CASE REPORT

ADENOMYOEPITHELIOMA WITH CARCINOMA; EPITHELIAL-MYOEPITHELIAL CARCINOMA WITH EARLY PULMONARY METASTASIS

Muhammad Umair Khan
Armed forces institute of Pathology, Rawalpindi-Pakistan

Adenomyoepithelioma (AME) is a rare variant of breast neoplasm. It is a biphasic tumour characterized by small epithelial-lined spaces with inner luminal cells and outer of abluminal (myoepithelial) cells. Either – or both – of these two cells may rarely undergo malignant transformation. We present a case of a 61-year-old lady who arbored a mass in her right breast. She presented with few left sided pulmonary nodules as well and was initially diagnosed with extensive DCIS on core biopsy. Lung biopsy of nodule was diagnosed as epithelial myoepithelial neoplasm. Ultimately, modified radical mastectomy and pneumonectomy was performed. The final histopathological diagnosis turned out to be malignant. Adenomyoepithelioma with carcinoma; epithelial-myoepithelial carcinoma of breast with pulmonary metastasis. The malignant transformation of adenomyoepithelioma has been documented in only a limited number of cases. Benign AME often undergoes treatment through wide local excision, given its rare local recurrence. In contrast, the approach to malignant AME typically involves a mastectomy, with or without a lymph node biopsy. Metastases may manifest several years' post-primary diagnosis, even in cases of AMEs lacking atypical histological features. However, in our case metastasis was seen with in first four months of clinical presentation. Adenomyoepithelioma with carcinoma is an exceptionally rare neoplasm that may present with early metastasis, challenging the conventional findings of late metastasis as reported in studies. Consequently, the behaviour and prognosis of this entity remains a grey area, necessitating further exploration with a substantial sample size.

Keywords: Adenomyoepithelioma; Breast neoplasm; Biphasic tumour

Citation: Khan MU. Adenomyoepithelioma with carcinoma; epithelial-myoepithelial carcinoma with early pulmonary metastasis. J Ayub Med Coll Abbottabad 2024;36(3):667–9.

DOI: 10.55519/JAMC-03-13011

INTRODUCTION

Adenomyoepithelioma (AME) is a biphasic neoplasm (usually benign) characterized by small epithelium-lined spaces with inner luminal ductal cells and a proliferation of variably enlarged and clearly noticeable abluminal myoepithelial cells. Malignant transformation may occur from either the luminal or myoepithelial component.

It was first reported in 1970 as neoplasm of epithelial and myoepithelial cells.[1] WHO 5th edition classifies it as a tumour of luminal and myoepithelial (abluminal cells).[2] Adenomyoepithelioma (AME) is a rare breast tumour, and its actual incidence remains uncertain. In a series of 2078 consecutive breast tumours diagnosed through core needle biopsy, Cheung et al. identified only one case of AME (0.048%).[3]

According to WHO 5th edition, Malignant Adenomyoepithelioma (AME) primarily impacts elderly women, with no case reports in young individuals. As for now malignant Adenomyoepithelioma is very rare with no data reported on its incidence.[2]

Adenomyoepithelioma with malignant transformation (AME-M) can exhibit diverse macroscopic characteristics, including infiltrative borders, a firm, rubbery, or fleshy consistency, and a color range from grey to yellowish-white. Some cases may also display cystic changes and necrosis. Microscopically, adenomyoepithelioma (AME) displays a broad range of morphological features. Whether luminal or abluminal cells, cytological atypia, brisk mitotic activity and the presence of necrosis are seen in the malignant component.[4]

When carcinoma arises from epithelial component it may be of IBC, NST, ILC or any of the epithelial tumours while carcinoma arising from myoepithelial cells may have metaplastic features and may display spindled, squamous, adenosquamous morphology or even matrix production.[4]

CASE PRESENTATION

61-year-old female presented with painless lump in her right breast for the last 4 months. The size of lump did not increase significantly. Local examination revealed a hard mass measuring 5x2 cm in infero-lateral quadrant. It was mobile, painless and unaccompanied by skin changes or nipple discharge. No axillary lymphadenopathy was detected either.

Mammary ultrasound revealed an ill-defined hypoechoic mass measuring 5x2.1 cm complex lesion in the right breast at 7 o clock position. On performing Ct scan two nodules in the contralateral lung were discovered in addition to confirmation of the breast mass. Core needle biopsy of breast mass suggested ductal carcinoma in situ while biopsy of one of the pulmonary nodules suggested malignant Adenomyoepithelioma. Hence after tumour board meeting, right modified radical mastectomy (MRM) and left lung Lobectomy were performed. Post-operative histopathology of breast mass and lung nodules revealed similar tumours both tumours were infiltrative composed of tubular structures comprising dual cell population with inner luminal (epithelial) cells and outer abluminal (myoepithelial) cells with predominance of abluminal cells. Both cell populations showed significant atypia with moderate nuclear Pleomorphism, high nuclear to cytoplasmic ratio and hyperchromasia. Brisk mitotic activity was appreciated along with foci of necrosis as shown in figures 1 to 3. Immunohistochemistry revealed CK7 positivity in epithelial cells while myoepithelial cells were positive for CK5/6 and S100 as shown in figures 4 & 5. ER and PR were negative in tumour with ki67 proliferation index of 30%. In light of all clinico-radiological and morphological evidence, a diagnosis of Adenomyoepithelioma with carcinoma; epithelial-myoepithelial carcinoma of right breast with metastasis to left lung, was made. After Right MRM and left lung lobectomy, she received 8 cycles of chemotherapy along with 15 sessions of radiotherapy spanning over 3 months.

