingertip, with a 2-year history of recurrent blistering and ulceration of her fingers bilaterally. She denied any preceding finger trauma, although she reported frequent gardening. She denied systemic symptoms. Her medical history was significant for a 2-year history of atrial fibrillation on carvedilol, amiodarone and apixaban, and she was a lifetime non-smoker. On admission, she had elevated inflammatory markers but unremarkable autoantibodies. Radiograph of the hand revealed diffuse soft tissue fullness and subtle irregularities at the tuft of the index finger, but all other investigations were unremarkable. The lesion was incised and drained, revealing blood-tinged purulent fluid. Wound biopsy revealed spongiosis with neutrophils, consistent with a diagnosis of blistering distal dactylitis.

BACKGROUND

Blistering distal dactylitis (BDD) is characterised by tense seropurulent fluid-filled bullae usually on the anterior fat pads of the distal phalanges, though it has been described to extend and affect the proximal and lateral nail folds, as well as to cause a periungual paronychia. It has even been described as involving the proximal phalangeal and palmar areas of the hand. The bullae have also been known to evolve into erosions over time and can rarely recur and remit. It is caused by skin flora such as *Streptococcus pyogenes* or *Staphylococcus aureus*. It most commonly occurs in children and is rare in adults. It has never been described in elderly patients. Clinicians, including internists, should be suspicious of this condition in all age groups, not just the paediatric population, and should be aware of the potential for recurrence.

CASE PRESENTATION

An 86-year-old woman presented to the emergency department with recurrent blistering of her fingers. The lesion on her left index fingertip began 3 days prior with painless erythema which progressed to a painful fluid-filled blister and eventually became blood tinged. She reported her left middle fingertip had an older ulcerating lesion without marked blistering. She had a 2-year history of recurrent ulceration and blistering, with five prior episodes on other fingers. Historically, her symptoms would

resolve spontaneously over weeks to months. She denied any preceding finger pricks, insect bites, thermal or chemical burns, or other trauma, though she did report frequent gardening. She denied any fevers, chills, recent weight loss or any changes in colour or temperature of her fingertips. Her medical history was significant for a 2-year history of atrial fibrillation, on amiodarone and apixaban. She was a lifetime non-smoker.

On admission, she was afebrile with normal vital signs. Physical examination revealed tense blood-filled bulla on her left index finger (figure 1) with healing ulceration of the left index and middle fingertips (figure 2), and a normal neurological examination with no evidence of peripheral neuropathy.

INVESTIGATIONS

Laboratory tests revealed elevated C-reactive protein (126.8; reference range 0–4.9) and erythrocyte sedimentation rate (127; reference range 0–<20). Antinuclear antibodies, rheumatoid factor (<10, reference range 0–14) and antineutrophil cytoplasmic antibodies were normal. Antiphospholipid battery (<9.4; reference range <20) and lactic acid (1.2; reference range 0.3–1.5) were also normal. Radiographs of the hand revealed diffuse soft tissue fullness and subtle osseous irregularities at the tuft of the index finger. Echocardiogram revealed preserved biventricular function, severe left atrial enlargement and irregular rhythm without thrombi. Arterial duplex revealed no evidence of arterial occlusive disease in her hands bilaterally, except mild digital ischaemia in her left fifth digit. CT angiogram was unremarkable for any evidence of thromboembolic disease. Incision and drainage of the lesion revealed blood-tinged purulent fluid. Wound cultures grew methicillin-sensitive *S. aureus*. Wound biopsy revealed spongiosis with neutrophils, consistent with a diagnosis of BDD.

DIFFERENTIAL DIAGNOSIS

Initially, our differential diagnosis was quite broad, including cellulitis, osteomyelitis, vasculitis (amiodarone-induced vs autoimmune), peripheral arterial disease, peripheral neuropathy with or without subsequent thermal injury and thromboembolism. On physical inspection, the patient's presentation was less concerning for cellulitis or osteomyelitis. Despite her history of atrial

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Figure 1 Tense blood-filled bulla on the left index finger.

fibrillation, the narrow anatomical distribution of her symptoms to only her fingers made us less concerned. Despite the echocardiogram revealing an irregular rhythm and severe left atrial enlargement, she was adequately treated with carvedilol, amiodarone and apixaban, and the clinical picture with the remaining negative thromboembolism workup, including CT angiogram and arterial duplex studies, was not concerning. Our workup, including a battery of autoimmune blood tests, further ruled out vasculitis and peripheral arterial disease. She also did not have any history, signs, symptoms or risk factors concerning for peripheral neuropathy or thermal injury.

