CASE REPORT

Polymorphous adenocarcinoma of the breast: A case report

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Received: May 6, 2022 **Accepted:** July 7, 2022 **Online Published:** July 25, 2022
DOI: 10.5430/crcp.v9n1p24 **URL:** https://doi.org/10.5430/crcp.v9n1p24

ABSTRACT

We report a patient with polymorphous adenocarcinoma of the breast. Polymorphous adenocarcinoma of the breast is a rare tumour that corresponds to polymorphous adenocarcinoma in the salivary gland. The tumour consisted of a unimorphous population of one type of neoplastic cells with hyperchromatic, pleomorphic nuclei. Neoplastic cells were arranged in various architectural patterns including solid pattern, trabecular pattern and single "Indian-file" arrangement with myxoid stroma in between. Tumour cells were negative for Estrogen, Progesterone, Her-2/neu, Smooth Muscle Actin, Cytokeratin 5/6, Cytokeratin 7, Synaptophysin and Chromogranin, while Cytokeratin AE1/AE3 (Pankeratin), BCL2 and E-cadherin were positive and p63 partially positive. Polymorphous adenocarcinoma is a rare and salivary gland-type tumour with only three cases reported up to date. To the best of our knowledge this is the fourth case of a polymorphous adenocarcinoma of the breast reported in the english literature.

Key Words: Polymorphous adenocarcinoma, Breast cancer, Salivary gland cancer, Immunohistochemistry

1. INTRODUCTION

Polymorphous adenocarcinoma of the breast is a rare tumour that corresponds to the same entity in the salivary gland. It is seen mainly in minor salivary glands of the hard palate and characterized by uniform cancer cells showing architectural diversity.[1,2] The tumour has been described under different pseudonyms as early as 1983 by Freedman et al. and Basakis et al.[3,4] Polymorphous adenocarcinoma of the salivary gland was first used as a morphological term by Evans et al. in 1984.[1]

We report a patient who was diagnosed with polymorphous adenocarcinoma of the breast in 2018. The patient underwent adjuvant chemo and radiotherapy and is alive and well without disease recurrence. To the best of our knowledge this is the fourth case of a polymorphous adenocarcinoma of the breast reported in the english literature. The other three cases

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were reported by Asioli et al. in an article published in 2006 and afterwards added to the list of rare and salivary gland-type tumours of the WHO breast cancer classification.[5]

2. CASE REPORT

We report a 66-year old female patient with no previous medical history of malignancy. She got her menarche at the age of 13 and last period at the age of 44. She is a multiparous female with 2 female offspring born by vaginal delivery. She gave up smoking 30 years ago and didn't consume alcohol. The patient was treated for hyperlipidemia over the past two years with atorvastatine. To the best of our knowledge the patient didn't have any other chronic medical conditions up to that date and wasn't taking any other medication. According to family history her female biological parent was treated for non-Hodgkin lymphoma and disseminated renal cell carcinoma.

In 2018 screening mammography detected BIRADS-4 lesion of the right breast, and ultrasonography confirmed suspicious hypoechoic lesion measuring $8 \times 7 \times 8$ mm, located at 2 O'clock in the upper medial quadrant, 2 cm from the nipple, without enlarged axillary lymph nodes. Fine needle aspiration cytology was performed and reported adenoid cystic carcinoma. Carcinoma tumour marker was not elevated. The patient was referred for segmentectomy and sentinel lymph node biopsy.

A specimen of breast tissue measuring $13 \times 10 \times 3$ cm was admitted to pathology and gross examination showed a solid, grey tumour measuring $0.9 \times 0.8 \times 0.9$ cm, 3.5 cm from the nearest resection margin. Alongside the breast tissue, a specimen of fat tissue, measuring $3 \times 2 \times 1,5$ cm, containing sentinel lymph node measuring 1 cm in diameter was received.

Histologic examination showed a unimorphous population of one type of neoplastic cells with hyperchromatic, pleomorphic nuclei and pale cytoplasms. They were arranged in various architectural patterns including solid pattern, trabecular pattern and single "Indian-file" arrangement. Between the tumor cells a mucin-like, myxoid, bluish stromal matrix was observed. The mitotic count was high (20/HPF). In situ component, lymphovascular, perineural invasion and necrosis were not detected. Lymph nodes were negative. Tumour cells were negative for Estrogen, Progesterone and Her-2/neu receptors. Proliferation marker Ki-67 was positive in 85% of tumour cells. Cytokeratin AE1/AE3 (Pankeratin) and BCL2 were positive, E-cadherin expressed fragmented positive staining, p63 was positive in 60% of tumour cells, Smooth Muscle Actin, Cytokeratin 5/6, Cytokeratin 7, Synaptophysin and Chromogranin were negative (see Figure 1). We excluded adenoid cystic carcinoma in differential diagnosis because of a lack of the typical biphasic cellular pattern. Lobular carcinoma was excluded due to E-cadherin positivity and Estrogen and Progesterone negativity. Diagnosis of a triple negative, grade three carcinoma of the breast was confirmed with a comment that the tumour fits the description of a polymorphous carcinoma of the breast.

The patient was admitted to the Department of oncology and started 4 cycles of adjuvant chemotherapy with the AC-dose dense protocol, followed by 12 cycles of paclitaxel. The patient tolerated chemotherapy well and proceded with radiotherapy. Follow-up ultrasonography one year after surgery detected a sharply demarcated lesion measuring 2.6 cm in largest diameter in the surgical scar area. Fine needle aspiration was performed. Cytology smears showed fat tissue necrosis, without tumour cells. Carcinoma tumour marker was not elevated. Mammography showed postoperative changes. The patient was followed and is alive and well without recurrence of the disease.

