Wound Management in End-Stage Dermatomyositis: A Case Report and Literature Review

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Introduction

Dermatomyositis (DM) is a rare inflammatory condition affecting the skin and muscles.

Common signs include:

- heliotrope rash
- gottron papules
- periungual telangiectasias
- rashes on the upper chest and back (“shawl” sign)
- scaly alopecia of the scalp

Children often exhibit calcium deposits in their skin, while adults may have concurrent neoplasms, such as ovarian cancer.[1,2]

Incidence: ~9.63 per 1 million.[3]

Higher prevalence among females (76%) and a low asymptomatic rate (20%).[3]

Myopathic cases of DM have a significantly higher mortality rate, with a standard mortality ratio of 3.1.[4]

Glucocorticoid therapy leads to 1.5 - 4 times higher rates of remission.[5]

Purpose

While there is extensive literature on the effects of glucocorticoids on DM, little has been written about its impact on wound healing. We present a case of end-stage DM in a patient on chronic glucocorticoids and discuss the complications that necessitated extensive wound management.

Case Presentation

A 60-year-old female was referred the wound clinic with complaint of slow healing wounds on her right flank, left hip, and lower extremities. Infection was observed on both the right flank and left hip wounds (Figures 1-2). Additionally, extensive calcification was evident over the left upper extremity, lower extremities, and abdominal region (Figures 3-6) secondary to end-stage DM and prolonged glucocorticoid use of seven years. She had previously taken azathioprine, which resulted in a rash, leading to subsequent treatment with methotrexate and infliximab. The patient reported that these effectively controlled inflammation and calcium deposition. The medications were later discontinued due to the detection of Mycobacterium avium complex in her right shoulder joint. She had a history of recurrent wound infections necessitating incision and drainage in the operating room followed by antibiotic therapy.

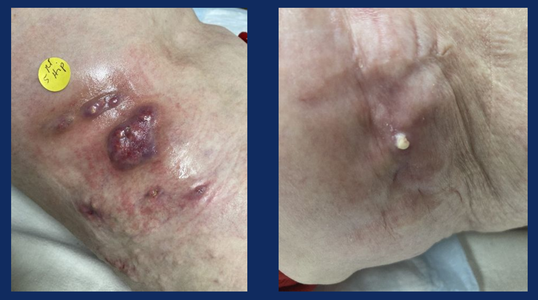

Figure 1 & 2: Right flank wound before surgery and abdominal wound drainage without infection

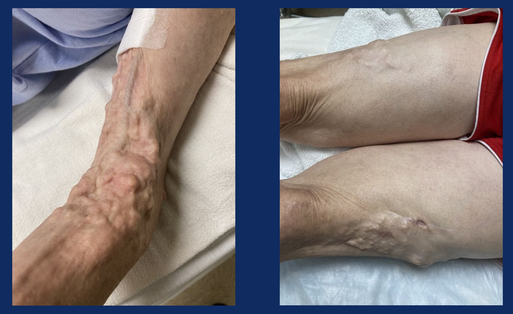

Figure 3 & 4: Left upper extremity and bilateral thigh calcifications

Documentation first recorded extensive calcification compatible with dermatomyositis 11 years prior to this most recent surgery, which was diagnosed by dermatology. She also had a history of osteoporosis and many surgeries including surgical debridement of the left thigh two years prior for a similar condition. Despite meeting clinical criteria for DM, she had normal JO-1, RNA Polymerase III IgG, and PM-Scl antibody levels found on testing. Recent pathology reports showed acanthotic epidermis with reactive changes as well as mixed inflammatory infiltrates in the dermis, but no concern for malignancy.

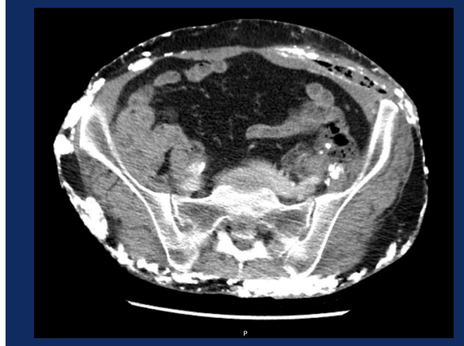

Figure 6: CT pelvis with contrast demonstrating extensive subcutaneous calcification

Visit, Surgery, and Follow Up

Multiple wounds were documented ranging from 0.25cm² to 18cm². The patient reported slow healing, particularly in the right flank and left hip. While some of her calcifications were partially drained in the clinic, they were refractory to non-surgical treatment. Fluctuance and erythema around the right flank and left hip raised a clinical concern for abscess. Surgery was determined to be indicated for removal of extensive calcification in slow-healing wounds, pain relief, and abscess drainage in the operating room.

Both abscesses were drained under general anesthesia without complication. Extensive calcification was removed in the right flank and partial excision occurred in the left hip. Cultures taken during surgery revealed a rare form of Staphylococcus aureus that was susceptible to vancomycin IV given in the operating room and a continued course of doxycycline was provided for 10 days after surgery.

Post-surgery, the wounds showed signs of minor soreness but improved healing. She completed daily wound packing with Iodoform strip gauze until her wounds were resolved at 38 days following surgery. This approach accelerated the previously protracted wound healing process and decreased self-reported pain, improving quality of life.

Discussion

Conventional therapy with corticosteroids was initiated to address muscle weakness in this case, but slow wound healing persisted.[7] Impaired wound healing in DM suggests broader physiological effects in areas such as angiogenesis and tissue regeneration.[8] Vasculopathy, identified in dermatomyositis, compromises blood flow and capillary network density, contributing to delayed wound healing.[9] These changes affect multiple phases of healing, exacerbating the dysregulated inflammatory process inherent in dermatomyositis.[10]

Apart from corticosteroids, other treatments modalities have shown promise in managing DM. Biologics like rituximab and infliximab, which target specific inflammatory pathways, were well tolerated in a study of dermatomyositis and polymyositis patients.[11] Methotrexate, also used in this case, interferes with nitric oxide synthesis, and increases T-cell apoptosis, reducing immune response.[12] Unfortunately, both medications, while effective, can also predispose to infection due to their immunosuppressive effects, as demonstrated in our patient. Another option is azathioprine which targets muscle involvement.[13] Its effectiveness against cutaneous manifestations is less documented and it was poorly tolerated in our patient.

In addition to slow wound healing, recurrent wound infections are common in DM. They often necessitate treatment with incision and drainage, tissue cultures, antibiotic therapy, and wound care.[6,14] Calcification, seen here, may also complicate treatment. Even with the above treatment options, the chance of prolonged remission of DM dermatologic conditions is very poor.[15]

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Conclusions

- In the absence of current guidelines when treating delayed wound healing in DM, treatment is primarily focused on infection and pain control; both of which were met through surgical debridement and drainage in this patient.
- DM-related wounds that are refractory to many of the other treatment modalities described may benefit from surgical debridement.
- Impaired wound healing raises broader systemic implications of the disease, necessitating further research into exact mechanisms and subsequently, targeted therapy.

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