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Adenomyoepithelioma [AME] with cystic change: A case report

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Abstract
Adenomyoepithelioma [AME] of breast with cystic change is a rare tumour. AME is characterized by dual differentiation in to luminal cells and myoepithelial cells. Spectrum of histologic patterns is observed among these tumours and even in different areas of individual tumours. AME has been divided into three patterns of growth: spindle-cell, tubular and lobulated types. This tumour is considered to have biologic behaviour of low malignant potential. Here we present a case of AME with cystic changes in a 31 year old female.

Keywords: Adenomyoepithelioma, cystic change, breast

Introduction
AME of breast is a rare tumour, which was first described by Hamperl in 1970. AME's are characterised by biphasic proliferation of the myoepithelial and epithelial cellular elements. AME's are classified as tubular, lobulated or spindle cell variants on the basis of their growth patterns. Rapid enlargement of a mass is highly suggestive of malignant change. Although AME is regarded as benign in nature, local recurrences and nodal and distant metastasis have been described [1].

Case report
A 31 year old female came with complaints of slowly growing lump in the left breast involving both the upper quadrants since 6 years. Ultrasonography [USG] of the lump was done and was suspicious of phyllodes tumour. Wide local excision of left breast tissue along with mass was done and specimen sent for histopathological study. On gross [Fig.1], the received breast tissue was 12 x 10 x 7 cm in dimensions. On sectioning, a well circumscribed, capsulated mass of size 9 x 9 x 7 cm with homogenous greyish white cut surface with multiple cysts was noted.
Microscopically [Fig.2 A] showed tumour tissue composed of proliferation of clear myoepithelial cells around epithelium lined spaces. At places [Fig.2 B,C] cystic degeneration, apocrine changes and papillary proliferations [Fig.2 D] were seen. Stroma showed focal inflammatory infiltrate with foci of fibrosis.
IHC [Immunohistochemistry] was done to confirm the diagnosis and revealed myoepithelial cells with [Fig.3: A] nuclear p40 positivity, [Fig.3; B] Calponin positive cytoplasmic staining, associated with [Fig.3: C]: ER positivity in tumour cells and epithelial cells with [Fig.3:D]: Pan CK positive cytoplasmic staining. [IHC: 10X].

Fig.1: On gross: Cut surface of left breast tissue of size 12 x10 x7 cm with well circumscribed mass of size 9 x 9 x 7 cm, homogenous grey white with cystic spaces.

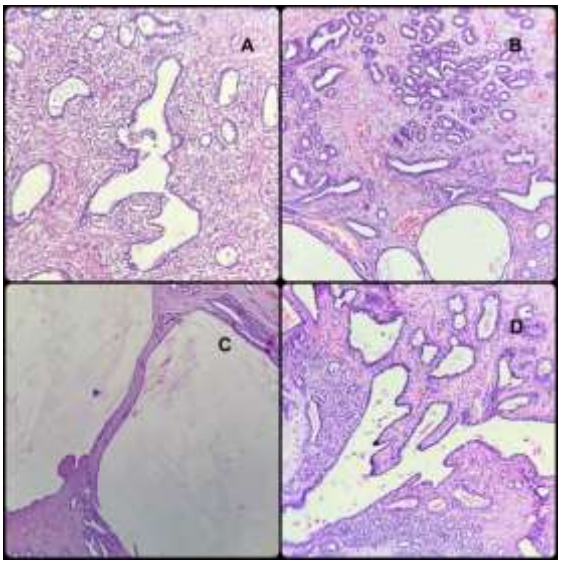

Fig 2: Microscopy showed plenty of tubules, cystic spaces and papillary projections in the lumen. The tubules were lined by luminal epithelial cells surrounded by outer myoepithelial cell proliferations. [H&E: 10X]