The patient remained tumour free for 6 months' post treatment, however, again presented with two metastatic deposits in the brain for which she was again administered with 5 cycles of chemotherapy along with 5 sessions of radiotherapy, to which patient responded and resulted in tumour regression. Currently patient has exhibited no signs of relapse for last 2 months.

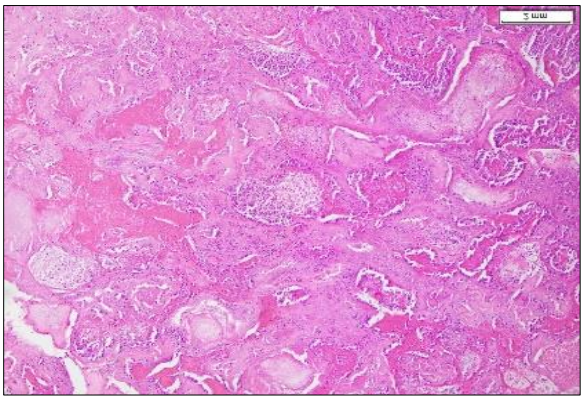

Figure-1: Scanner view

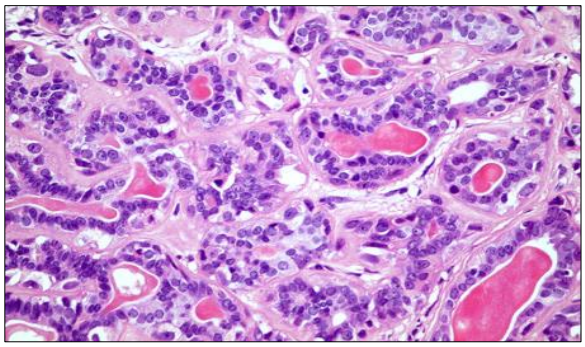

Figure-2: High power(40x)

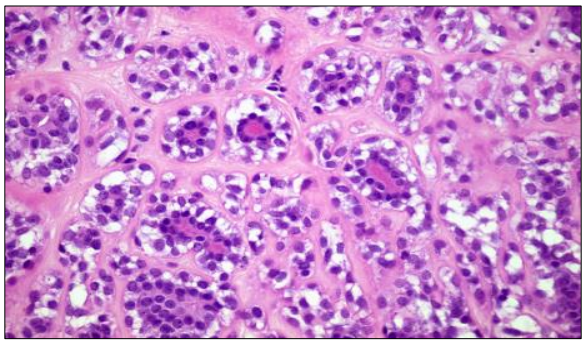

Figure-3: High power (40x)

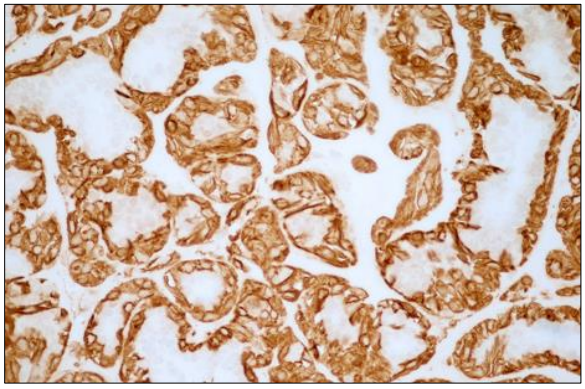

Figure-4: CK7

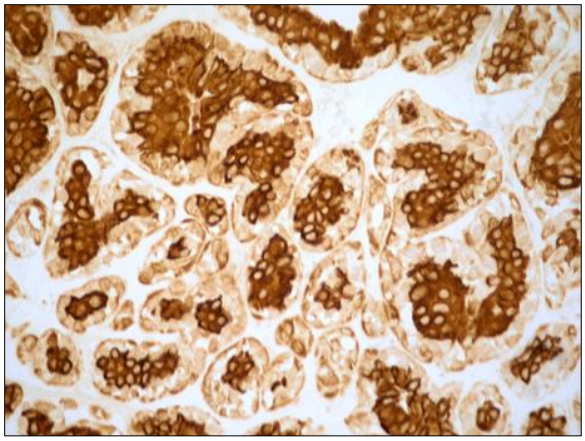

Figure-5: CK5/6

DISCUSSION

Breast Adenomyoepithelioma is a very rare tumour composed of epithelial and myoepithelial cells. Currently WHO recognizes malignant AME as it was recognized for the first time in 2002 by WHO. In a series of 2078 consecutive breast tumour diagnoses through core needle biopsy, Cheung et al. identified a single case accounting for 0.048% of the cases.[3] AME primary affects older women, showing a peak incidence in those aged over 60,[5] as is our case, the patient is 62 years of age. One case has been reported in association with neurofibromatosis type 1.[2] The tumour presents as palpable firm mass measuring 1-7cm in size.[6] Malignant AME generally arises from its benign counterpart,[7] however whether the possibility of tumour to develop de novo still needs to be explored.

