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Fine Needle Aspiration Cytology of Adenomyoepithelioma of the Breast

- Comparison with Typical Fibroadenoma -

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Adenomyoepithelioma is an uncommon benign tumor of the breast. We present the fine needle aspiration cytologic features of adenomyoepithelioma in a 23 year-old Korean women, initially diagnosed as fibroadenoma. Aspiration cytologic findings of the left breast mass revealed high cellularity, small to medium sized, less cohesive epithelial clusters, rich naked cells and amorphous materials on background. The epithelial cells were round and uniform with no cytologic atypia or mitosis. Myoepithelial cells were conspicuous with peripheral rimming along the epithelial clusters. Small amount of fibrotic stromal tissues were observed. Distinguishing features from typical fibroadenoma are less tight epithelial clusters, dyscohesive epithelial cell aggregates, more abundant naked cells and scant stromal tissue fragments.

Key words: Adenomyopithelioma, FNAC, Breast

Introduction

Fine needle aspiration cytology of the breast lump has been widely used with relatively high diagnostic accuracy. However, it is difficult to make a diagnosis in cases of mistargeting, scant cellular yield or poor understanding for their cytologic features. Adenomyoepithelioma is a recently described, relatively rare, benign lesion of the breast. The fine needle aspiration cytologic findings have not been well understood yet[1]. It is important to recognize this lesion because adenomyoepithelioma has been sometimes misdiagnosed as carcinomas cytologically[2, 3].

We report the fine needle aspiration cytologic findings of adenomyoepithelioma with emphasis on differential features with fibroadenoma and carcinomas.

Case Report

A 23-year-old Korean woman had complained of a palpable mass in the left breast for 3 years. Physical examination revealed a round, well defined, movable, but slightly firm mass, 3.5cm in diameter, in the upper inner quadrant of breast. There was no palpable mass in the left

axillary region. She had no past history or family history of breast carcnoma. Mammography showed a well demarcated, lobulated mass. Fine needle aspiration cytology from the left breast mass was done, and Papanicolaou stainings were made for 3 slides and hematoxylin and eosin staining was made for one slide.

Cytologic findings

The aspirates were very cellular. Abundant naked cells and amorphous materials were observed on background(Fig. 1). The epithelial cell clusters were small to medium-sized and less cohesive. Small, poorly defined epithelial aggregates were diffusely found. Myoepithelial cells were rich over or outside the epithelial clusters, and peripheral rimming of myoepithelial cells around the epithelial clusters was seen infrequently(Fig. 2A). The epithelial cells were relatively uniform, and the nuclei were round with occasional micronucleoli, but no mitoses were found (Fig. 2B). Stromal tissue fragments were small in amount and fibrotic. Initially this case was diagnosed as suggestive of fibroadenoma. Wide local excision was performed.

Histopathologic features

The mass was round and well circumscribed, measuring 4.5×3.5×2.0 cm. Cut section revealed solid, pale tan to brown and lobulated appearance(Fig. 3). No foci of hemorrhage or cyst were found. Microscopically, cellular lobulated lesion with intervening fibrocollagenous tissue was noted. The cellular lobules showed proliferating tubular structures lined by inner epithelial cells and prominent outer myoepithelial cells, compatible with tubular type of adenomyoepithelioma(Fig. 4). There were no cellular atypia or mitotic figures.

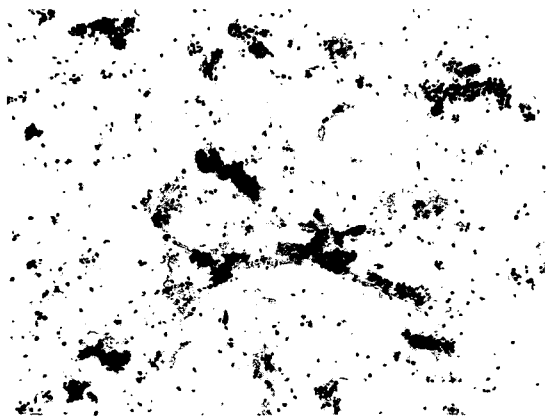

Fig. 1. Low power view of FNAC; High cellularity of small to medium-sized epithelial clusters, and rich naked cells and amorphous material on background. Stromal tissue fragments are rarely seen(Papanicolaou, ×100).

