Case report

Pleomorphic adenoma of breast - a case report and distinction with metaplastic carcinoma

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Introduction

Pleomorphic adenoma, also known as mixed tumour, is a benign tumour which typically presents as a painless, persistent mass. The majority of pleomorphic adenomas involve the salivary glands, most commonly the parotid gland. Histologically, these tumours are encapsulated and consist of epithelial, myoepithelial and stromal components. The stromal component may form a variety of structures including tubules, ductules, or trabeculae and the stromal component may also consist of a variety of forms including mucoid, myxoid, cartilaginous, and osseous elements. (1,2)

Pleomorphic adenoma of breast is rare, and to date only 68 cases have been documented in the literature. We report another case of pleomorphic adenoma of the breast, highlighting the rare occurrences of such tumours in the female breast and its differential diagnosis.

Case report

A 60 year old woman with no significant past medical history presented at the surgical out patient department with the complaint of a palpable mass in her right breast. On examination, it measured 3 cm in maximum dimension and was subareolar in location. There was no nipple retraction or discharge. It was clinically followed up by serial mammograms without significant change. The mass was completely excised.

The excised mass consisted of a firm, well circumscribed, ovoid piece of soft pink tissue measuring 3 x 2.5 x 2.5 cm. On sectioning, the mass was gritty. Cut surface was grayish white and glistening with yellow discolouration. Histologically, the mass showed a well demarcated cellular tumour comprising of benign glandular epithelial and myoepithelial cells in a chondromyxoid stroma. The epithelial cells were arranged in tubules, islands, cords and sheets having round to oval nuclei with bland nuclear chromatin and scant cytoplasm. At places, the chondroid stroma showed osseous differentiation. Large areas of calcification were also seen. (Fig.1). The diagnosis of

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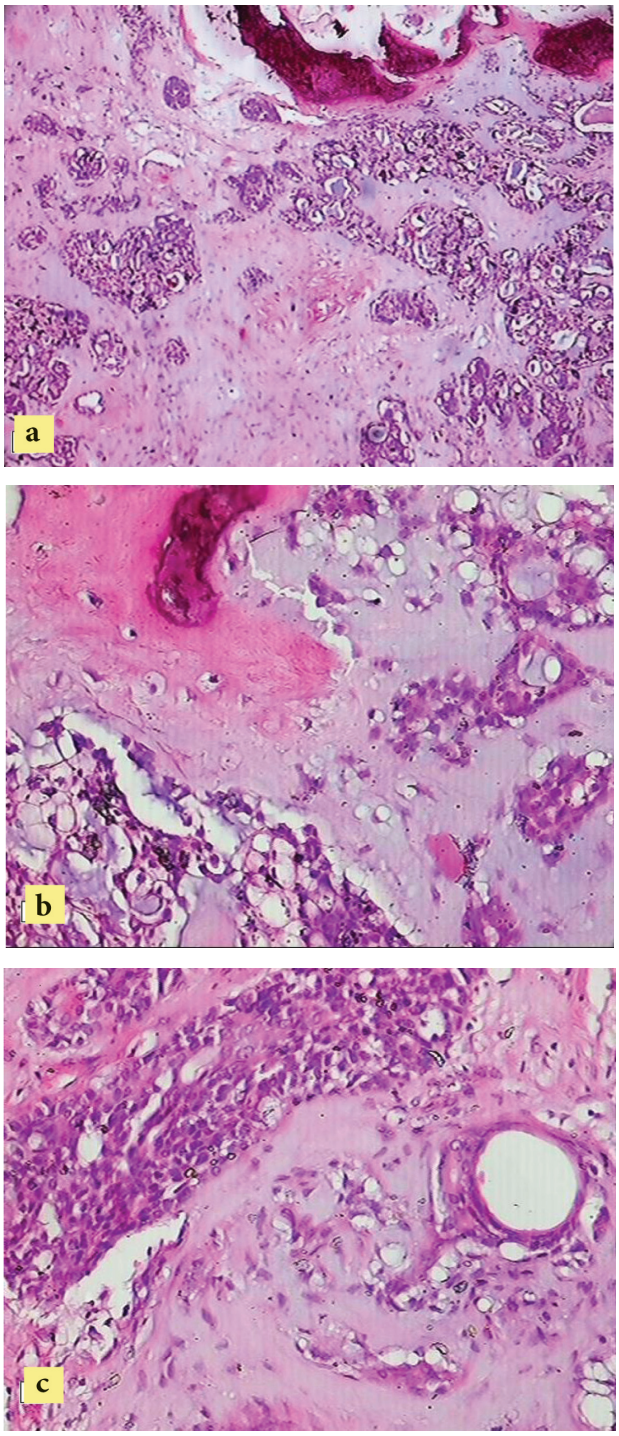

Fig.1 (a) Proliferation of cords and ducts in the chondromyxoid stroma (H & E x 100), (b) Cords and ducts lined by myopeithelial cells surrounded by osseous metaplastic foci with calcification (H & E x 400), (c) Proliferation of ductal epithelial cells mimicking malignancy (H & E x 400).

