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The role of inflammatory infiltrate in the assessment of DCIS

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Incidence of breast Ductal Carcinoma In Situ (DCIS) is on the rise. Previous studies have shown up to 50% of DCIS cases will recur as DCIS or progress to invasive disease; however, robust predictive factors have not been identified. DCIS is associated with inflammatory infiltrate, which varies in amount, distribution and composition. Since the immune system's response is an important predictor of biologic behavior in cancer of other sites, we hypothesize that the level and/or type of local immune response correlates with more aggressive disease with propensity for recurrence or progression. We identified five patients with DCIS who went on to have disease recurrence, and five control subjects without disease recurrence. Sections were stained with H&E (to assess nuclear grade, necrosis and inflammation score), and immunohistochemistry (CD45, CD3, CD20, CD56, CD68, and CD138; scored for level and distribution of staining). Clinicopathologic correlation was done for disease recurrence, margin status on excision and hormone receptor status on biopsy. There was a variable lymphoplasmacytic infiltrate (LPI) in our cases. When present, this infiltrate is composed of predominantly T cells (CD3-positive cells), followed by B cells (CD20) and plasma cells (CD138) of the 5 patients with recurrence of disease, four had moderate to severe LPI (by H&E and immunohistochemistry); in contrast, only 2 out of 5 without recurrence had moderate, and none had severe, level of infiltrate. Patients with recurrence had higher grade of DCIS, were more likely to be ER/PR negative, and have positive or close margins on lumpectomy when compared to patients without recurrence. Indeed, statistical analysis demonstrated significant positive correlation of amount of CD45-positive cells and DCIS grade (Spearman correlation, $r=0.75$, $P=0.04$). Furthermore, ER/PR status and status of margins were significantly associated with disease recurrence ($P<0.05$); level of LPI and nuclear grade showed a trend but not statistically significant association, presumably due to low number of patients in our study. M-1 macrophages (CD68-positive, arginase-1 negative) were part of the infiltrate; their level and distribution did not correlate with clinical outcomes. In contrast to predicting good prognosis in invasive disease, LPI in DCIS correlates with high nuclear grade and should alert the pathologist and clinician of a possibility of more aggressive disease course.

Biography

Shagufta Khan is currently working as an Assistant Professor for Pathology and Laboratory Medicine Department at University of Cincinnati Medical Center, USA.

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