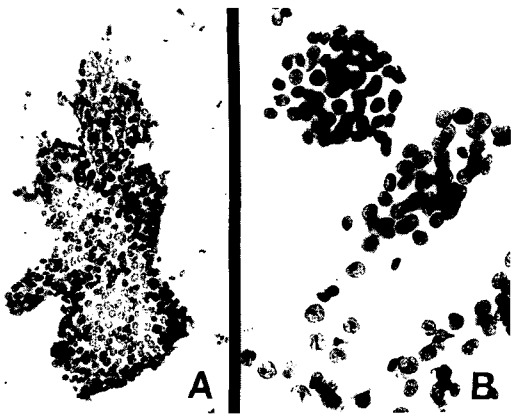

Fig. 2. High power view of FNAC: (A) A cohesive epithelial cluster with peripheral rimming of myoepithelial cells(Papanicolaou stain, ×200). (B) The epithelial cells show round and uniform nuclei with occasional micronucleoli(Papanicolaou, ×400).

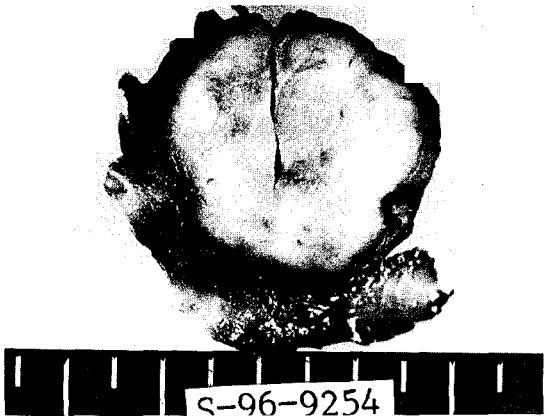

Fig. 3. Cut surface of the breast mass: The mass is well circumscribed with incomplete lobulation by fibrous septa

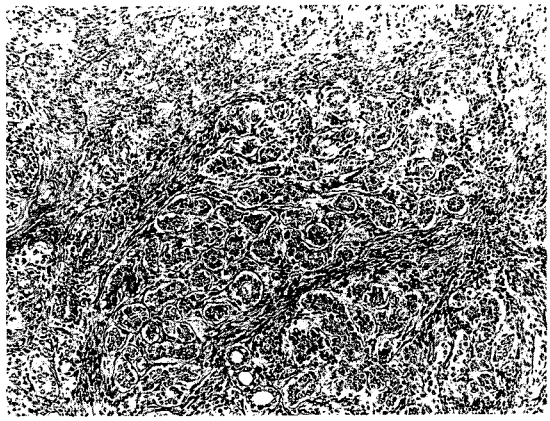

Fig. 4. Histologic findings: The tumor is composed of tubules lined by a luminal population of epithelial cells and a distinct basal population of myoepithelial cells with clear cytoplasm and intervening fibrous stroma(H & E, ×100).

Immunohistochemistry

Immunohistochemical stainings for cytokeratin, smooth muscle actin and S-100 protein(Dako, USA) on paraffin-embedded tumor mass were done using LSAB kit(Dako, USA). The epithelial cells showed positive reaction for cytokeratin and the myoepithelial cells revealed positive reaction for smooth muscle actin. For S-100 protein, both myoepithelial and epithelial cells exhibited positive reaction, though the epithelial cells revealed weak positivity.

Discussion

Myoepithelial lesions of the breast have been recently classified into three groups, namely myoepitheliosis, adenomyoepithelioma and myoepithelial carcinoma. Adenomyoepithelioma is subdivided into tubular, lobulated or spindle cell types[2]. Rarely malignant adenomyoepithelioma has been reported[2, 4]. Adenomyoepithelioma is an uncommon, well demarcated, and solid neoplasm, and was first described in 1970 by Hamperl et al.[5]. Histologically the tumor shows proliferation of both myoepithelial cells and epithelial cells. Immunohistochemical stainings for cytokeratin, S-100 protein and smooth muscle actin are very useful for recognition of both epithelial and myoepithelial components.

Fine needle aspiration cytology of adenomyoepithelioma has not been well documented due to rarity of this tumor, but reflects the histology. Cytologically very high cellularity and rich myoepithelial cells with peripheral rimming around the epithelial clusters are characteristic[1]. Cytologic atypia of epithelial cells may be rarely seen[6].

