My experience of attendance and poster presentation at Leeds Pathology 2019

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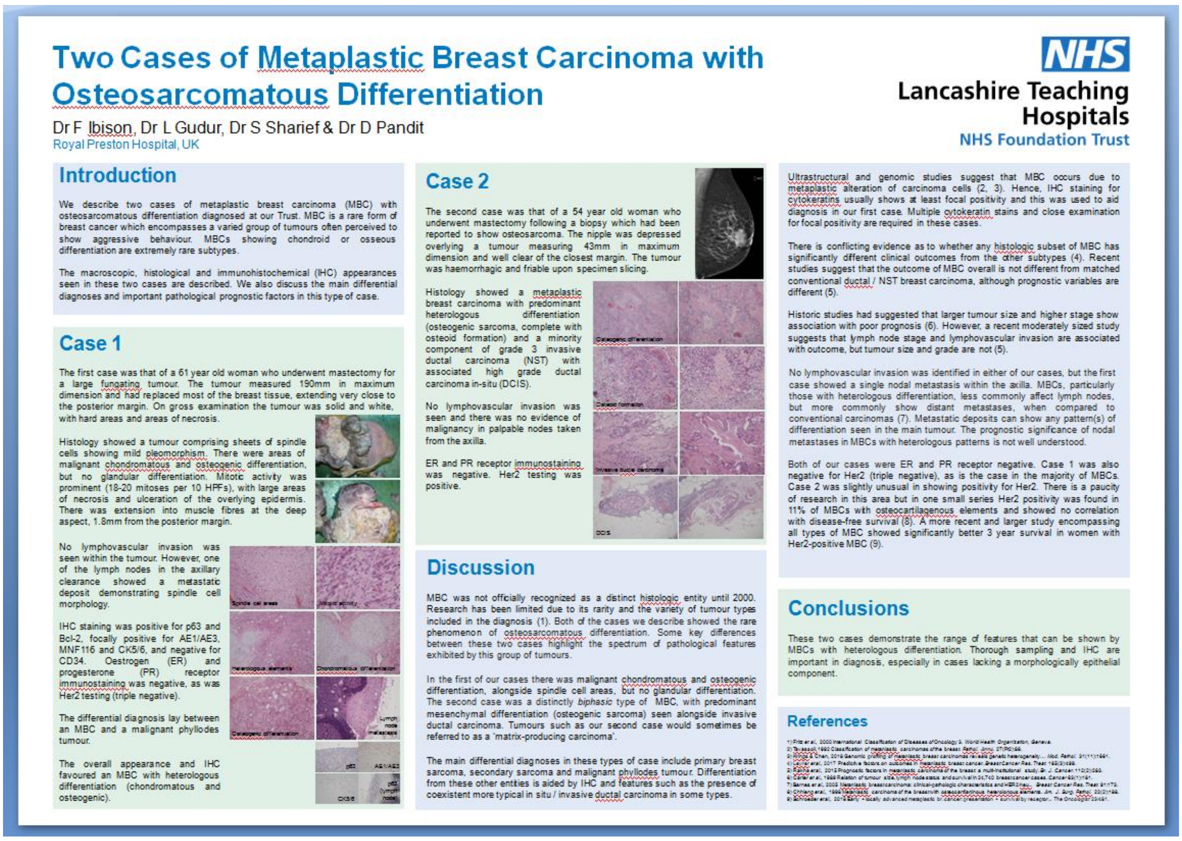
It was a great privilege to be offered a bursary to attend and present a poster at the Leeds Pathology Conference 2019. Preparing the poster was a valuable learning experience. Through reading around the two cases I presented, I gained new knowledge about gross and histological features associated with metaplastic breast carcinoma. I am also now more aware of the varied forms of differentiation, such as chondroid and osseous differentiation, which can be seen in these types of tumour. In addition, it was useful to refresh skills of presenting information in a poster format.

Being present to defend my poster during the official poster rounds was another useful learning experience. I received questions about classification criteria for metaplastic breast carcinoma and frequency of chondroid and osseous differentiation. I also had opportunity to read and learn from the posters that others had produced. It was beneficial to converse with other trainees attending from around the country and talk about their poster content and generally about training experiences.

During the time after the poster rounds I was able to attend lectures in the Gynaecological and Breast pathology symposiums, including an especially useful and memorable talk on Lynch syndrome by Dr Emma Crosbie.

I returned to work and training feeling enthusiastic about the experience I'd had at the conference. I was able to share with colleagues the comments and interest that I'd received on the poster and this was well received in the department.


