Mammary Analogue Secretory Carcinoma in a Woman with a Prolactinoma: A Case Report and Review of Literature

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ABSTRACT

Objectives: To describe a unique case of Mammary Analogue Secretory Carcinoma (MASC) in a woman with a prolactinoma. To examine the potential link between elevated prolactin levels and salivary gland tumors.

Methods: A 23-year-old woman with a history of pituitary prolactinoma presented with a slowly enlarging right parotid mass. Cytology and immunohistochemistry were consistent with MASC. Literature was reviewed to examine the relationship between elevated prolactin levels and salivary tumors.

Results: MASC is morphologically and genetically similar to secretory carcinoma of the breast. In the past, MASC was erroneously classified as acinic cell carcinoma and other adenocarcinomas due to similar histopathological features, but MASC should be differentiated from these tumors given that it displays a specific t(12;15)(p13;q25) translocation. In the patient reported, fine needle aspiration (FNA) of the right parotid revealed a monotonous population of cells with abundant eosinophilic cytoplasm and frequent cytoplasmic vacuoles. Multiple studies have suggested that circulating prolactin level is related to breast cancer risk and that prolactin receptors are present in salivary tissues. No studies identified elevated prolactin as a risk factor for MASC or other salivary tumors.

Conclusion: MASC is a recently described entity with similarities to secretory carcinoma of the breast. To our knowledge, this is the first reported case of MASC in a patient with a prolactinoma. Further studies are needed identify any potential association between elevated prolactin and salivary tumors such as MASC.

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INTRODUCTION

Mammary analogue secretory carcinoma (MASC) is a recently described salivary gland malignancy which is morphologically and genetically similar to secretory carcinomas of the breast. MASC is a distinct clinical entity from other salivary adenocarcinomas, expressing a specific t(12;15) (p13;q25) translocation.

CASE PRESENTATION

A 23 year old woman presented with a slowly enlarging right preauricular mass. She denied any pain, paresthesia, or facial weakness. Her medical history was significant for a pituitary microadenoma discovered by her gynecologist after she reported a 6 month history of amenorrhea and had a prolactin level of 50.5 (N=2.5-17 Ng/ml). A subsequent MRI revealed a 0.7 x 0.5 cm pituitary mass and a coincident 2 cm cystic right parotid mass **(Figure 1)**. On physical exam, the mass was rubbery, mobile, and non-tender. There was no facial nerve weakness or cervical lymphadenopathy. A FNA biopsy was performed which showed a monotonous population of cells with abundant eosinophilic cytoplasm and frequent cytoplasmic vacuoles **(Figure 2)**. The cells had a round nucleus with the tumor cells arranged in small to large hypercellular nests with papillary configuration contained in a fibrovascular core **(Figure 3)**. The tumor cells were positive for S100, Mammaglobin, HMWCK, CK8, and CK19 and negative for DOG-1 and P63. The patient ultimately underwent a right superficial parotidectomy with facial nerve preservation and her postoperative course was uneventful. Histopathological examination of the surgical specimen was consistent with the diagnosis of MASC made on FNA.

FIGURE 1: AXIAL T2 WEIGHTED MRI SHOWS 2-CM CYSTIC RIGHT PAROTID MASS

FIGURE 2: EPITHELIOID CELLS WITH EOSINOPHILIC CYTOPLASM IN PAPILLARY CONFIGURATION WITH FIBROVASCULAR CORE. (H&E) (X200)

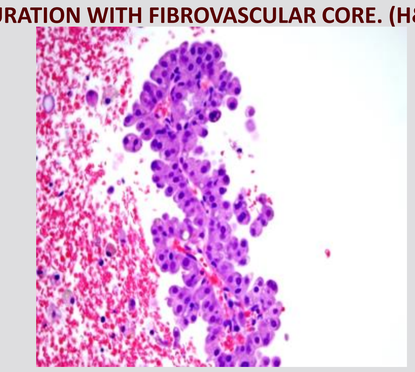


FIGURE 3: HYPERCELLULAR SMEAR COMPOSED OF TUMOR CELLS WITH PAPILLARY ARCHITECTURE (H&E) (X100)