Many cytologic differential diagnoses have to be considered. High cellularity and dyscohesion of epithelial clusters can suggest the possibility of malignancy[7]. Findings such as absence of cellular atypia of epithelial cells and rich

Table 1. Comparison of Cytologic Features between Fibroadenoma and Adenomyoepithelioma

	Fibroadenoma	Adenomyoepithelioma
Cellular yield	Rich	Rich
Epithelial clusters		
Size	Medium to large	Small to medium
Cohesiveness	Tight	Less tight
Borders	Well defined	Less definable
Naked cells	Abundant	More rich
Stromal tissue		
Amount	Moderate to abundant	Scanty
Nature	Fibromyxoid	Fibrotic

myoepithelial cells in the present case are against the diagnosis of usual ductal carcinoma. Possibility of tubular carcinoma, lobular carcinoma and papillary neoplasms should be excluded. The tumor cells of above-mentioned three categories are relatively uniform and small with a little or mild nuclear atypia. In tubular carcnoma, the epithelial clusters are typically three-dimensional, complex branching and angulated[8, 9], but these kinds of the epithelial clusters were not observed in this case. The epithelial clusters of lobular carcinoma and adenomyoepithelioma are similar[8, 9] but absence of myoepithelial cells and presence of cord-like pattern and intracytoplasmic vacuole in lobular carcinoma are the differential points[1]. It is very difficult to exclude the possibility of benign or malignant papillary neoplasms from adenomyoepithelioma[1]. Absence of papillary structures with fibrovascular cores and foam cells and presence of rich naked nuclei and myoepithelial cells favor the possibility of adenomyoepithelioma in this case. In malignant adenomyoepithelioma[2, 4], cellular pleomorphism and mitotic activity are distinguishing feature histologically, but cytologic differentiation has not been reported as yet[1].

In cases of fibroadenoma, high cellularity is a characteristic finding. The epithelial cells form large, branching clusters or tight cohesive sheets, and are frequently accompanied by fibromyxoid stromal tissue fragments[1]. But this case revealed small to medium sized, less cohesive epithelial clusters, and the stromal tissue was very scant, and not fibromyxoid but fibrotic in character. Cytologic differential features between adenomyoepithelioma and fibroadenoma are summarized in Table 1.

Spindle cell type of adenomyepithelioma shows plump spindle cell aggregates, which are confused with cellular stromal tissue fragments shown in a phyllodes tumor[1]. However, rich epithelial cell clusters and naked cells in this case are not compatible with phyllodes tumor. Microglandular adenosis showed the proliferation of both epithelial and myoepithelial components, histologically. Less cellular smear, presence of apocrine change, moderate amount of stromal tissue and varying degree of epithelial cell atypia could be observed cytologically in microglandular adenosis[7, 10], and these findings were not noted in this case. Histologic findings of tubular adenoma show similarity to adenomyoepithelioma.

Less naked nuclei and less prominent myoepithelial cells in tubular adenoma might be the differential points.

Adenomyoepithelioma is a benign tumor, but has a potential to recur[4]. Wide excision is an adequate treatment to prevent local recurrence[1]. Cytopathologists should be concerned about the cytologic characteristics of adenomyoepithelioma even though it may be very difficult to diagnose this uncommon tumor cytologically.

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= 국문요약 =

유방 선근상피종의 세침흡인 세포학적 소견

- 섬유선종과의 비교 -

인제대학교 의과대학 부산백병원 해부병리과

윤 혜 경 · 정 수 진 · 강 미 선

유방에 발생한 선근상피종은 드문 양성 종양으로 세침흡인 세포학적 소견이 잘 알려져 있지 않다. 저자들은 조직소견상 관상 선근상피종으로 확진된 23세 여자의 좌측 유방종괴의 세침흡인 세포학적 특징과 전형적인 유방 섬유선종과 비교하여 감별점을 찾아보았다. 세침흡인 세포학적 소견상 흡인된 양이 많아 높은 세포학적 밀도를 보였으며, 배경에는 풍부한 나핵 세포와 점액성 물질이 관찰되었다. 상피세포의 군집의 크기는 작거나 중간 정도였으며, 느슨한 응집성을 보였고, 소수의 촘촘한 응집성을 보이기도 하였다. 상피 세포의 핵은 둥글고 비교적 균일하였으며, 작은 핵소체는 가끔 발견되었으나 핵의 비정형성이나 유사분열상은 관찰되지 않았다. 근상피세포들이 풍부하게 관찰되었으며 응집성이 좋은 상피세포 군집의 변연부를 따라 배열하기도 하였다. 기질 조직은 흡인된 양이 적었으며 섬유성 양상이었다. 전형적인 섬유선종과 구별되는 선근상피종의 세포학적 특징은 응집성이 덜한 상피세포 군집, 불분명한 군집의 변연부, 상피세포의 작은 덩어리가 미만성으로 관찰되는 점과 적은 양의 섬유조직성 기질조직이었다.