Pulmonary apical fibrosis in a patient treated earlier for breast cancer

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DESCRIPTION

A 46-year-old woman who completed 10 years of follow-up after successful treatment for right-sided breast cancer presented in peak winter with discomforts of cough and accompanying chest-wall musculoskeletal pain persisting for 4 days. She had earlier received multimodality therapy with surgery (modified radical mastectomy), radiotherapy (to the ipsilateral postmastectomy chest wall, axilla and the supraclavicular area), chemotherapy and hormonal therapy.

A chest radiograph demonstrated right pulmonary apical fibrosis (figure 1). A CT scan demonstrated a band which showed no contrast enhancement (figure 2). There were no cavitations or calcifications. The rest of the lungs and the mediastinum were unremarkable. A workup on the lines of tuberculosis was negative (negative sputum-smear examination and the Mantoux test yielded an induration of 3 mm diameter). There were no histories or clinical features suggestive of rheumatological disorders.

In the meantime, the patient's cough and chest pain subsided with symptomatic treatment. However, a fine-needle aspirate (resorted to allay patient anxiety) was non-specific, with occasional histiocytes found amidst a predominantly fibrotic background. The diagnosis was assigned as postradiation pulmonary fibrosis.

Radiotherapy after mastectomy involves irradiation of the chest wall with tangential beam placements placed at angles so as to irradiate the chest wall while sparing the underlying lung and the heart.¹ Irradiation of the supraclavicular nodal

Figure 1 Chest radiograph depicting the presence of a right-sided apical fibrosis with an ipsilateral lack of the mammary shadow.

Figure 2 Band-like fibrosis in the right pulmonary apex visualised in a CT section.

region is usually considered to be indicated in patients with involvement of more than three axillary nodes or with involved supraclavicular nodes. This requires the placement of a direct supraclavicular field, through which the radiation beam passes perpendicularly onto the supraclavicular fossa. Thus, a significant radiation dose can be expected to reach the underlying pulmonary apex.¹

Radiation induced injury to the lung in general is of two temporal types. An early transient stage of pneumonitis can set in at 4–6 weeks, which even if symptomatic, is mostly self-limiting. Later, a chronic fibrotic stage is observed as late as 6–24 months after irradiation. The factors that decide the onset and extent of injury include the total radiation dose, dose fractionation and also possibly the use of chemotherapy.²

Radiation-induced pulmonary fibrosis must be given due consideration as a possible diagnosis during the evaluation of pulmonary apical radiological opacities in the ever-growing population of breast cancer survivors.^{3 4}

Learning points

- ▶ After mastectomy, radiotherapy to the chest wall is typically delivered by the use of tangential beam placements, which spares the underlying lungs.
- ▶ However, the irradiation of the supraclavicular and level III axillary areas require the use of a direct field placement, which can cause radiation-induced changes in the apex of the ipsilateral lung.
- ▶ The possibility of prior irradiation as an aetiology should be acknowledged in the differential diagnosis of pulmonary apical fibrosis in the ever-growing population of breast cancer survivors.

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