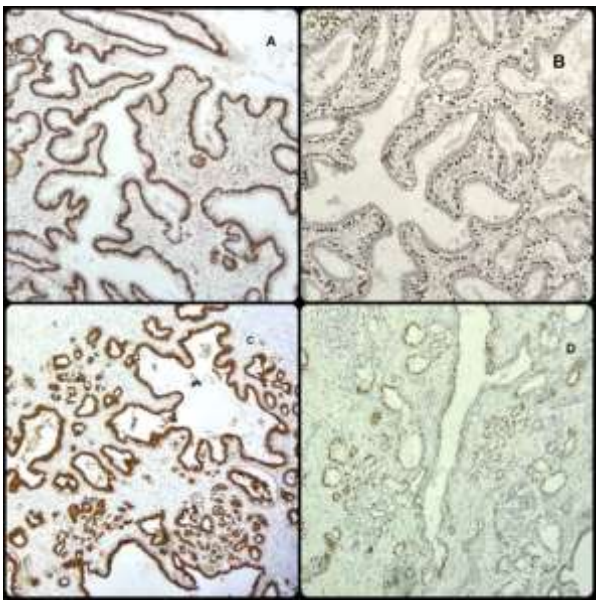

Fig 3: Immunohistochemistry showed [A]: p40 nuclear positivity in myoepithelial cells, [B]: Calponin positive cytoplasmic staining in myoepithelial cells, [C]: ER positivity inn tumour cells, [D]: Pan CK positive cytoplasmic staining in epithelial cells. [IHC: 10X]

Discussion

Myoepithelial lesions of the breast are classified into myoepitheliosis, adenomyoepithelial adenosis, adenomyoepithelioma and malignant myoepitelioma [2]. Adenomyoepithelial adenosis (AA) is histologically indistinguishable from a small (microscopic) adenomyoepithelioma (AME). In most described cases, (AA) blends with or surrounds an AME [3].

The 2012 World Health Organization (WHO) classification of breast tumours distinguishes AME's as benign tumours composed of a biphasic proliferation of phenotypically variable myoepithelial cells around small epithelial lined spaces. Tavassoli described these tumours to have spindle, tubular, and lobulated histologic patterns. The tubular growth pattern is characterized by small round tubules lined by luminal epithelial cells, which are reminiscent of tubular adenoma, but with more prominent and hyperplastic myoepithelial cells as seen in our present case [Fig.2] Clear cell change within myoepithelial cells may be seen [4]. Haemorrhage and focal necrosis have also been reported. The second variant is the spindle cell type, which is composed of a predominantly spindled myoepithelial cell proliferation admixed with a few columnar, epithelial-lined tubules. Most AMEs have papillary configuration and, therefore, have been considered a variant of intraductal papilloma by some authors [5].

One or both of the components of the tumour may exhibit malignant transformation, which is termed AME with carcinoma [malignant AME], characterized by a higher mitotic rate, infiltrative growth pattern, marked cytologic atypia, necrosis, and/or metastasis of cells of either epithelial or myoepithelial component. Papillary areas and subareolar location are often findings of AME [4].

Clinically, AME's tend to present as palpable, solid, well circumscribed or lobulated, and firm or hard masses. Usually, such a mass is near the areola and centrally located, although more peripheral localizations are not unknown. These tumours have reportedly been palpable for a 6 years or more before excision in some cases but most patients describe a recent onset. The age range of patients in the literature is 27–80 years. Our patient was 31-year old. The reported sizes of adenomyoepithelioma vary from 0.5 to 13 cm, and these measures had been present for 6 months to 50 years. The imaging appearances of the breast adenomyoepithelioma are not specific. Microscopically, tan-grey, white, yellow and pink colorations have been mentioned. Small cysts are observed in a minority of cases [5].

The differentiation of papilloma with prominent myoepithelial cells from AMEs can be made based on architecture, pattern, and degree of myoepithelial proliferation. Those cases with only myoepithelial cells lining the papillae and forming the basal layer below the epithelial elements and without nests, nodules, or an increased proportion of myoepithelial cells are categorized as papillomas with prominent myoepithelial cells. A diagnosis of AME is favoured if myoepithelial proliferation is extensive and involves the lesion diffusely. Clear cell carcinoma may also mimic AMEs, but that may be differentiated by the presence of both epithelial and myoepithelial cell types, and confirmed with immunohistochemical stains, if necessary [6].

The interplay between epithelial and myoepithelial cell elements is highlighted by immunohistochemical staining with antibodies specific for these two components. The

cytoplasm of epithelial cells uniformly reacts with antibodies to cytokeratin's. Calponin is also highly sensitive for detecting myoepithelial cells with cytoplasmic staining. Proliferative indices of Ki-67 immunostaining are present in both compartments of the tumour but may be higher in the myoepithelial cells than it is in the ductal cells. Immunostaining for oestrogen is either negative or weakly positive in a patchy pattern [6]. Many cases had immunohistochemical stains supporting the presence of myoepithelial cells in the form of S-100, calponin, smooth-muscle-actin (SMA), or p63 immunohistochemical stains [4].

Conclusion

Recognition of the biphasic cellular elements and the characteristic overall architecture of the tumour in combination with IHC are essential to establish the correct diagnosis. Although most tumours have a benign clinical course, local recurrences, malignant transformations and distant metastasis have been reported. Therefore a complete excision with adequate margins is required.

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