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Case Report

Large encapsulated papillary carcinoma presenting as an arteriovenous malformation

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ABSTRACT

Encapsulated papillary carcinomas (EPCs) are a rare breast tumour that carry a good prognosis. They are typically 0.5-8.0 cm in size and commonly present with a painless mass and bloody nipple discharge. We present an 80-year-old female with a 15.0 cm EPC, the largest reported in literature, that presented with an expanding breast haematoma and a distant history of breast trauma. Anaemic symptoms post initial aspiration, previous arterial injury to the same breast and prominent feeding vessels to the mass seen on both imaging, and at time of mastectomy, raise the differential of underlying vascular malformation.

Keywords: Encapsulated, Papillary, Carcinoma, EPC, Vascular, Malformation

INTRODUCTION

Encapsulated papillary carcinomas (EPC) are a rare entity, accounting for 1-2% of all breast carcinomas.[1] They carry a favourable prognosis and are mostly seen in postmenopausal women.[1,2] Whether they should truly be considered an invasive tumour or a ductal carcinoma in-situ (DCIS) is a matter of debate.[3] They range in size from 0.5 to 8.0 cm.[4]

CASE REPORT

An 80-year-old female was referred to the general surgical outpatients by her general practitioner for advice and management of a chronic right breast mass. A history revealed firmness and swelling of the right breast for the previous 6 years. Further questioning revealed a temporal relationship with a traumatic fall at the time of initial onset. The patient reported a sudden increase in the size of the lesion 6 months prior to her review but denies any further history of recent trauma. Her past medical history included a fine-needle aspirate of a right breast cyst over 20 years ago, which was complicated by an arterial injury which was managed conservatively, and an abdominal hysterectomy. She is a non-smoker, denied a family or personal history of breast cancer and has been on hormone replacement therapy for the previous six years.

Examination revealed a large mass occupying the superior aspect of the right breast causing significant mass effect, with inferior displacement of the nipple and threatened integrity of the overlying skin.

She underwent a diagnostic ultrasound scan which suggested a large haematoma, 15.3 cm in size (Figure 1). She subsequently underwent ultrasound guided aspiration of this mass, at which point 800 ml of dark blood was aspirated, resulting in presyncopal symptoms. The patient's breast re-expanded in the few weeks following the ultrasound drainage. A diagnostic magnetic resonance imaging (MRI) breast was requested and revealed a complex cystic lesion, measuring 14.5 cm, with a volume of 1200 ml (Figure 2), reported as being mixed density fluid, consistent with areas of acute and chronic haematoma. Note was made of an enhancing mural nodule in the posteromedial wall of the cyst, concerning for a cystic papillary neoplasm. Given the history and concern for a possible vascular malformation, a magnetic

resonance angiogram (MRA) was performed, which revealed an aberrant artery supplying the mass, originating from the right subclavian artery (Figure 3).

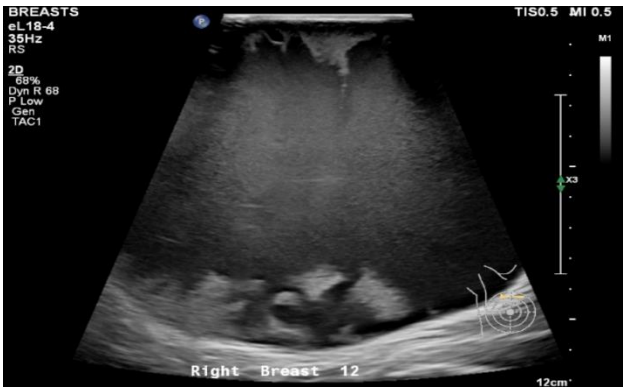

Figure 1: Ultrasound of right breast, revealing a large haematoma.

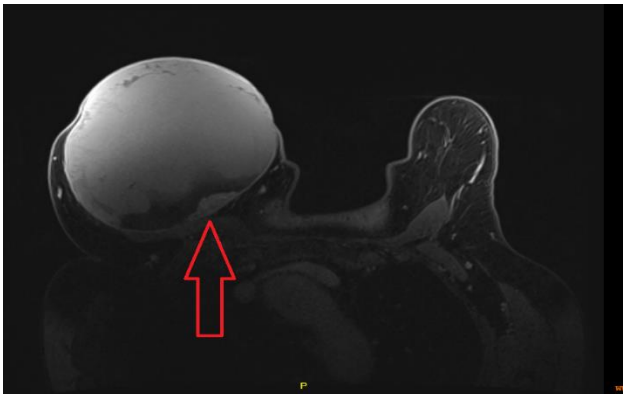

Figure 2: MRI of right breast, showing enhancing nodule in posteromedial wall of cystic cavity (red arrow).