TREATMENT

She was started on empiric vancomycin treatment for presumed cellulitis. The orthopaedic surgery service evaluated the patient and was not concerned for osteomyelitis. Amiodarone was discontinued due to concern for medication-induced vasculitis given the temporal association between the initiation of

amiodarone and the onset of symptoms 2 years ago. Incision and drainage of the newest lesion revealed blood-tinged purulent fluid. Wound cultures grew methicillin-sensitive *S. aureus*, and vancomycin was narrowed to cephalexin.

OUTCOME AND FOLLOW-UP

Following incision and drainage, the patient reported significantly improved pain. At 2-week follow-up, her blisters were resolving, and she reported further improvement in pain. Amiodarone was restarted at this time.

DISCUSSION

BDD is characterised by tense seropurulent fluid-filled bullae, usually on the anterior fat pads of the distal phalanges though it has also been described to extend and affect the proximal and lateral nailfolds, as well as to cause periungual paronychia.¹⁻⁴ It has even been described as involving the proximal phalangeal and palmar areas of the hand. The bullae have also been known to evolve into erosions over time, and can rarely remit and recur.⁴ The most commonly affected digits are the index fingers and thumbs.¹ It most commonly occurs in children aged 2–16 years, although rare cases have been reported in children less than 24 months old or in adults.⁵ The prevalent theory suggests that BDD is caused by autoinoculation of the fingertips by nose-picking and trauma such as an insect bite, abrasion, burn or finger prick.^{5,6} Although most prevalent in children, clinicians should remain suspicious in all age groups, including the elderly, and should be conscious of this diagnosis as there is a very broad differential, including herpetic whitlow, epidermolysis bullosa, bullous impetigo, friction blisters, and chemical or thermal burns.⁶ Lesions are not sterile, and wound cultures will often isolate skin flora, most commonly *S. pyogenes* or *S. aureus*.^{2,4,7-9} Management consists of incision and drainage of the bullae and beta-lactam antibiotic therapy, either topical or systemic.^{9,10}

In this case, amiodarone was initially thought to be the cause of the patient's symptoms as the onset of symptoms was coincident with her initiation of amiodarone therapy for atrial fibrillation. Amiodarone has been associated with cutaneous vasculitis in some patients and is characterised as a leucocytoclastic vasculitis. In most reported cases, the vasculitis resolves spontaneously following discontinuation, often within 2–4 weeks, despite the long half-life of amiodarone.^{11,12}

Learning points

- ▶ Blistering distal dactylitis is predominantly a paediatric disease, but can also rarely present in elderly patients as seen in this case.
- ▶ Blistering distal dactylitis can rarely recur and remit as seen in this case.
- ▶ Lesions are not sterile, and culture will identify *Streptococcus pyogenes* or *Staphylococcus aureus* in most cases.
- ▶ Infection is most often preceded by trauma such as an insect bite, abrasion, burn or finger prick.
- ▶ Current understanding of the disease suggests that it is caused by autoinoculation of fingertips by nose-picking in young children.
- ▶ Treatment is with incision and drainage of the bullae, with either topical antibiotics or a short course of anti-staph/strep systemic antibiotics.

Figure 2 Ulceration of the left index and middle fingertips.

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published, and treatment of the patient. NHS participated by providing major revisions to the draft as necessary, analysis and interpretation of data, final approval of the version published and treatment of the patient. NH participated by providing revisions to the draft as necessary, analysis and interpretation of data and final approval of the version published. AVW participated by providing revisions to the draft as necessary, analysis and interpretation of data, final approval of the version published and treatment of the patient.

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