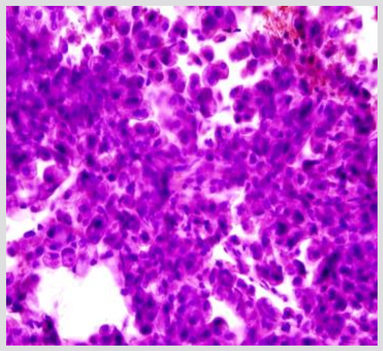


FIGURE 4: TUMOR CELLS WITH ABUNDANT PALE BLUE, MUTIVACUOLATED CYTOPLASM AND UNIFORM NUCLEI WITH INCONSPICUOUS NUCLEOLI (DIFF QUICK) (X1000)

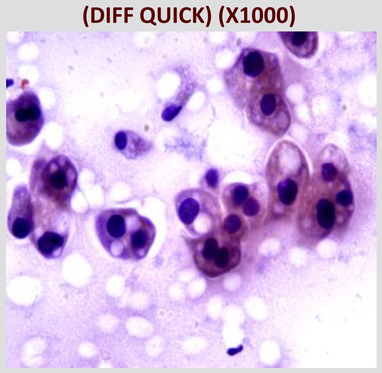


FIGURE 5: TUMOR CELLS SHOW STRONG AND DIFFUSE EXPRESSION OF MAMMOGLOBIN (X200)

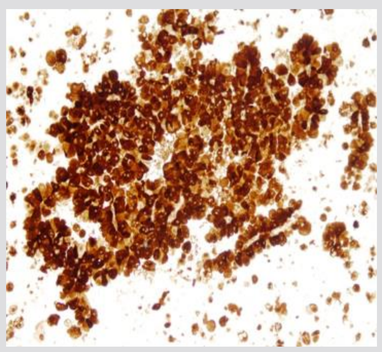
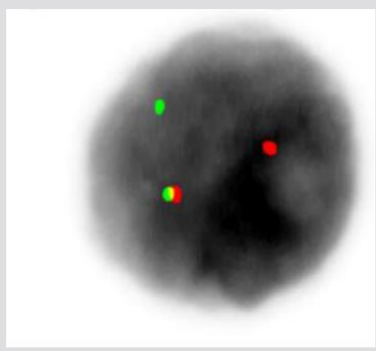


FIGURE 6: FISH SHOWING SPLIT SIGNAL FOR ETV6 (12P13)



DISCUSSION

MASC is a recently described entity with about 134 cases reported in the literature.[1,2,3,4] The majority of the cases involve the major salivary glands, especially the submandibular and parotid glands.[1] MASC has been reported in patients as young as 5 and as old as 77, with mean age of 45.[1,2,3,4] MASC of the salivary gland is morphologically similar to secretory carcinoma of the breast and both express S-100 protein, mammaglobin, vimentin, and have a t(12;15) (p13;q25) translocation creating the ETV6-NTRK3 fusion gene.[5,6] It is believed that MASC has been misclassified in the past as acinic cell carcinoma (ACC) and other adenocarcinomas but the ETV6-NTRK3 translocation, found on fluorescence in situ hybridization, is specific to MASC differentiates it from other salivary adenocarcinomas. As a result, more cases of MASC have been retrospectively identified as molecular studies have been completed on previously evaluated specimens.

Prolactin, especially the long isoform, has been found to be an important growth factor for the development and differentiation of human breast tissue.[7] Studies have shown that prolactin also acts as a local growth promoter in breast carcinoma via an autocrine/paracrine loop[7,8] Prolactin receptors have also been found to be present in normal salivary tissue as well neoplasms such as pleomorphic adenoma and adenoid cystic carcinoma.[9,10] Our literature search did not identify any studies where prolactin level was investigated as a risk factor for MASC or any other salivary tumors. Given the associations found in the study of breast carcinomas, our case presents an area for future study.

CONCLUSION

MASC is a recently described entity with similarities to secretory carcinoma of the breast. It should be differentiated from other salivary adenocarcinomas given its t(12;15) (p13;q25) translocation. To our knowledge, this is the first reported case of MASC in a patient with a prolactinoma. Further studies are needed identify any potential association between elevated prolactin and salivary tumors such as MASC.

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