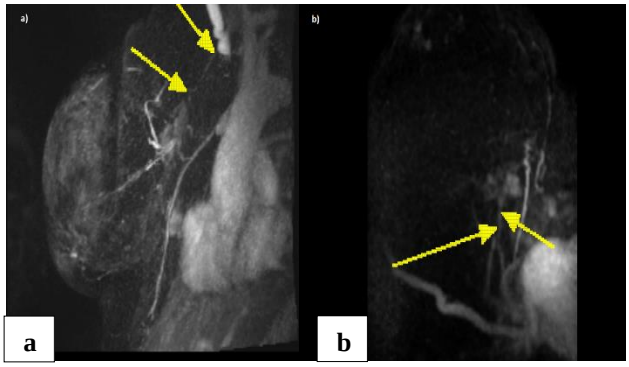

Figure 3: (a) Sagittal and (b) axial views of MRA of the right breast, revealing feeding vessels coursing inferiorly from the subclavian artery into the mass (yellow arrows).

The patient's case was discussed at a multi-disciplinary meeting and a simple mastectomy was performed. At the time of surgery, large vessels were identified supplying the mass superiorly and were ligated. Despite minimal intraoperative bleeding, she suffered a haemoglobin drop from 150 g/l to 127 g/l postoperatively. She had an uneventful recovery and was discharged the following day.

Histopathology revealed a 15.0 cm encapsulated papillary carcinoma (EPC), with an invasive component measuring 0.9 mm. The minimum margin clearance from tumour deposit was 2mm from the posterior margin. The tumour was oestrogen and progesterone positive and HER-2 negative.

The patient was referred to radiation oncology for consideration of adjuvant radiotherapy and subsequent endocrine therapy.

DISCUSSION

EPCs usually presents as a painless mass and are often accompanied with bloody nipple discharge.[3,5,6] They rarely present as an expanding haematoma, as was the case here. Even more unusual, the patient's fatigue immediately following the initial drainage procedure, the findings of large feeding vessels to the mass and an unexpected post-operative haemoglobin drop. This suggests that the cystic portion of the mass was part of the patient's circulating blood volume. Whilst impossible to make any definite conclusions, the patient's history of a previous arterial injury from a cyst aspiration, raises the possibility a vascular malformation, however one would expect this to be diagnosed on the MRA. Arteriovenous malformation (AVM) is a known complication of breast biopsies.[7]

There are rare reports of EPC presenting secondary to trauma.[1,5,8] Whether this haemorrhagic change was secondary to her traumatic fall six years ago is unclear, but it would appear to be unlikely, given the latency between the incident and presentation.

To our knowledge, the size of our patient's lesion, measuring 15.0 cm on histology, is the largest quoted in the literature. There is a case report of a patient presenting with a 15.2 cm haemorrhagic mass on ultrasound that, on biopsy, was shown to be an EPC, but the patient was lost to follow up before formal surgical resection.[5]

The diagnosis of EPC relies on the utilization of imaging, as well as tissue diagnosis. Typical imaging features of EPC on ultrasound include an intraductal mass. In contrast to papillomas, papillary carcinomas tend to have a greater solid component. It can be difficult to distinguish encapsulated papillary carcinomas from other papillary lesions on imaging alone and therefore histological diagnosis is often required.[9]

Histological feature of EPCs consist of cystically dilated duct surrounded by a fibrous capsule with intraluminal arborisation of the fibrovascular stroma covered by atypical epithelial cells.[1] EPC usually lacks a myoepithelial cell layer, which separates it from most

benign lesions, although some benign papillary lesions are known to also lack this layer.[1]

A multidisciplinary approach to treatment is essential, and usually involves surgical resection with a 2 mm margin.[2] EPCs rarely involve lymph nodes and, as such, a sentinel lymph node biopsy is rarely indicated. The use of radiotherapy is of uncertain significance, given the tumour is usually low grade and rarely recurs. Adjuvant endocrine therapy may be suggested as tumours are almost invariably hormonally positive.[2]

CONCLUSION

This case highlights the need to remain vigilant when treating patients who present with seemingly benign pathology. Breast haematomas are common, and normally treated with simple aspiration. However, they can sometimes be indicative of a more serious underlying pathology. EPCs have an excellent prognosis once detected, and a high index of suspicion can give these patients the best chance of a disease-free recovery. We presented an unusual presentation of EPC, both due to the size, haemorrhagic nature of the lesion, and added complexity of a potential AVM.

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