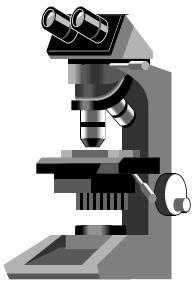
CALIFORNIA
TUMOR TISSUE REGISTRY

Breast Pathology

Minutes – Subscription B

January 2016



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FILE DIAGNOSES

CTTR Subscription B January 2016

Case 1: **MEDULLARY CARCINOMA,** Breast

Case 2: **MYOFIBROBLASTOMA**, **Breast**

Case 3: **COMBINED MICROPAPILLARY/DUCTAL AND LOBULAR CARCINOMA,** Breast

Case 4: **PHYLLODES TUMOR,** Breast

Case 5: **FIBROMATOSIS,** Breast

Case 6: **GRANULAR CELL TUMOR,** Breast

Case 7: **INVASIVE CRIBRIFORM CARCINOMA,** Breast

Case 8: **GYNECOMASTIA,** Breast

Case 9: **INTRADUCTAL MICROPAPILLARY CARCINOMA,** Breast

Case 10: **MUCINOUS ADENOCARCINOMA,** Breast

CASE #1: Accession No. 27765 or 8448

DIAGNOSIS: MEDULLARY CARCINOMA, Breast

Diagnoses submitted in decreasing order of frequency:

Medullary carcinoma, atypical
High-grade ductal carcinoma with medullary features
Lymphoma, large cell
Invasive ductal carcinoma with lymphoid stroma, Lymphoepithelioma-like carcinoma
Rosai-Dorfman disease
Invasive high-grade poorly differential carcinoma focal LVI
Malignant neoplasm
Plasma cell mastitis

Discussion
This circumscribed mass shows high grade tumor cells growing in a syncytial growth pattern. A prominent mononuclear infiltrate is present, in many areas obscuring the underlying tumor cells. The tumor cells have a high N/C ratio with large vesicular nuclei and macronucleoli. Surrounding breast tissue shows no in-situ or infiltrative carcinoma.

Medullary carcinoma is rare, <1% of all invasive breast carcinomas. There is an increased incidence in BRCA-1 mutation carriers. Strict criteria are required for diagnosis. If not all diagnostic features are present (circumscription, high grade tumor in syncytial growth pattern or large sheets, mononuclear inflammatory cell infiltrate, scant stroma, numerous mitoses, absence of in-situ or invasive ductal carcinoma) it is best to report as high grade infiltrating ductal carcinoma NOS, some use the term atypical medullary carcinoma instead. Medullary carcinoma tumor cells are triple negative (ER, PR, HER2/Neu –ve).
Medullary carcinoma had been reported to have a significantly better prognosis than a similar grade infiltrating ductal carcinoma; however recent studies have raised doubts about the better behavior of these tumors. Differential diagnosis: Infiltrating ductal carcinoma, Large cell lymphoma, Lymphoepithelioma-like carcinoma, collision tumor of carcinoma with lymphoma.

CASE #2: Accession No. 29160

DIAGNOSIS: MYOFIBROBLASTOMA, Breast

Diagnoses submitted in decreasing order of frequency:

Myofibroblastoma/Myofibrosarcoma
Metaplastic carcinoma with myoepithelial features
Metaplastic carcinoma, spindle cell type
Fibrosarcoma, Sarcoma, Leiomyosarcoma
Nodular fasciitis
Inflammatory myofibroblastic tumor
Sarcoma
Hamartoma, rule out fibromatosis

Discussion
This tumor consists of a circumscribed mass of spindled cells growing in a somewhat haphazard growth pattern with short disrupted fascicles and dense interpersed collagen. There are scattered areas of inflammatory cells. Occasional mitotic figures are identified. There are a few foci where the tumor stroma appears myxoid and to "break apart" – a feature that is commonly seen in nodular fasciitis, along with the inflammatory cell infiltrate. The negative cytokeratin stain helps exclude metaplastic carcinoma. The Smooth Muscle Actin and S100 positivity are suggestive of the tumor being of myofibroblastic origin.

Myofibroblastoma of the breast is found equally in older males and females. This is a rare spindle cell neoplasm arising from the mammary stroma. It presents as a solitary slow growing mass, and is benign in behavior. Tumor is usually desmin, actin, CD 34, ER and PR +. This tumor is related to solitary fibrous tumor and spindle cell lipoma, as it also shows 13q-, 16q-. Differential diagnosis: Nodular Fasciitis, Metaplastic carcinoma, Sarcoma, Fibromatosis, Spindle cell lipoma, Leiomyoma, PASH, low grade myofibroblastic sarcoma (infiltrative, high mitotic rate).