3. DISCUSSION

Salivary glands and mammary glands are histologically very similar and share similar morphological features, both being tubulo-acinar glands with exocrine secretion. Considering the latter it is evident that the same types of tumours can occur in both glands.[6] Various salivary gland-like tumours have been described in the breast including polymorphous adenocarcinoma, and it was was added to the list of rare and salivary gland-type tumours of the WHO breast cancer classification due to a report by Asioli et al. who described 3 cases for the first time.

In this case report the 3 tumours consisted of solid areas and nests of tumor cells showing multiple growth patterns including single-file pattern, trabecules, tubules and alveolar structures, which are similar patterns we encountered. One of the reported tumour's stroma was collagenous, whereas ours was more myxoid. The mitotic count in two of the cases was 10/10 HPF and in one case 12/10 HPF, while the mitotic count in our case was 20/10 HPF. The nuclei of our tumour cells were more pleomorphic and hyperchromatic, where in the previously reported cases they were more monotonous. According to The Nottingham grading system, the tumour we report was assigned a histologic grade 3, making it a poorly differentiated tumour. The cases reported by Asioli et al. were all grade 2 tumours.

Our immunohistochemical analysis is almost identical to the cases reported by Asioli et al. There was positive reaction for BCL2 and fragmented positive reaction for E-cadherin, partial positive staining for p63 and negative reaction for Smooth muscle actin, Chromogranin, Estrogen, Progesterone and Her2/neu in both case reports.

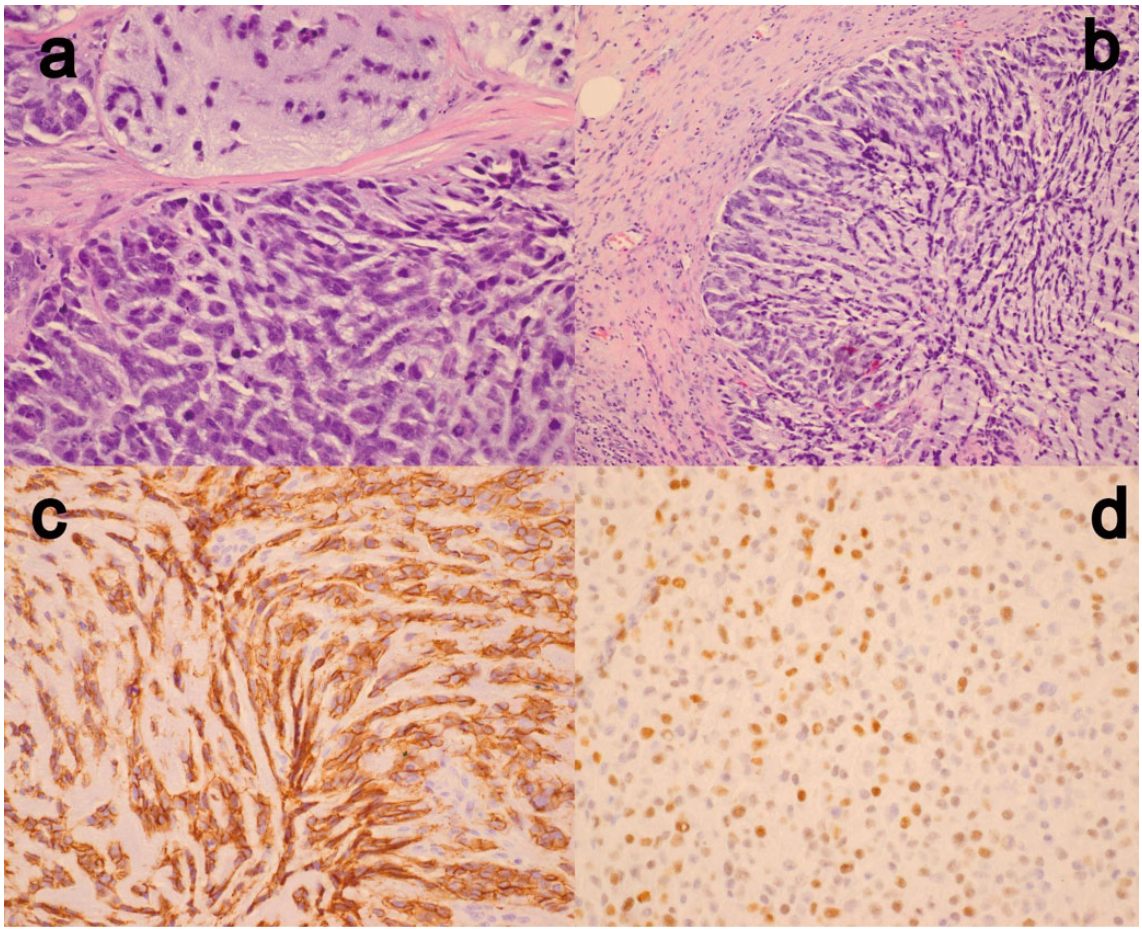

Figure 1. a.Neoplastic cells arranged in trabecular pattern with myxoid stroma between them. b.Neoplastic cells displaying "Indian-file" growth pattern. c.E-cadherin expressing fragmented positive staining. d.P63 nuclear staining is partially present

The tumour cells in the previous cases were mostly diffusely positive for Cytokeratin 7 with absence of staining at the periphery of the lesions, whereas our case was entirely Cytokeratin 7 negative. This could be due to our case being poorly differentiated. Because there have been only 3 cases reported in the english literature we cannot make any further immunohistochemical conclusions regarding this tumour, other than wait for future cases to give us more insight. The term Polymorphous low grade adenocarcinoma of the breast should be avoided because of the histologic grade of the tumour we report.[5]

Conflicts of Interest Disclosure

There is no conflict of interest.

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