MASC UNMASKED

Local experience with the rare mammary analogue secretory carcinoma of salivary glands

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ABSTRACT

Mammary analogue secretory carcinoma (MASC) of salivary glands is a rare, recently described salivary gland tumour. It mostly affects parotid glands and generally behaves indolently. Previously it had been labelled as acinic cell carcinoma, mucoepidermoid carcinoma, and adenocarcinoma, not otherwise specified, due to some pathologic similarities. It has the defining genetic characteristic of the ETV6-NTRK3 translocation, however, that is not necessary for its diagnosis.

Here we describe two cases of MASC managed at our hospital recently, as well as some differentiating pathologic features of its common mimics.

BACKGROUND

MASC is a rare salivary gland tumour which shares morphologic and genetic features with secretory carcinoma of the breast. Since its first description by Skalova in 2010, some 300 cases have been published in literature. Its defining characteristic is the ETV6—NTRK3 translocation: t(12;15)(q13;125).[1]

It most commonly occurs in the parotid gland, but has been described in other salivary glands as well. It has a slight male predominance with mean age of 46 years old. It is generally low-grade and presents as a painless swelling. Cervical nodal metastasis occurs in up to 25%, with distant metastasis being rare. [2]

Although identifying the ETV6-NTRK3 translocation is diagnostic, its not always present. Furthermore, it shares pathologic features with acinic cell carcinoma, mucoepidermoid carcinoma, and adenocarcinoma, which can make diagnosis more challenging. [3] Here we describe two cases of MASC of parotid gland that was managed recently, both without the defining translocation.

CASES

Case 1: A 35 year old man presented with one year of painless firm and mobile left parotid lump of 2cm. MRI showed a superficial lobe tumour with no pathologic neck nodes. (Fig 1) Core biopsy suggested secretory carcinoma although it was ETV6 negative on FISH. He proceeded to superficial parotidectomy with complete excision of the lesion.

Case 2: A 65 year old man presented with one year of painless firm and mobile left parotid lump of 3cm. MRI and CT showed a large 60 x 38 x 37mm mass in left parotid, involving deep lobe, with mild compression of the carotid artery. (Fig 1) There was no lymph node involvement. Core biopsy suggested secretory carcinoma but was also ETV6 negative. He proceeded to total conservative parotidectomy with complete excision of the lesion.

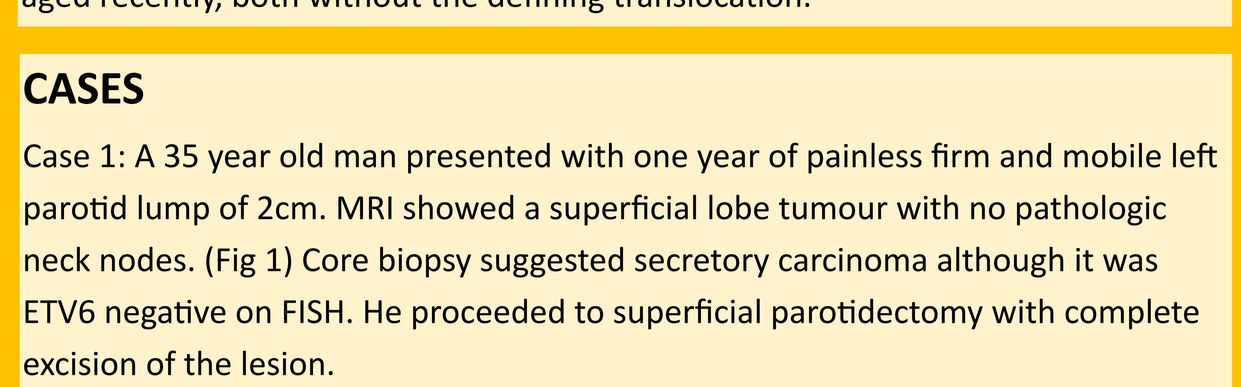

Figure 1. MRIs of Case 1 (A) and MRI and CT of Case 2 (B, C).