CASE #3: Accession No. 29390

DIAGNOSIS: COMBINED MICROPAPILLARY/DUCTAL AND LOBULAR CARCINOMA, Breast

Diagnoses submitted in decreasing order of frequency:

Infiltrating ductal and lobular carcinoma with micropapillary features
Micropapillary carcinoma and lobular carcinoma
Mixed invasive lobular and ductal carcinoma
Infiltrating lobular carcinoma, Pleomorphic lobular carcinoma
Invasive ductal carcinoma
Micropapillary carcinoma and neuroendocrine tumor
Invasive lobular carcinoma with neuroendocrine differentiation
Malignant neoplasm

Discussion
This rare breast neoplasm (comprising <1-2% of mammary cancers) shows mixed invasive ductal carcinoma with major micropapillary component admixed with invasive lobular carcinoma. Behavior is very aggressive with a higher incidence of secondary primary breast cancers and poor survival. DCIS is also identified in this case. Some tumors may also show LCIS components. Micropapillary tumor component shows solid and hollow aggregates of tumor cells surrounded by clear stromal spaces that resemble vascular channels. Lymphovascular space invasion is particularly common with micropapillary cases and correlates with increased nodal tumor. All axillary lymph nodes in this patient were positive for metastatic carcinoma with extra-nodal spread. MUC-1and EMA stains shows reverse polarity with basal staining (stroma-facing surface of tumor cell clusters). Micropapillary carcinoma may be pure but is usually admixed with infiltrating ductal carcinoma. It is rarely associated with other carcinoma types as in this case.

CASE #4: Accession No. 31174

DIAGNOSIS: PHYLLODES TUMOR, Breast

Diagnoses submitted in decreasing order of frequency:

Phyllodes tumor, low grade, borderline, with myofibroblastic stroma
Juvenile fibroadenoma
Fibroadenoma

Discussion
This is a biphasic tumor, showing stromal overgrowth with a leaf-like intracanalicular growth pattern in cleft-like spaces. Tumor shows condensation of the stromal cells around the epithelial/myoepithelial clefts. Tissue fragmentation is identified. Differential diagnosis includes Juvenile fibroadenoma (no tissue fragmentation, leaf-like growth pattern or or peri-epithelial stromal cell condensation).

Phyllodes tumors comprise 1% of breast tumors, and are uncommon in children. There is an increased incidence in Hispanics. Tumors are classified as benign, borderline and malignant, or low grade and high grade based on tumor interface, proportion of stromal component, mitotic activity/10 HPF, and presence of anaplasia. Clear resection margins are essential to prevent local recurrence.

CASE NO #5: Accession No. 28298

DIAGNOSIS: FIBROMATOSIS, Breast

Diagnoses submitted in decreasing order of frequency:

Fibromatosis, Spindle cell neoplasm with myofibroblastic differentiation
Fibromatosis vs. Nodular fasciitis
Nodular fasciitis
Dermatofibroma

Discussion
This is an infiltrative spindle cell neoplasm with long sweeping interlacing fascicles and a variable amount of cellularity and interspersed collagen. Tumor infiltrates the surrounding fat. A few small lymphoid clusters are present. Mitoses are not identified. There is no epithelial cell component.

Fibromatosis of the breast is rare, < 0.2% of breast tumors, and is usually seen in women of childbearing age. There are a few case reports of these tumors being associated with trauma and breast implants. Fibromatosis may be present in patients with Gardner's syndrome. Tumor is positive for myofibroblastic markers and beta catenin. Treatment consists of excision with wide margins. Local recurrences are common and are difficult to differentiate from fibrous scar tissue. Differential diagnosis: nodular fasciitis, metaplastic carcinoma, inflammatory pseudotumor, phyllodes tumor.

CASE #6: Accession No. 15947

DIAGNOSIS: GRANULAR CELL TUMOR, Breast

Diagnoses submitted in decreasing order of frequency:

Granular cell tumor

Discussion
Tumor consists of polygonal cells with abundant eosinophilic granular cytoplasm. Nuclei are small, bland and uniform with prominent nucleoli. A small amount of interspersed collagenous stroma is present. No mitotic figures or necrosis is identified.

Granular cell tumor is an uncommon breast neoplasm. It is seen in women in their 40s, African-Americans are more commonly affected. Tumor arises from Schwann cells of peripheral nerves. Overlying skin may show pseudo-epitheliomatous hyperplasia. Positive stains: PAS-D, CD 68, S100. Differential diagnosis: Apocrine carcinoma, melanoma.

