

# Right breast ulceration and dystrophic calcification as a late sequela following postmastectomy radiotherapy

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## DESCRIPTION

A woman in her 80s was referred urgently in view of an enlarging and tender right breast ulceration. There was no preceding injury. She had undergone a right mastectomy, axillary node dissection and radiotherapy for an invasive breast carcinoma 30 years ago. A medical history included hypertension and well-controlled rheumatoid arthritis—she had been prescribed oral Methotrexate for years with no reported side effects.

On examination, there was an extensive right breast ulcer with an indurated edge and central slough (figure 1). There was no rash or ulceration elsewhere and no involvement of the mucous membranes. Differential diagnoses were recurrence of right breast malignancy, atypical infection, pyoderma gangrenosum and methotrexate induced cutaneous ulceration.

A deep incisional biopsy revealed marked inflammation, focal calcification and ulceration. Tissue culture was positive for *Streptococcus anginosus* and anaerobes and she was commenced on antibiotics according to the sensitivities. Laboratory studies were unremarkable, including Antinuclear Antibody (ANA), complement and Antineutrophil Cytoplasmic Antibody (ANCA) levels. Ultrasound and CT scans of the chest, abdomen and pelvis confirmed heavy calcification and ulceration extending to the inferolateral margins of the pectoralis major. There was no evidence of lymphadenopathy or metastases. A diagnosis of dystrophic calcification and ulceration post radiotherapy was made, and she was managed conservatively with tissue viability input. Malignancy and pyoderma gangrenosum were excluded as the biopsy showed no evidence of dysplasia or neutrophilic infiltrate. Methotrexate induced ulceration was not considered as the patient did not have other features of Methotrexate toxicity, including mucositis, gastrointestinal upset and biochemical abnormalities.

Radiotherapy is one of the mainstay treatments for breast malignancies and the incidence of adverse events has reduced considerably with advances in radiation delivery techniques. These complications can range from diffuse skin thickening and oedema in early stages to fat necrosis, fibrosis and dystrophic calcification months to years following completion of radiotherapy.<sup>1,2</sup>

It is postulated that radiation induced dystrophic calcification is due to chronic inflammatory changes and hypoxia, resulting in a dysregulation of intracellular calcium concentration in damaged tissues.<sup>3</sup> This leads to an increased calcium deposition and



**Figure 1** Right breast ulceration with surrounding indurated erythema and central slough.

formation of calcium hydroxyapatite. Radiation concurrently causes microangiopathy and this further exacerbates hypoxia and vascular damage.<sup>3</sup> A literature review done by Gabani *et al* reported that the time taken from completion of radiotherapy to the occurrence of subcutaneous calcification ranged from 8 to 32 years.<sup>2</sup> The risk of calcification is higher in larger doses (greater than 2.0 Gy) and if there is an area of overlap between radiotherapy fields.<sup>3,4</sup>

In our patient, she had received a total radiotherapy dose of 61 Gy in 28 fractions over a period of 37 days. The procedure was also performed with conventional tangential field technique, resulting in dose inhomogeneity. It is essential to exclude atypical infections and malignancy as they can have similar clinical presentation. Management is largely conservative due to a paucity of research evidence and poor wound healing. It is important for clinicians to consider the diagnosis of dystrophic calcification as a delayed presentation of radiotherapy as this can occur years following its completion.

## Learning points

- ▶ Consider atypical infections and malignancy in patients who present with right breast ulceration.
- ▶ Subcutaneous dystrophic calcification and ulceration of the breast can occur as a delayed presentation years following radiotherapy for breast carcinoma.
- ▶ The risk of calcification is higher in larger radiotherapy doses and overlapping fields.



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Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

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