

The Immured Mammary Metamorphosis-Ductal carcinoma in situ

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Ductal carcinoma in situ is a premalignant condition of the breast characteristically discerned through screening mammography and confirmed with pertinent histology. Additionally designated as intra-ductal carcinoma, the lesion may occur as a non-invasive, stage 0 carcinoma breast. Cogent therapy ensures superior prognostic outcomes with > 97% proportionate, extended survival. The premalignant, non-invasive condition exhibits mammary ducts and lobules layered by atypical epithelium wherein stromal invasion is absent. Ductal carcinoma in situ with occasional stromal infiltration emerges as a low grade lesion or high grade, aggressive neoplasm. Multiple lesions or foci of ductal carcinoma in situ articulated within diverse mammary quadrants configure a ‘multi-centric’ neoplasm [1, 2]. Of obscure aetiology, factors contributing to genesis of ductal carcinoma in situ are early menarche, delayed childbearing, delayed menopause, nulliparous women or family history of carcinoma breast. Hormonal therapy or oestrogen-progesterin hormone replacement therapy following menopause for > 5years, genetic mutations of BRCA1 or BRCA2 genes, atypical ductal hyperplasia breast and exposure to radiation or chemicals may contribute to disease emergence. Proportionate occurrence of non-invasive carcinoma is enhanced in women > 45 years [1, 2].

Generally asymptomatic, ductal carcinoma in situ may exceptionally expound a breast or an axillary lump, redefine outline or magnitude of mammary gland, engender nipple discharge, tenderness, inversion or retraction of nipple and ridging of mammary cutaneous surfaces [1, 2]. Nipple, areola and cutaneous surface appears warm, oedematous, inflamed, hyperaemic or scaly [1, 2].

Contingent to cellular and architectural pattern, ductal carcinoma in situ is categorized as solid, cribriform, papillary or micro-papillary variants. Tumefaction is subdivided into high grade, intermediate grade or low grade lesions with configuration or absence of ‘comedo’ tumour pattern [1, 2].

Traditionally, ductal carcinoma in situ is classified into •cribriform variant comprised of proliferating ductal epithelial cells demonstrating fenestrations and multiple, spherical, rigid, extracellular lumen with ‘punched out’ appearance. Generally, tumour cells are uniformly spread, equidistant and polarized wherein cellular axis appears perpendicular to central lumen. Trabecular bars are constituted of rigid, cellular rows with perpendicular long axis. Roman bridges depict curvilinear, trabecular cellular bars attaching seg-

ments of ductal epithelial layer.

- micro-papillary variant exhibits papillary fronds and tufts devoid of fibro-vascular core appearing to protrude into duct lumen. Papillae delineate uniform club-shaped cells configuring micro-papillae. Cellular fronds display adherent tips articulating cellular bridges and arcades.
- papillary variant depicts papillary fronds with prominent fibro-vascular septa protruding into duct lumen. Papillary cores are devoid of myoepithelial cell layer. •solid variant enunciates duct lumens or lobules pervaded with sheets of cohesive ductal epithelial cells. Low grade or intermediate grade neoplasms exemplify uniformly distributed tumour cells. •flat or clinging variant exhibits singular or dual layer of high grade, malignant cells coating mammary glands with an enlarged, centric, empty lumen.
- comedo variant is a high grade neoplasm constituted of centric, expansible tumour necrosis with impregnated cellular debris and coarse micro-calcification [1, 2].

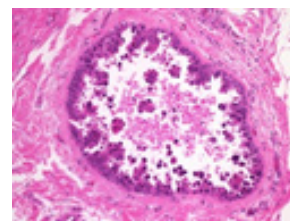


Figure 1: Ductal carcinoma in situ micro-papillary variant demonstrating short cellular tubules and spikes devoid of a fibro-vascular core and ductules encased with fibrosis [5].

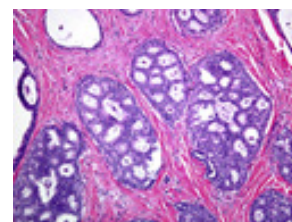


Figure 2: Ductal carcinoma in situ cribriform variant depicting fenestrations, extracellular, punched out lumen, curvilinear bridges and cellular bars with perpendicular long axis [6].

Contemporary grading of ductal carcinoma in situ is contingent to nuclear grade and presence or absence of tumour necrosis and is designated as nuclear grade which is subdivided into ~low grade tumefaction demonstrating monotonous, miniature, spherical nuclei with smooth contour, diffuse, fine chromatin and absent or indistinct nucleoli. Mitotic figures are absent or infrequent and tumour necrosis is uncommon [3, 4].

Intermediate grade tumefaction enunciating moderate cellular and nuclear pleomorphism, mild to moderate anisonucleosis, variably coarse chromatin, occasional nucleoli and exceptional mitotic figures. Lesion may simulate mammary ductal hyperplasia [3, 4].

High grade neoplasm exemplifies prominent cellular and nuclear pleomorphism, enlarged nuclei with vesicular, irregularly distributed nuclear chromatin, prominent nucleoli and frequent mitotic activity. 'Comedo' necrosis may be frequently discerned [3, 4]. Necrosis within the tumefaction may be manifest or absent wherein necrosis is classified as focal or comedo. Myoepithelial cell layer circumscribing tumour-containing mammary ducts and spaces appears uninterrupted. Focal attenuation of myoepithelial cell layer may ensue in high grade ductal carcinoma in situ [3, 4].

Stroma enveloping the tumour configures a prominent, zonal reaction delineating a chronic inflammatory infiltrate and focal fibrosis or sclerosis, especially in high grade neoplasms [3, 4]. Cancerization of lobules with tumour extension into acini of terminal duct-lobular unit is observed [3, 4].

Additionally, ductal carcinoma in situ exemplifies variants such as apocrine, cystic hypersecretory, squamous, spindle cell, clear cell, signet ring cell, mucinous, small cell and undefined categories [3, 4].

Predominantly discerned with mammography (~85%), ductal carcinoma in situ demonstrates miniature calcium aggregates configuring micro-calcifications [3, 4].

Sentinel node biopsy is optimally adopted for discerning high risk or grade III ductal carcinoma in situ representing with a palpable mass or assessing enlarged lesions upon imaging [3, 4]. Surgical extermination of lesion is a preferential, recommended therapeutic strategy. Breast-conserving manoeuvre as lumpectomy or mastectomy can be adopted [3, 4].

Mastectomy is optimally employed in neoplasms with persistent microscopic infiltration of tumour perimeter following localized excision or in tumefaction demonstrating diffuse micro-calcification [3, 4].

Mastectomy following core needle biopsy or excisional tissue sampling may be appropriately defined with concomitant sentinel node biopsy. Post operative radiotherapy decimates lesion recurrence or emergence of invasive carcinoma [3, 4].

Tamoxifen is recommended in treating neoplasms reactive to oestrogen receptors [3, 4]. Chemotherapy is inessential in treating non-invasive ductal carcinoma in situ [3, 4].

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5. Image 1 Courtesy: Webpathology.com
6. Image 2 Courtesy: Research gate

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