MRI shows T2 hyperintense, well lobulated soft density lesion of the parotid gland (A, B). CT (C) shows a left parotid mass displacing, but not evidently invading, adjacent structures, including jugular vein and carotid artery.

Table 1. Comparison of immunohistochemical features between cases

Immunohistochemistry	Case 1	Case 2
S100	+	+
Mammoglobin	+	+
CK5/6	-	+
SOX10	-	+
GCDFP15	+	-
DOG1	-	-
P40	-	-
GCDFP15	+	-
MUC1	+	-
Vimetin	+	+

Table 2. Comparison of MASC with its pathologic mimics.

	MASC	Acinic Cell Carcinoma	Adenocarcinoma not-otherwise-specified	Low-Grade Mucoepidermoid Carcinoma
Clinical	Mainly parotid M>F	Mainly parotid F>M 30% symptomatic More likely bilateral	Mainly minor salivary, followed by parotid M>F	50% major salivary 40% symptomatic
Morphologic/ Cytologic	Microcysts, papillary proliferation, cribriform pattern. Vacuolated eosinophilic cytoplasm, “bubbly” appearance. Mucin intracytoplasmic and intraluminal. Does not usually infiltrate surrounding tissue	Solid, microcystic, papillary-cystic, follicular. Serous acinar cells. Variable cell types and architectures. Usually mucin - Basophilic cytoplasm	Infiltrative. Glandular or ductal. Also solid, tubular, nests, islands, cord-like. Collagenised, myxoid, mucinous stroma	Cystic pattern Squamoid/epidermoid, mucinous, intermediate cells
Immunohistochemical	Strongly positive for Mammoglobin & S-100 STAT5+ GCDFP-15 + DOG1 – No zymogen granules p63 -	PAS positive zymogen granules Non-reactive to amylase antibody. STAT5 + DOG 1 + S-100 +	Mucin	Diffuse p63 in squamoid cells S100- Mammoglobin -
Cytogenetic	ETV6-NTRK3	Nil	Nil	CRTC1 (MECT1)-MAML2

DISCUSSION

Our cases are fairly typical presentations of MASC, however they do illustrate diagnosis without the classic ETV6 fusion gene. On immunohistochemistry, MASC also exhibits co-reactivity of S100 and mammoglobin, which is not typically present in its common pathologic mimics. [3] Nevertheless, it is worth noting that mammoglobin reactivity may be found in low-grade cribriform cystadenoma, polymorphous low-grade adenocarcinoma, mucoepidermoid carcinomas, and pleomorphic adenomas. [4] Furthermore, co-reactivity of S-100 and mammoglobin can be found in polymorphous low-grade adenosarcoma and adenoid cystic carcinoma. [5]

The closest clinical and pathologic mimic remains acinic cell carcinoma, some of which has been retrospectively reclassified as MASC. [5] They are both low-grade and thus behave indolently. [2] Acinic cell carcinoma typically exhibits PAS-positive zymogen granules whilst MASC does not, though there are zymogen-poor variants. [2,3] Table 2 illustrates the pathologic characteristics of the MASC and its common mimics.

Management is less well established given lack of follow up data. Mean disease free survival is 92 months, similar to acinic cell carcinoma. [2] Both our cases did not have neck node involvement and did not receive neck dissection or adjuvant therapy. This would be in-line with the literature suggestion that, in absence of nodal metastasis or high-grade features, it would be reasonable to manage as other low-grade salivary gland cancers.

CONCLUSION

MASC is a rare salivary gland tumour that typically occurs in the parotid and behaves indolently. Diagnosis is typically by identifying the ETV6-NTKR3 fusion gene. However, in its absence, diagnosis can still be made based on morphologic and immunohistochemical features. The closest pathologic mimic is acinic cell carcinoma, and the two also share a similar management and prognosis.

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