Two Cases of Metaplastic Breast Carcinoma with Osteosarcomatous Differentiation
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Introduction
We describe two cases of metaplastic breast carcinoma (MBC) with osteosarcomatous differentiation diagnosed at our Trust. MBC is a rare form of breast cancer which encompasses a varied group of tumours often perceived to show aggressive behaviour. MBCs showing chondroid or osseous differentiation are extremely rare subtypes.
The macroscopic, histological and immunohistochemical (IHC) appearances seen in these two cases are described. We also discuss the main differential diagnoses and important pathological prognostic factors in this type of case.
Case 1
The first case was that of a 61 year old woman who underwent mastectomy for a large fungating tumour. The tumour measured 190mm in maximum dimension and had replaced most of the breast tissue, extending very close to the posterior margin. On gross examination the tumour was solid and white, with hard areas and areas of necrosis.
Histology showed a tumour comprising sheets of spindle cells showing mild pleomorphism. There were areas of malignant chondromatous and osteogenic differentiation, but no glandular differentiation. Mitotic activity was prominent (18-20 mitoses per 10 HPFs), with large areas of necrosis and ulceration of the overlying epidermis. There was extension into muscle fibres at the deep aspect, 1.8mm from the posterior margin.
No lymphovascular invasion was seen within the tumour. However, one of the lymph nodes in the axillary clearance showed a metastatic deposit demonstrating spindle cell morphology.
IHC staining was positive for p63 and Bcl-2, focally positive for AE1/AE3, MNF116 and CK5/6, and negative for CD34. Oestrogen (ER) and progesterone (PR) receptor immunostaining was negative, as was Her2 testing (triple negative).
The differential diagnosis lay between an MBC and a malignant phyllodes tumour.
The overall appearance and IHC favoured an MBC with heterologous differentiation (chondromatous and osteogenic).
Spindle cell areas
Mitotic activity
Heterologous elements
Chondromatous differentiation
Osteogenic differentiation
p63
AE1/AE3
CK5/6
Case 2
The second case was that of a 54 year old woman who underwent mastectomy following a biopsy which had been reported to show osteosarcoma. The nipple was depressed overlying a tumour measuring 43mm in maximum dimension and well clear of the closest margin. The tumour was haemorrhagic and friable upon specimen slicing.
Histology showed a metaplastic breast carcinoma with predominant heterologous differentiation (osteogenic sarcoma, complete with osteoid formation) and a minority component of grade 3 invasive ductal carcinoma (NST) with associated high grade ductal carcinoma in-situ (DCIS).
No lymphovascular invasion was seen and there was no evidence of malignancy in palpable nodes taken from the axilla.
ER and PR receptor immunostaining was negative. Her2 testing was positive.
Osteogenic differentiation
Osteoid formation
Invasive ductal carcinoma
DCIS
Discussion
MBC was not officially recognized as a distinct histologic entity until 2000. Research has been limited due to its rarity and the variety of tumour types included in the diagnosis (1). Both of the cases we describe showed the rare phenomenon of osteosarcomatous differentiation. Some key differences between these two cases highlight the spectrum of pathological features exhibited by this group of tumours.
In the first of our cases there was malignant chondromatous and osteogenic differentiation, alongside spindle cell areas, but no glandular differentiation. The second case was a distinctly biphasic type of MBC, with predominant mesenchymal differentiation (osteogenic sarcoma) seen alongside invasive ductal carcinoma. Tumours such as our second case would sometimes be referred to as a 'matrix-producing carcinoma'.
The main differential diagnoses in these types of case include primary breast sarcoma, secondary sarcoma and malignant phyllodes tumour. Differentiation from these other entities is aided by IHC and features such as the presence of coexistent more typical in situ / invasive ductal carcinoma in some types.
Ultrastructural and genomic studies suggest that MBC occurs due to metaplastic alteration of carcinoma cells (2, 3). Hence, IHC staining for cytokeratins usually shows at least focal positivity and this was used to aid diagnosis in our first case. Multiple cytokeratin stains and close examination for focal positivity are required in these cases.
There is conflicting evidence as to whether any histologic subset of MBC has significantly different clinical outcomes from the other subtypes (4). Recent studies suggest that the outcome of MBC overall is not different from matched conventional ductal / NST breast carcinoma, although prognostic variables are different (5).
Historic studies had suggested that larger tumour size and higher stage show association with poor prognosis (6). However, a recent moderately sized study suggests that lymph node stage and lymphovascular invasion are associated with outcome, but tumour size and grade are not (5).
No lymphovascular invasion was identified in either of our cases, but the first case showed a single nodal metastasis within the axilla. MBCs, particularly those with heterologous differentiation, less commonly affect lymph nodes, but more commonly show distant metastases, when compared to conventional carcinomas (7). Metastatic deposits can show any pattern(s) of differentiation seen in the main tumour. The prognostic significance of nodal metastases in MBCs with heterologous patterns is not well understood.
Both of our cases were ER and PR receptor negative. Case 1 was also negative for Her2 (triple negative), as is the case in the majority of MBCs. Case 2 was slightly unusual in showing positivity for Her2. There is a paucity of research in this area but in one small series Her2 positivity was found in 11% of MBCs with osteocartilagenous elements and showed no correlation with disease-free survival (8). A more recent and larger study encompassing all types of MBC showed significantly better 3 year survival in women with Her2-positive MBC (9).
Conclusions
These two cases demonstrate the range of features that can be shown by MBCs with heterologous differentiation. Thorough sampling and IHC are important in diagnosis, especially in cases lacking a morphologically epithelial component.
References