Postirradiation Pseudosclerodermatous Panniculitis: A Rare Complication of Megavoltage External Beam Radiotherapy

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PRACTICE **POINTS**

- Postirradiation pseudosclerodermatous panniculitis presents as an erythematous or indurated plaque at a site of prior radiotherapy.
- This rare entity may be underreported and requires biopsy for accurate diagnosis.

To the Editor:

Postirradiation pseudosclerodermatous panniculitis (PIPP) is a rarely reported complication of megavoltage external beam radiotherapy that was first identified in 1993 by Winkelmann et al.[1] The condition presents as an erythematous or hyperpigmented indurated plaque at a site of prior radiotherapy. Lesions caused by PIPP most commonly arise several months after treatment, although they may emerge up to 17 years following exposure.[2] Herein, we report a rare case of a patient with PIPP occurring on the leg who previously had been treated for Kaposi sarcoma.

An 84-year-old woman presented with a tender plaque on the right lower leg of 2 months' duration. Her medical history was remarkable for Kaposi sarcoma, with multiple sites on the body treated with megavoltage external beam radiotherapy during the prior 4 years. The most recent treatment occurred 8 months prior to presentation, at which time she had undergone radiotherapy for lesions on the posterior lower right leg. Physical examination demonstrated a hyperpigmented and indurated plaque at the treatment site (Figure 1).

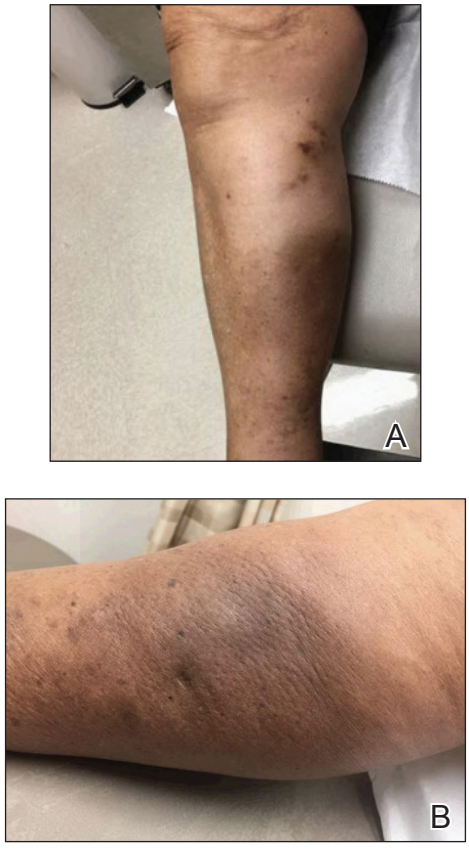

FIGURE 1. A and B, Medial and posterior view, respectively, of a hyperpigmented and indurated plaque on the posterior lower right leg.

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Skin biopsy results showed a mildly sclerotic dermis with atypical radiation fibroblasts scattered interstitially between collagen bundles, and a lobular panniculitis with degenerated adipocytes and foamy histiocytes (Figure 2). Hyalinized dermal vessels also were present. Based on the constellation of these biopsy findings, a diagnosis of PIPP was made.

The diagnosis of PIPP is challenging and invariably requires histologic examination. Clinically, the differential diagnosis includes cutaneous metastasis of the primary neoplasm, cellulitis, lipodermatosclerosis, morphea, and chronic radiation dermatitis.

Histologically, PIPP is characterized by a lobular panniculitis without vasculitis. Typical findings include the presence of centrilobular necrotic adipocytes along with a foamy histiocytic infiltrate containing lipophagic granulomas at the periphery of the fat lobules. Septal thickening and sclerosis around fat lobules also have been described, and dermal changes associated with chronic radiation dermatitis, such as papillary dermal sclerosis, endothelial swelling, vascular hyaline arteriosclerosis, and atypical star-shaped radiation fibroblasts, may be present.[2] Features of radiation-induced vasculopathy commonly are seen, although the appearance of these features varies over time. Intimal injury and mural thrombosis can develop within 5 years of radiation therapy, fibrosis of the vessel wall can occur within 10 years of radiation therapy, and atherosclerosis and periarterial fibrosis can appear within 20 years of radiation therapy.[2,3] The histologic findings in our patient showed characteristic dermal findings seen in radiation dermatitis in addition to a lobular panniculitis with foamy histiocytes and mild vessel damage.

