Rare disease

Oncocytic carcinoma of the parotid gland with facial nerve invasion

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Summary

Approximately 3% of all head and neck neoplasms originate in the parotid gland and less than 1% are oncocytic. We present the rare case of a 44-year-old man with oncocytic carcinoma of the parotid gland with facial nerve invasion and discuss the characteristics of this rare entity.

BACKGROUND

- ▶ The prognosis of oncocytic carcinomas is not well known because of their low incidence.
- ▶ Decisions regarding best treatment, including neck dissection in cases without nodal spread and the use of chemotherapy and radiotherapy, are not clear due to the paucity of cases.
- ▶ Oncocytic carcinoma may be a difficult diagnosis to make preoperatively on fine needle aspiration (FNA), and therefore extent of surgery may be difficult to plan.

CASE PRESENTATION

A 44-year-old man presented to our clinic with a painful right parotid mass that was tender to touch and had been present for approximately 12 months. On examination, there was a firm body of parotid mass that was 20 mm in diameter and not fixed to the overlying skin. Facial nerve function was normal and there was parasthesia in the territory of the great auricular nerve. There were no intraoral findings or lymphadenopathy.

INVESTIGATIONS

A CT scan showed a single, hypervascular mass, which measured 17×17×19 mm and appeared in close association with the facial nerve. The radiological differential diagnosis included a vascular malformation or hypervascular neoplasm. A follow-up MRI confirmed the mass within the deep lobe of the parotid was abutting the posterior aspect of the right retromandibular vein and bony mandibular ramus. The T2 signal within the lesion was intermediate, raising the likelihood of a carcinoma, possibly an adenoid cystic lesion. No cervical adenopathy or evidence of perineural spread was seen.

An ultrasound-guided fine needle aspirate showed large sheets of oncocytic cells, some traversed by vessels. There was some granular and mucoid material in the background with groups of salivary gland acinar cells also present. The findings suggested a primary salivary gland neoplasm with oncocytic cells but without overt cytological features of malignancy.

DIFFERENTIAL DIAGNOSIS

- ▶ Inflammation¹ – unlikely mumps, suppurative parotitis or acute sialadenitis given the lesion was unilateral and chronic.
- ▶ Benign tumour (most likely).^{1 2}
- ▶ Pleomorphic salivary adenoma (approximately 90% parotid tumours in adults).
- ▶ Warthin's tumour (cystic lymphoepithelial lesion).
- ▶ Haemangioma.
- ▶ Malignant tumour.^{1 2}
- ▶ Adenoid cystic carcinoma.
- ▶ Mucoepidermoid tumour (small proportion malignant).
- ▶ Acinic cell tumours (almost exclusively occur in parotid gland).
- ▶ Squamous carcinoma (rare in parotid).
- ▶ Lymphoma.
- ▶ Oncocytic carcinoma – extremely low on the differential list before imaging and FNA.

TREATMENT

A right total parotidectomy was performed. During the procedure, there was macroscopic evidence of tumour invading the facial nerve (figure 1). Antegrade and retrograde dissection of the facial nerve was undertaken and an intraoperative frozen section of the parotid gland confirmed oncocytic neoplasia only. A radical parotidectomy was then undertaken with immediate facial re-animation using a right short saphenous nerve graft.

OUTCOME AND FOLLOW-UP

Sections from the parotid gland sent for histopathology showed a tumour demonstrating features of oncocytic carcinoma (figure 2). The tumour in parts showed a fibrous capsule and elsewhere infiltrated fat and salivary gland parenchyma. The tumour directly involved the facial nerve and only one lymph node out of 11 lymph nodes was sent for analysis. The resection margins were clear.

At the 4-month follow-up, the patient had completed his course of radiotherapy, receiving 60 Gy to his parotid and 50 Gy to his supraclavicular region. There was no sign of any local or regional recurrent disease. He had a grade

Figure 1 Intraoperative image showing exposed facial nerve (FN) with macroscopic tumour invasion (T). Parotid gland retracted (P). Other structures seen: right ear (E), posterior belly of digastric muscle (PBD) and sternocleidomastoid muscle (SM).

Figure 2 Histopathology reveals oncocytic tumour (T) with entrapped nerve (N) lower left. The tumour cells demonstrate large round nuclei with prominent nucleoli and moderate to abundant eosinophilic cytoplasm. Glandular spaces (G) are also present. (Magnification $\times 100$.)

6 House-Brackmann facial nerve palsy with good speech and swallowing function. He had no concerns about his hearing.

DISCUSSION

Oncocytic carcinoma of the parotid gland is an extremely uncommon neoplasm. First reported in 1953 by Bauer and

Bauer,³ it is the rarest morphology of a group of salivary gland tumours that also include oncocytosis and oncocytoma.⁴ As well as the parotid gland, oncocytic carcinoma has been reported in the submandibular gland, ethmoid sinus, nasal cavity, maxillary sinus, palate, thyroid gland, mediastinum and lung.⁵

The oncocyte itself is a large polygonal cell characterised by a granular and eosinophilic cytoplasm, which reflects the accumulation of mitochondria. Other features include a round uniform nucleus, prominent nucleolus and frequent mitoses.²⁻⁶ Criteria for malignancy include destruction of adjacent structures, perineural or vascular invasion, and distant or regional lymph node metastases.⁵

The role of imaging in the assessment of oncocytic carcinoma is to define the intraglandular versus extraglandular location, to identify malignant features, to assess the extent of local extension and to detect nodal metastases or systemic involvement.⁷

A review of 42 oncocytic carcinomas of the head and neck by Nakada *et al*⁶ showed a male to female incidence ratio of approximately 2 to 1 and a mean age of incidence of 59.7 years. Currently, the main treatment modality for oncocytic carcinoma is surgery because other therapies such as radiotherapy and chemotherapy are thought to produce inferior outcomes although the lack of cases has not yet allowed a systematic evaluation of all treatment modalities.⁸

Learning points

- ▶ Oncocytic carcinoma should be a differential diagnosis in salivary gland tumours where oncocytic cells are present despite their rarity.
- ▶ Normal facial nerve function on examination for a parotid mass does not rule out nerve invasion by the tumour.
- ▶ All salivary gland masses should be adequately assessed, especially in younger patients.
- ▶ Operative surgeons should be prepared to reconstruct the facial nerve in parotid gland surgery.
- ▶ Intraoperative frozen sections may be helpful but cannot be relied upon to give a definitive tissue diagnosis.

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Competing interests None.

Patient consent Obtained.

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