CASE #7: Accession No. 31001

DIAGNOSIS: INVASIVE CRIBRIFORM CARCINOMA, Breast

Diagnoses submitted in decreasing order of frequency:

Invasive cribriform carcinoma
Invasive ductal carcinoma, moderately differentiated
Adenoid cystic carcinoma
Basal cell carcinoma
Invasive solid papillary carcinoma

Discussion
Section shows an infiltrative breast carcinoma with islands of tumor cells with sharply punched out spaces. The tumor nests are large and of variable size and show expansive growth pattern. Tumor nuclei are low grade, with minimal pleomorphism. Mitoses are not readily identified. No tubular carcinoma is identified.

Cribriform carcinoma is rare (1%-3% of breast malignancies). It is related to tubular carcinoma, some tumors may show mixed patterns with both tubular and cribriform carcinoma components. It is associated with cribriform DCIS. Cribriform or solid sheets of tumor nests infiltrate the breast stroma. A surrounding myoepithelial component is absent. Tumor cells may show apical snouts and should be nuclear grade I in at least 90% of the cells. Mucin is not present. Mitotic figures are rare. ER, PR +. Tumor has an excellent prognosis, even with nodal metastases. Differential diagnosis: Cribriform DCIS (myoepithelial cells present, smaller tumor cells), Adenoid cystic carcinoma (CD 117+, mixed epithelial and myoepithelial cell neoplasm, basement membrane component in punched out spaces).

CASE #8: Accession No. 32244

DIAGNOSIS: GYNECOMASTIA, Breast

Diagnoses submitted in decreasing order of frequency:

Gynecomastia
Gynecomastia with PASH
Pseudoangiomatous stromal hyperplasia

Discussion
There is a proliferation of ducts with surrounding edema and stromal cuffing. Epithelial cells show micropapillary hyperplasia. No lobular growth is identified. The interspersed collagenous stroma shows pseudoangiomatous stromal hyperplasia.

Gynceomastia may be seen in males around the time of puberty and is often bilateral; however it may be more pronounced in one breast (more often left). This may occur due to hormonal imbalances. Gynecomastia may also be seen in patients with functioning testicular neoplasms, other neoplasms, liver cirrhosis, drugs and Klinefelter's syndrome.

CASE # 9: Accession No. 27049

DIAGNOSIS: INTRADUCTAL MICROPAPILLARY CARCINOMA, Breast

Diagnoses submitted in decreasing order of frequency:

Micropapillary DCIS, high grade
Low grade DCIS, papillary type
Ductal Carcinoma in situ (DCIS)
Apocrine DCIS
High-grade DCIS, Hypersecretory type
Clinging type ductal carcinoma in situ
Papillary carcinoma
Intermediate DCIS

Discussion
Sections reveal breast parenchyma containing areas of ductal carcinoma-in-situ with a micropapillary pattern. Note the papillae are bulbous with apical broadening and lack fibrovascular cores. The tumor cells have large pleomorphic nuclei and eosinophilic cytoplasm (apocrine features). There is associated dilatation of ducts with prominent proteinaceous secretions and focal comedo-type necrosis.

CASE #10: Accession No. 225761

DIAGNOSIS: MUCINOUS ADENOCARCINOMA, Breast

Diagnoses submitted in decreasing order of frequency:

Mucinous carcinoma, Colloid carcinoma
Invasive ductal carcinoma with mucinous features
Mucinous carcinoma with neuroendocrine differentiation

Discussion

Spherical islands of tumor cells are present dispersed within pools of light staining extracellular mucin. Within the mucin pools are thin fibrous septae and small vessels. The tumor nuclei are low grade and show minimal pleomorphism. Occasional mitotic figures are present.

Mucinous/Colloid carcinoma is an uncommon tumor, accounting for <3% of invasive breast carcinomas. It is Seen in older women in their 70s and is associated with a favorable prognosis. Patients often present with a soft, well-circumscribed mass. Low grade tumor cell clusters are present floating in a sea of mucin. The extracellular mucin may be due to inverted polarity of the tumor cells with the mucin being secreted into the stroma rather than the luminal surfaces. At least 50% of tumor volume should consist of mucin in mucinous tumors. Pure mucinous tumors have 90% or greater mucinous component, mixed variants contain 75 – 90% mucinous component and have a worse prognosis. Type A tumors are paucicellular and show no neuroendocrine differentiation, type B tumors are hypercellular and show neuroendocrine differentiation (Chromogranin, synaptophysin +). There is also an intermediate type AB. In situ component may be present (DCIS may also be mucinous)

Tumors are: ER, PR, MUC2 +, HER 2 -ve. Differential diagnosis: Mucinous DCIS, metastatic mucinous carcinoma, micropapillary carcinoma, carcinoma with mucinous differentiation (< 50% mucinous component)

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