In contrast, lipodermatosclerosis is a septal and lobular panniculitis with septal fibrosis. Membranocystic fat necrosis is present, characterized by fat microcysts lined by feathery eosinophilic material. Stasis changes in the dermis and epidermis are accompanied by a mild perivascular lymphocytic infiltrate.

Patients with traumatic panniculitis, which also may enter the clinical differential diagnosis of PIPP, often demonstrate nonspecific histologic changes. Early lesions show a perivascular infiltrate of lymphocytes and macrophages. Evolving lesions show variably sized fat microcysts surrounded by histiocytes, in addition to possible calcifications and a foreign-body giant cell reaction. A fibrous capsule may develop, surrounding the fat necrosis to form a mobile encapsulated lipoma. Late lesions frequently demonstrate lipomembranous changes and calcium deposits.[4]

To date, nearly all cases of PIPP in the literature have been described in breast cancer patients.[1,2,5,6] However, Sandoval et al[7] reported a case of PIPP occurring in the leg of a patient after radiotherapy for a soft tissue sarcoma. Similar to our patient, this patient presented with a painful, dully erythematous, indurated plaque, although her symptoms arose 5 years after radiotherapy.

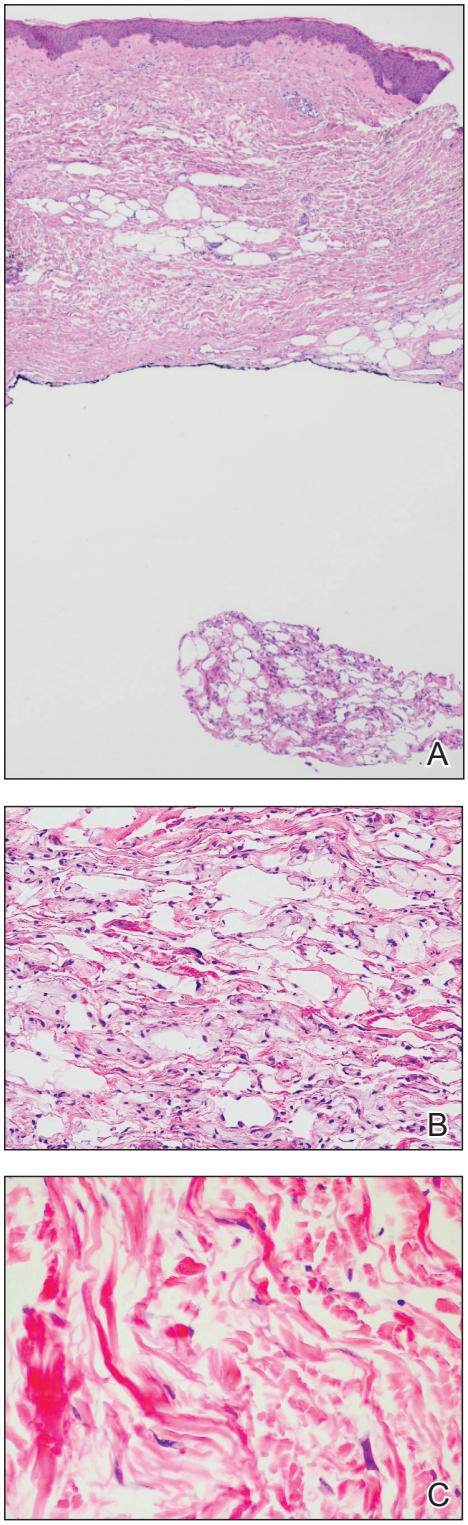

FIGURE 2. A, The dermis appeared mildly sclerotic with epidermal thinning, attenuated rete ridges, and mild compact hyperkeratosis (H&E, original magnification ×20). B, Lobular panniculitis was present with lymphocytes and histiocytes (H&E, original magnification ×400). C, Degenerated adipocytes, foamy histiocytes, and atypical radiation fibroblasts were scattered interstitially between collagen bundles (H&E, original magnification ×400).

Megavoltage external beam radiotherapy has become a widely used modality in the treatment of various cancers. As such, PIPP may represent an underdiagnosed condition with potential cases remaining unidentified when the clinical differential diagnosis does not lead to biopsy. Effective therapies have yet to be widely reported, and our patient failed to experience notable improvement with either topical or intralesional corticosteroids. Further studies are needed in order to address this knowledge gap.

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