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Branchiogenic carcinoma in the parotid gland

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To the Editor: Branchiogenic carcinoma is a rare condition. When it does occur, it is often misdiagnosed as a metastasis from an unknown primary. Due to the low incidence of this entity of disease, there is always a lack of relevant research data.[1,2] Herein, we report an extremely rare case of branchiogenic carcinoma in the parotid gland to expand the understanding of this disease.

An 89-year-old male patient was referred to the Department of Otolaryngology, Head & Neck Surgery, West China Hospital because of a painless mass in the right parotid region for 8 years which had grown rapidly over the most recent 6 months. Physical examination revealed that the mass was 4.5 cm × 6.0 cm in dimensions. Enhanced computed tomography demonstrated a solid cystic tumor with irregular margin in the right parotid gland [Figure 1A and 1B]. Total parotidectomy was performed under general anesthesia. Surgical exploration revealed that the tumor had an uneven thickness capsule with mixture of brown liquid and necrotic solids in it. Fortunately, facial nerve branches were not embedded in the tumor thus spared. Several enlarged lymph nodes were collected in the superior right neck. Histopathologically, the cyst lining was composed of ciliated columnar and squamous epithelium, and the latter cells multifocally evolved into atypical proliferation, which then led to the formation and the microinvasiveness of squamous cell carcinoma. Moreover, extensive necrosis in the parotid gland was also observed [Figure 1C and 1D]. Immunohistochemically, the tumor cells were positive for P63, P53, pancytokeratin (PCK), and P40. The percentage of MIB-1 positive cells was 20%. *In situ* hybridization of *Epstein-Barr* encoding region *(EBER)* turned out to be negative. The diagnosis of branchiogenic carcinoma was established. No lymphatic metastasis was detected. Postoperative radiotherapy was recommended to the patient but was not adopted. The patient was eventless during the postoperative 2-year follow-up.

Branchiogenic carcinoma is a malignant transformation from branchial anormaly. Its diagnosis has always been one of the most controversial issues in the field of head and neck oncology since its proposal in 1882. Advocates for its existence normally adhere to rigid criteria to validate their stand. However, opponents tend to argue that the entity is simply metastatic disease masquerading as a branchial cleft primary. Generally, branchial cysts mainly occur in the neck and extremely rarely in the parotid gland. Those growing in the parotid gland probably come from the first branchial cleft anormaly. In this case, the histological study revealed a transition from normal squamous epithelium of a branchial cyst to atypical proliferation, squamous carcinoma formation, and microinvasiveness. In general, a diagnosis of branchiogenic carcinoma could be established before any possibility of local recurrence or distant metastasis in the head and neck is ruled out.[3,4] This case implied that, due to its malignant potential, a branchial anomaly should be treated at an early stage. From diagnostic perspective, this case is quite likely to be misdiagnosed as Warthin's tumor by medical history and CT imaging, which is a common entity of disease among old male patients with long history of smoking. In addition, attention should be paid to cystic lymph node metastasis in the differential diagnosis. Regarding treatments for this cancer, surgical resection, selective neck dissection, followed by adjuvant radiotherapy are normally recommended. Although previously recorded cases of branchiogenic carcinoma in the head and neck are quite limited, their overall prognosis has seemed satisfactory so far away.[5]

