Case Letters

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Lichenoid drug reaction to technicium-99: a case report and review of the literature

Keywords: adverse drug reaction, nuclear medicine, technicium-99

Introduction

Technicium-99 (Tc99m) and other radiopharmaceuticals are commonly used in the setting of malignancy to assess for metastatic bone disease and guidance in sentinel lymph node biopsies.[1–3] The administration of radiopharmaceuticals can be associated with a range of cutaneous adverse reactions.[4,5] We report the case of a biopsy-proven lichenoid drug reaction secondary to intravenous Tc99m contrast administration in the setting of breast carcinoma requiring oral prednisolone for resolution.

Case report

A 52-year-old woman presented with a 24-hour history of an exquisitely pruritic, rapidly progressing, widespread coalescent papular eruption. Sharp demarcation was seen on the anterior chest in areas of sun exposure but no involvement of the distal limbs or other sun-exposed areas was noted (Fig. 1). The patient was currently being investigated for bone metastases for stage 3 breast carcinoma for which she underwent a Tc99m bone scan. She reports the pruritus and rash developing as soon as 10 minutes after administration of Tc99m.

She denied any history of autoimmune disease, lupus, polymorphic light eruption, dermatomyositis, eczema, or psoriasis. Examination revealed otherwise normal nails, hair, and mucosal membranes, and no muscle weakness or gait abnormalities were noted. The patient denied any other past medical history or regular medications. In the past 28 days, the patient had taken 1000 mg of acetaminophen 15 days prior for an unrelated headache. Blood work revealed a normal complete blood count with no eosinophilia, normal renal function, normal liver enzymes, and a negative antinuclear antibody titer.

Two punch biopsies from representative indurated erythematous papular lesions were performed. Histopathology demonstrated a superficial dermal perivascular lymphocytic infiltrate with focal extension of the lymphocytes into the epidermis, associated with subtle lichenoid change (Fig. 2). No wedge-like infiltrate suggestive of PLEVA was seen. Direct immunofluorescence was negative demonstrating no deposition of IgG or C3.

Based on both clinical and histopathological findings, a diagnosis of a lichenoid drug eruption secondary to Tc99m exposure was done. The patient was treated with 25 mg oral prednisolone for 7 days with a slow weaning course over the following 4 weeks. Topical betamethasone dipropionate was used for symptomatic relief of the pruritus. She had complete resolution of the pruritus and eruption after 7 days. She was advised to avoid Tc99 m-associated studies in the future in case of a worsening allergic reaction.

Discussion

Adverse cutaneous reactions to radiographic contrast, including cutaneous reactions, are widely reported in the literature,[4,5] but reactions to Tc99m are rare.[1–3] Reported cutaneous reactions to contrast media such as iodine and gadolinium include urticaria, fixed drug reaction, drug reaction with eosinophilia and systemic symptoms, Stevens–Johnson syndrome, toxic epidermal necrolysis, small-vessel vasculitis, iododerma, and symmetrical drug-related intertriginous and flexural exanthema.[4,5] Reported cases of cutaneous reaction to Tc99m are urticarial and self-resolving after 24 hours.[1–3] Previous cases have not documented histopathology and often have coadministered medications including dyes used for sentinel node evaluation. This case demonstrates clear documentation of a lichenoid drug eruption with no coadministered medications. Acute lichenoid eruption (PLEVA) was considered a differential diagnosis, however the histopathology was not supportive. The clinical and histological evidence support a type IV hypersensitivity reaction secondary to Tc99m in this case.

Conflicts of interest

The authors made the following disclosures: J.W.F. has conducted advisory work for Janssen, Boehringer-Ingelheim, Pfizer,

What is known about this subject in regard to women and their families?

- Allergic reactions to the radiopharmaceutical agent technicium-99 (Tc99m) are rare and cutaneous reactions are mostly reported to be urticarial in nature and self-resolving after 24 hours.

What is new from this article as messages for women and their families?

- We present the first clear documentation of a lichenoid drug eruption after Tc99m administration, requiring oral prednisolone.

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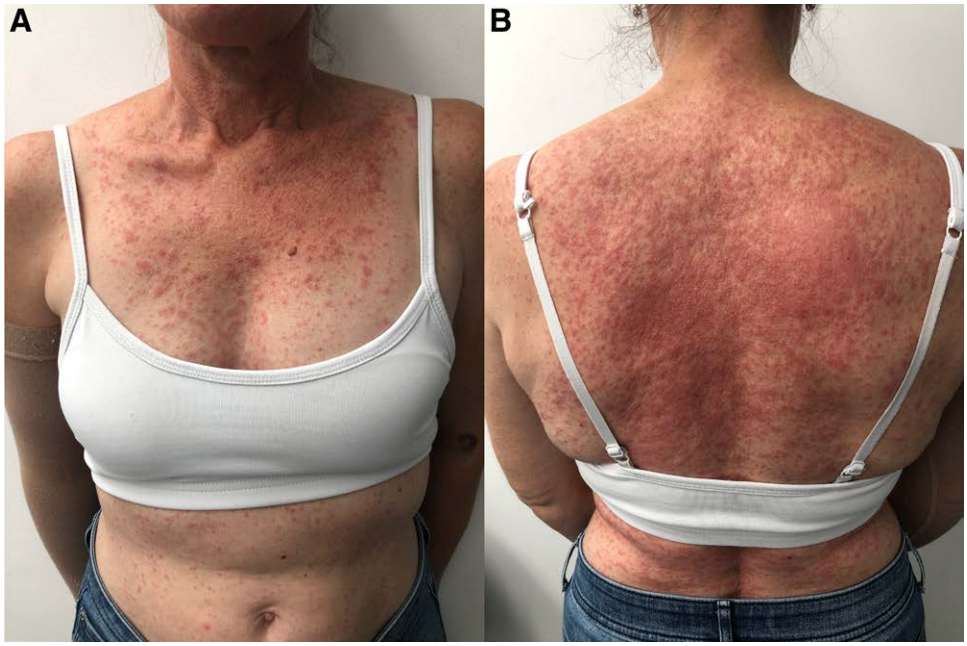

