The radial scar of the breast diagnosed at core needle biopsy

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The radial scar (RS) or complex sclerosing lesion (CSL) of the breast represents a management dilemma on diagnosis at breast core needle biopsy because of the risk of associated malignancy identified only upon surgical excision. To determine our experience, we retrospectively reviewed core needle biopsies performed at the Darlene G. Cass Breast Imaging Center from 2006 to 2011, identifying 67 patients with RS or CSL, and correlated histology at excisional biopsy with core biopsy results. Of the 67 cases, 6 (9%) were associated with malignancy at surgical excision. The average size of the RS or CSL was 1.42 cm. In conclusion, RS or CSL diagnosed at core needle biopsy still warrants surgical excision because of the significant percentage (9%) of cases with associated malignancy.

Despite being considered benign lesions, radial scars (RS) and complex sclerosing lesions (CSL) of the breast often demonstrate suspicious imaging features that prompt imaging-guided core needle biopsy. Percutaneous diagnosis of an RS without atypical features can present a management dilemma since a significant percentage of these lesions are known to be associated with malignancy (1–11). At our institution, we routinely advise surgical excision of these lesions in order to exclude a more aggressive atypical or malignant component that was not sampled at the time of needle biopsy.

This report reviews the cases of RS or CSL diagnosed at the Darlene G. Cass Women's Imaging Center by percutaneous imaging-guided core needle biopsy or surgical excision to determine the frequency of associated malignancy.

MATERIALS AND METHODS

The histologic findings of 67 patients diagnosed with either RS or CSL were retrospectively analyzed, beginning with 2006, when the breast center began using a computerized database for pathology results from core needle biopsies. All biopsies were obtained and all lesions diagnosed at our center. The frequency of associated in situ or invasive malignancy was calculated. We included lesions diagnosed by percutaneous core needle biopsy, including both 9 g vacuum-assisted stereotactic biopsies and 11 g sonographic biopsies. Before biopsy, all lesions were suspicious (at least BI-RADS category 4 or greater). Lesions were identified mammographically and/or sonographically and were nonspecific, including masses, microcalcifications, and mammographic asymmetries. The histologic findings were not retrospectively confirmed by a pathologist, and the original histologic diagnosis for each case was accepted.

RESULTS

Six of the 67 lesions (9%) were associated with malignant features. Of the six malignant lesions, two were low-grade ductal carcinoma in situ (DCIS), two were intermediate-grade DCIS, one was an invasive ductal lesion with fragmented architecture that prevented definitive grading, and the final one was a low-grade metaplastic (adenosquamous) carcinoma. The six patients ranged in age from 35 to 69 years. The average size of the identified RS or CSL was 1.42 cm.

DISCUSSION

RS of the breast is a benign lesion with mammographic and sonographic features that can mimic carcinoma. It is the imaging manifestation of an idiopathic scarring process that is unrelated to trauma or surgery (12). If the lesion is >1.0 cm, it is described as CSL. The characteristic stellate histologic appearance of an RS is the result of ducts and lobules radiating outward from a central fibroelastic core (13). This histologic arrangement contributes to the classic radiographic appearance of RS, described as spiculated masses often having a radiolucent core. If present, these findings may suggest the diagnosis of RS, but they are not adequately specific to allow exclusion of malignancy (12). In fact, RS have been shown to present with a variety of mammographic characteristics and should therefore be considered a prebiopsy diagnostic possibility for almost all mammographic lesions (3, 14). Furthermore, Linda et al (15) showed that mammographic and sonographic features of a lesion diagnosed as RS are not predictive of the absence or presence of associated malignancy.

Historically, RS were most often discovered as incidental microscopic findings, but the common use of screening

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mammography has led to increased imaging detection of these lesions (16). Multiple reports in the literature show an association of RS with surrounding malignancy in anywhere from 3% to 40% of cases (1–11). Furthermore, common associated findings of hyperplastic conditions such as atypia, adenosis, and papillomatosis have prompted the suggestion that RS represents an early stage in the development of invasive carcinoma (17). However, recent articles from Sanders et al (18) and Berg et al (19) conclude that there is no increased breast cancer risk in patients with RS/CSL relative to those with proliferative diseases of the breast with or without atypia. The varying results of these studies reflect the ongoing debate regarding management of these lesions.

At our facility, we routinely recommend surgical excision of any lesion with histologic components of RS or CSL. The results of this review support such a recommendation. The frequency with which malignant features are identified in association with RS or CSL warrants thorough histologic evaluation of the area containing these lesions. Some investigators have suggested that surgery can be confidently avoided if core-needle biopsy is performed with a vacuum-assisted device, more than 12 samples are obtained, no associated atypical hyperplasia is identified, and radiologic-pathologic concordancy is confirmed (3, 11). However, Linda et al (15) reported an underestimation of malignancy using a vacuum-assisted device. Lopez-Medina et al (1) showed that carcinoma was invariably located at the periphery of sclerosing lesions and that the volumetric proportion of malignancy within RS ranged from 3.7% to 16.2%. These findings suggest that malignant foci can easily be missed by the biopsy needle, despite an extensive sampling technique (20).

Several authors have concluded that malignancy in RS or CSL is very rare in patients under the age of 50 (21–24). Although the overall number of patients included in this review is small, it is worth noting that 2 of our 6 patients with malignant features were under 50 years of age (ages 35 and 43). The average size (1.42 cm) of lesions with associated malignancy in our study is consistent with the conclusion by Sloane et al that carcinoma is more common in lesions >0.6 cm (22).

Findings of DCIS arising in RS/CSL are most commonly low or intermediate grade while invasive cancers are usually grade 1 or 2, and staging of these patients is historically prognostically favorable (15, 25–27). Metaplastic carcinoma was identified in one of the patients we reviewed and has been reported in multiple previous cases (28).

In conclusion, there is a noteworthy association of malignancy with lesions diagnosed as RS or CSL at this facility. The frequency of this association along with the lack of predictive imaging characteristics warrants the recommendation that all RS or CSL be surgically excised, even if malignant components are not identified at core needle biopsy.

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