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the forms, the patient's guardians have given their consent for the use of patient's images and other clinical information in the journal. The patient's guardians understand that the names and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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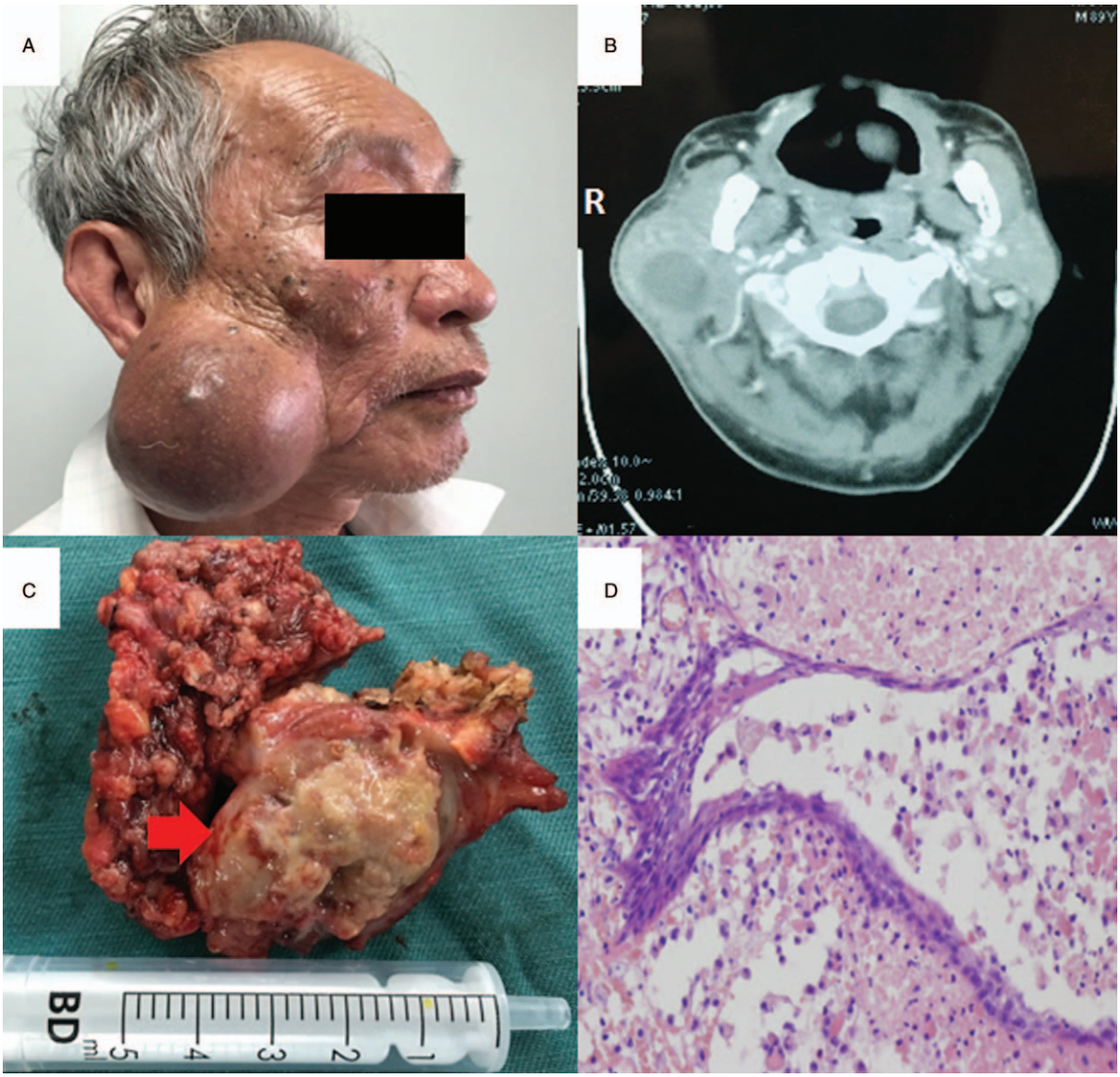

Figure 1: Enhanced computed tomography and pathology of the branchiogenic carcinoma in the parotid gland. (A) A lump in the right parotid region. (B) Enhanced computed tomography demonstrated a solid cystic tumor with irregular margin in the right parotid gland. (C) The tumor revealed a cystic solids lesion with an uneven thickness of the capsule (red arrow). (D) Histologically, a transition of squamous epithelium of a normal branchial cyst squamous epithelial lining to squamous carcinoma was revealed (Hematoxylin-eosin staining, original magnification ×400).

Conflicts of interest

None.

References

1. Roche JP, Younes MN, Funkhouser WK, Weissler MC. Branchiogenic carcinoma of a first branchial cleft cyst. Otolaryngol Head Neck Surg 2010;143:167–168. 168.e1. doi: 10.1016/j.otohns.2010.01.031.
2. Strassen U, Hofauer B, Matsuba Y, Becker K, Mansour N, Knopf A. Bronchogenic cancer: it still exists. Laryngoscope 2016;126:638–642. doi: 10.1002/lary.25660.
3. Khafif RA, Prichep R, Minkowitz S. "Primary branchiogenic carcinoma." Head Neck 1989;11:153–163. doi: 10.1002/hed.2880110209.
4. Lin YC, Fang SY, Huang RH. Branchiogenic squamous cell carcinoma. A case report. Int J Oral Maxillofac Surg 2004;33:209–212. doi: 10.1054/ijom.2002.0450.
5. Katori H, Nozawa A, Tsukuda M. Post-operative adjuvant chemo-radiotherapy with carboplatin and 5-fluorouracil for primary branchiogenic carcinoma. J Laryngol Otol 2005;119:467–469. doi: 10.1258/0022215054273241.

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