Cytological features of a pleomorphic/necrotic lobular carcinoma in situ of the breast detected by screening mammography

Tomonori Kawasaki,1 Tsutomu Yuminamochi,2 Y Ishii,2 K Nakazawa,2 Shiori Sato,2 Noriyuki Yamada,1 Junichi Ambo,1 Suzuki Moritani,3 Syu Ichihara3 & Tanotsu Sugai 1

1Department of Molecular Diagnostic Pathology, Iwate Medical University School of Medicine, Morioka, 2Department of Diagnostic Pathology, University of Yamanashi Hospital, Yamanashi, and 3Department of Pathology, National Hospital Organization Nagoya Medical Center, Aichi, Japan

Objective: Mammary pleomorphic lobular carcinoma in situ (PLCIS) is regarded as a pre-invasive counterpart of PLC. However, the cytologic features of this tumor have yet to be sufficiently analyzed and definitively determined.

Methods: The patient was a 58-year-old postmenopausal Japanese woman. Screening mammography revealed pleomorphic micro-calculcations in a segmental distribution in the upper outer portion of the left breast. We performed ultrasound-guided, fine needle aspiration (FNA) of an irregularly-shaped hypoechoic mammary area with hyperechoic spots.

Results: The FNA specimen showed high cellularity in the necrotic background with calcifications (Fig. 2a, b). Singly dissociated tumor cells were prominent, whereas loosely-arranged tumor cell clusters were also observed. Large tumor cells were polygonal in shape and had eosinophilic, granular and/or foamy cytoplasm (Fig. 2c). The nuclear/cytoplasmic (N/C) ratio was intermediate, and some tumor cells contained intra-cytoplasmic lumina and/or mucin with a ‘signet-ring’ morphology (Fig. 2d). The nuclei had a fine chromatin pattern and irregular shapes with nuclear grooves, frequently with distinct nucleoli. Binucleated tumor cells were occasionally present. Mitotic figures were not uncommon. Histologically, the diagnosis of PLCIS, accompanied by comedo-like necrosis with dystrophic calcification, was confirmed based on the mastectomy specimen (Fig. 3). Immunohistochemically, cancer cells were negative for E-cadherin and positive for 34BES12 and GCDFP15 (Fig. 4).

Conclusion: The cytological features of lobular carcinoma in situ have rarely been reported. Invasive lobular carcinoma rarely causes mammographic abnormalities and palpable masses. Herein, we showed the characteristic cytopathological findings of mammographically-detected PLCIS.

Figure 1 The cut surface of the mastectomy specimen contains an irregular lesion with grouped calcifications.

Figure 2 Cytological findings on fine needle aspiration smear of pleomorphic lobular carcinoma in situ. (a) High cellularity with necrotic material (PAP, ×20, original magnification). (b) Note calcified deposits accompanied by dissociated cancer cells (PAP, ×40, original magnification). (c) Loosely-cohesive and single, detached cancer cells in the background. (PAP, ×400, original magnification). (d) The nuclei with fine chromatin has eccentrically located with conspicuous nucleoli. Cytoplasmic vacuoles with faintly eosinophilic mucin are observed in some cancer cells (PAP, ×600, original magnification).

Figure 3 Histopathological findings of pleomorphic lobular carcinoma in situ. (a) The tumor cells shows loosely cohesive with central necrosis. (b) Numerous intra-cytoplasmic vacuoles present as well as many signet ring cell features.

Figure 4 Immunohistochemical findings of pleomorphic lobular carcinoma in situ. (a) E-cadherin. (b) Pan-cytokeratin AE1/AE3 (so-called “bag of marbles” appearance).

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DISCLOSURE
None Declared.