According to literature, more than 50% of malignant AMEs present with infiltration of peripheral stroma and brisk mitosis,[8] which our case showed as well. According to current data distant metastasis can occur late in course of the disease,[9] which is contrary to our case where pulmonary metastasis appeared simultaneously with primary mass. AME metastasizes through haematogenous route predominantly with lung and brain being the most frequent sites of metastasis.[10]

Malignant AME can present with malignant transformation of either epithelial or myoepithelial component. Rarely malignancy can arise from both the components with predominance of myoepithelial component,[2] as it did in our case. The key to diagnosis is IHC identifying both epithelial and myoepithelial elements. Distant metastasis is seen in More than one third of the patients, that's why neoadjuvant chemotherapy is administered preferentially in the patients, who present with malignant AME.[11] However due to extremely rarity of the reported cases, validity of the chemotherapy still needs to be established.

My patient presented with pulmonary metastatic disease simultaneous with primary mass and treated with chemotherapy post-surgery, however tumour recurrence in the form of brain metastasis after 6 months of treatment and then regression of brain metastasis following repeat chemo-radiotherapy was observed. The patient is currently disease free after close follow up of about 7 months.

CONCLUSION

Adenomyoepithelioma with carcinoma is an exceptionally rare neoplasm that may present with early metastasis, challenging the conventional findings of late metastasis as reported in studies. Consequently, the behaviour and prognosis of this entity remains a grey area, necessitating further exploration with a substantial sample size. Currently resection followed by chemotherapy is suggested to be preferred treatment protocol, however its validity still needs to be verified, after performing studies on large sample size.

REFERENCES

1. Hamperl H. The myothelia (myoepithelial cells). Normal state; regressive changes; hyperplasia; tumours. Curr Top Pathol 1970;53:161–220.
2. Maria Pia Foschin CM, FGRNMMH. WHO classification of tumours of breast. World health organisation classification of tumours; 2021.
3. Cheung KL, Wong AW, Parker H, Li VW, Winterbottom L, Morgan DA, *et al*. Pathological features of primary breast cancer in the elderly based on needle core biopsies--a large series from a single centre. Crit Rev Oncol Hematol 2008;67(3):263–7.
4. Moritz AW, Wiedenhoefer JF, Profit AP, Jagirdar J. Breast adenomyoepithelioma and adenomyoepithelioma with carcinoma (malignant adenomyoepithelioma) with associated breast malignancies: A case series emphasizing histologic, radiologic, and clinical correlation. Breast 2016;29:132–9.
5. Yoon JY, Chitale D. Adenomyoepithelioma of the breast: a brief diagnostic review. Arch Pathol Lab Med 2013;137(5):725–9.
6. Gafton B, Scripcariu V, Prutianu I, Alexa-Stratulat T, Terinte C, Nicolau A, *et al*. Challenges in management of male breast adenomioepithelioma with malignant behavior: Case report. Medicine (Baltimore) 2019;98(43):e17587.
7. Geyer FC, Li A, Papanastasiou AD, Smith A, Selenica P, Burke KA, *et al.* Recurrent hotspot mutations in HRAS Q61 and PI3K-AKT pathway genes as drivers of breast adenomyoepitheliomas. Nat Commun 2018;9(1):1816.
8. Papaevangelou A, Pougouras I, Liapi G, Pierrakakis S, Tibishrani M, Setakis N. Cystic adenomyoepithelioma of the breast. Breast 2004;13(4):356–8.
9. Korolczuk A, Amarowicz M, Bąk K, Korobowicz E, Koncewicz T. Adenomyoepithelioma of the breast with late pulmonary metastases - case report and review of the literature. J Cardiothorac Surg 2016;11(1):121.
10. Ahmed AA, Heller DS. Malignant adenomyoepithelioma of the breast with malignant proliferation of epithelial and myoepithelial elements: a case report and review of the literature. Arch Pathol Lab Med 2000;124(4):632–6.
11. Yuan Z, Qu X, Zhang ZT, Jiang WG. Lessons From Managing the Breast Malignant Adenomyoepithelioma and the Discussion on Treatment Strategy. World J Oncol 2017;8(4):126–31.

Submitted: February 27, 2024	*Revised: June 24, 2024*	*Accepted: June 24, 2024*

Address for Correspondence:

Muhammad Umair Khan, Armed forces institute of Pathology, Rawalpindi-Pakistan
Email: umairkhan0953@gmail.com