Fig. 1. Clinical photographs (A and B) 24 hours after Tc99m administration documenting the acute coalescent pruritic papules on the anterior chest, proximal forearms, and upper back. Scattered papules are seen on the anterior abdomen but no extension onto the face or hands was seen. Sharp demarcation at the line of clothing suggests a degree of photo accentuation in the acute reaction.

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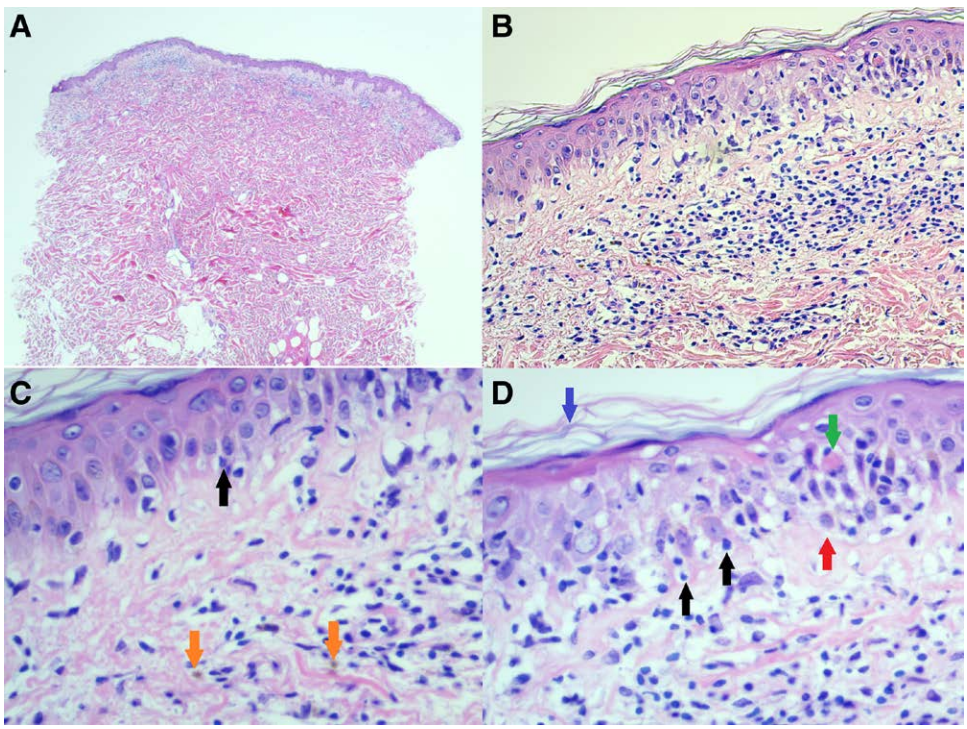

Fig. 2. (A) Low power view of acute lichenoid reaction showing band-like infiltrate in upper dermis obscuring the dermo-epidermal junction (DEJ) (hematoxylin and eosin [H&E], ×25). (B) Medium power view of acute lichenoid reaction. Note basal vacuolar change, lymphocyte rimming of basal keratinocytes, melanophages in the upper dermis, and retained basket-weave stratum corneum reflecting the acute nature of the insult (H&E, ×200). (C) High power detail of acute lichenoid reaction. Note lymphocyte rimming of basal keratinocytes (black arrow) and dermal melanophages (orange arrow) (H&E, ×400). (D) High power detail of acute lichenoid reaction. Note basal keratinocyte vacuolar change (red arrow), lymphocyte rimming of basal keratinocytes (black arrows), apoptotic and dyskeratotic keratinocyte from lymphocyte-mediated damage (green arrow), and retained basket-weave stratum corneum (blue arrow) reflecting the acute nature of the insult (H&E, ×400).

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Study approval

N/A

Author contributions

EK contributed to the original draft, writing, review, and editing of the report. TE contributed to the writing, review, and editing of the report. AC contributed to the dermatopathological analysis and interpretation. JWF contributed to the supervision of all aspects of the report and provided editorial guidance.

Patient consent

The patient has consented to participate in this case report and to the use of their material and photographs and material for this case report. Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy

Data availability

The data that support the findings of this study are not publicly available due to their containing information that could compromise the privacy of research participants but are available from J.W.F.

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