Pleomorphic Adenoma of Breast (PAB) was made. Two months after excision of the mass, at the time of writing this report, the patient was free of recurrence.

Discussion

Pleomorphic Adenoma of Breast (PAB) is an uncommon neoplasm, accounting for 68 cases in the literature (1). It was first reported in 1906 by Lecene, who described a case with cartilaginous and osseous metaplasia (3). It is more common in women than men (female – male ratio > 10:1) and patients range from 23 to 78 years. Tumour size varies from 0.7 to 20 cms in diameter and is commonly located in the subareolar area (4). These are usually slow growing solitary painless tumours. They are often encapsulated, well defined ovoid and round masses. On mammography, tumours appeared circumscribed and homogenous with dense and speckled calcification. Lesions with irregular infiltrative edges have also been reported (5).

Histologically, pleomorphic adenoma shows a remarkable degree of morphologic diversity. The essential components are epithelial, myoepithelial and mesenchymal elements. The epithelial component shows a variety of cell types including cuboidal, basaloid, squamous, spindle cell, plasmacytoid and clear cells. These cells are cytologically bland without atypia or mitotic figures. Myoepithelial

cells may form a fine reticular pattern or sheets of spindle shaped or plasmacytoid cells. The mesenchymal component may be myxoid/ mucoid, cartilaginous or hyalinised. Cells within the myxoid material are myoepithelial cells in origin and tend to blend into the surrounding stroma (6).

The epithelial cells are strongly positive for cytokeratin, carcinoembryonic antigen, and epithelial membrane antigen, and are occasionally positive for vimentin and glial fibrillary acidic protein. Myoepithelial cells are strongly positive for vimentin, muscle-specific actin, and cytokeratin. Oestrogen and progesterone receptor staining is unpredictable, with variable positivity in some cases (7).

The differential diagnosis of PAB includes metaplastic carcinoma, mucinous carcinoma, adenomyoepithelioma, intraductal papilloma and fibroadenoma (Table 1a,1b,1c). The breast tumours with abundant cartilaginous and osseous metaplasia can be confused with metaplastic carcinoma. However, metaplastic carcinomas are characterized by the presence of poorly differentiated infiltrating carcinoma admixed with atypical or frankly malignant mesenchymal elements, thereby making distinction feasible. PAB, by contrast, shows minimal to absent atypia and a proliferation of myoepithelial cells admixed with the epithelial component.

Mucinous carcinoma is another differential diagnosis since this tumour is cytologically bland and has an abundant myxoid stroma. Another differential diagnosis is intraductal papilloma with osseous and chondroid differentiation. Papillomas can be distinguished by their lack of proliferative myoepithelial elements, a feature that is characteristic of PAB (1,8)

Table 1a. The features differentiating pleomorphic adenoma from metaplastic carcinoma

Pleomorphic adenoma	Metaplastic carcinoma
Circumscribed	Not circumscribed (infiltrating)
Cytologically bland	Usually cytologically atypical cells in cases resembling pleomorphic ademona
No necrosis	Necrosis +/-
Benign mesenchymal elements	Atypical or frankly malignant mesenchymal elements
Myoepithelial cells present	Lacks myoepithelial cells

Table 1b. The features differentiating pleomorphic adenoma from infiltrating ductal carcinoma

Pleomorphic adenoma	Infiltrating ductal carcinoma
Circumscribed	Not circumscribed (infiltrating)
Cytologically bland	Usually cytologically atypical cells in cases resembling pleomorphic ademona
Chondromyxoid stroma present	Lacks chondromyxoid stroma
Myoepithelial cells present	Lacks myoepithelial cells

Table 1c. The features differentiating pleomorphic adenoma from adenomyoepithelioma

Pleomorphic adenoma	Adenomyoepithelioma
Chondromyxoid stroma present. Otherwise the lesions may be identical	Lacks chondromyxoid stroma

PAB is a rare and benign lesion with extremely rare cases of malignant transformation which can be clearly exemplified by the lack of metastases in all reported cases. Therefore, treatment consists of wide excision with clear margins. Unfortunately, 30% of the reported cases in the literature were misdiagnosed as carcinoma and treated by mastectomy. Misdiagnosis is either due to suspicious mammographic and clinical findings or due to misinterpretation of fine needle aspirates and frozen sections (1,9)

Hence, the pathologists and clinicians should be aware of this rare tumour and its clinical, mammographic and variable histological appearances, in order to avoid misdiagnosis and an unwarranted mastectomy.

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