

Annals of Clinical and Medical Case Reports

Case Report

ISSN: 2639-8109 | Volume 8

Mucoepidermoid Carcinoma of Parotid Gland: 2 Cases and Literature Review

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Received: 20 Dec 2021

Accepted: 11 Jan 2022

Published: 18 Jan 2022

J Short Name: ACMCR

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Citation:

Shuting L, Mucoepidermoid Carcinoma of Parotid Gland: 2 Cases and Literature Review. Ann Clin Med Case Rep. 2022; V8(6): 1-3

Keywords:

Ultrasound; Mucoepidermoid carcinoma;
Parotid gland

1. Abstract

Mucoepidermoid Carcinoma (MEC) of the salivary gland accounted for 5% of all salivary gland tumors and 20% of all malignant salivary gland tumors [1]. About 50% of salivary gland Mucoepidermoid carcinoma occurred in the parotid gland, and 45% occurred in small salivary glands of the maxillary and buccal mucosa [2]. The main age of onset is between 35-65. However, there are few reports at home and abroad, and even fewer reports on the ultrasonic characteristics and pathological basis of a single disease [3]. Mucoepidermoid carcinoma of the parotid gland is a malignant tumor, which can be divided into low, medium and high malignant types according to the degree of malignancy of the tumor [3, 4]. Ultrasonographic images of low grade mucoepidermoid carcinoma of the parotid gland mostly show well-defined masses with regular morphology, which are similar to benign tumors and are easily misdiagnosed as benign tumors [5].

A total of 2 cases of mucoepidermoid carcinoma of the parotid gland were reported from January 2010 to November 2020. Parotid gland ultrasound examination was performed pre-operation, and parotid gland mucoepidermoid carcinoma was confirmed by surgery and histopathology in our hospital. Through retrospective analysis of the reasons for the inconsistency between ultrasound diagnosis and pathological results, it is helpful to understanding of mucoepidermoid carcinoma of parotid gland, and improve the accuracy of ultrasound diagnosis.

2. Case 1

Yang XX, female, 26 years old, due to the discovery of left posterior ear mass for one and a half years and enlargement for 2 months, Specialist examination: swelling was observed in the parotid gland area behind the left ear, with a size of about 3.5cmx3.0cm. The skin was not swollen and broken, with hard contact, clear boundary, poor mobility, and no tenderness.

Ultrasound examination: a hypoecho mass with a size of about 4.0cmx2.3cm was detected behind the lower pole of the left parotid gland, with a clear boundary, irregular shape and petal-like shape. And a short linear hyperecho was found inside, CDFI: Abundant linear blood flow information could be seen inside, Adler grade III, and the measured arterial spectrum: the VP = 16.7 cm/s, RI = 0.79.

Ultrasonic diagnosis: hypoecho mass in the left parotid gland, considering (1) pleomorphic adenoma, not excluding the possibility of malignant transformation; (2) Basal cell tumor. Parotid gland mass resection was performed. And pathological results showed that the parotid gland mass was consistent with mucoepidermoid carcinoma. Immunohistochemistry: CK7 (+), SMA (partial +), CEA (partial +), S-100 (focal +), EMA (+), CK5/6 (partial +), Vimentin (partial +), CD34 (-), P63 (+), Ki67 nuclear positive rate < 15%. Combined with histological morphology and immunohistochemical phenotype, the lesions were consistent with mucoepidermoid carcinoma (low grade) (Figure 1 and 2).

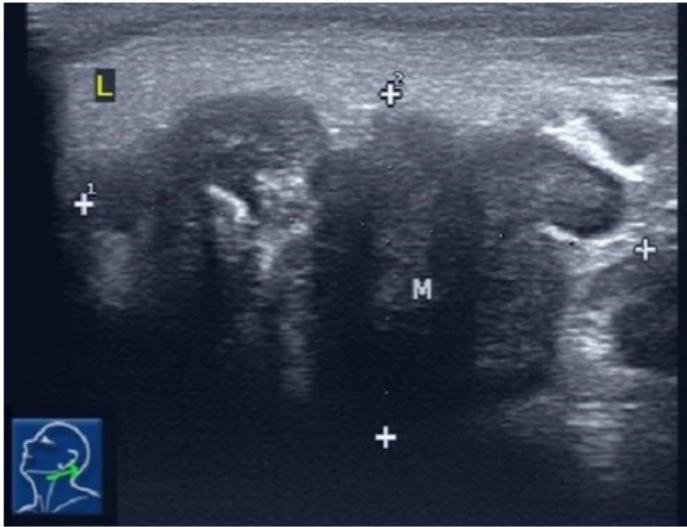


Figure 1: Two-dimensional ultrasound showed hypoecho mass in the left parotid gland with clear boundary and irregular shape

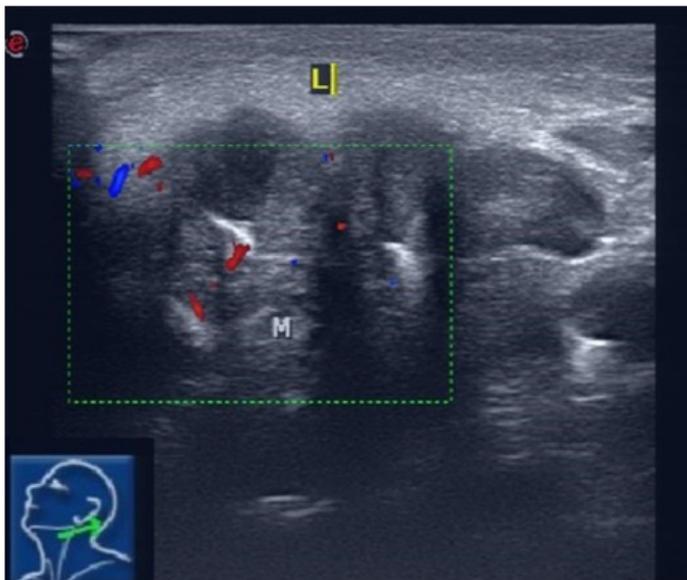


Figure 2: Color Doppler ultrasonography showed abundant linear blood flow information in the hypoecho mass

3. Case 2

Chen XX, male, 46 years old, went to the hospital after finding a mass in the left parotid gland area for half a year. A specialist examination showed that a mass with a size of about 2.0cmx2.0cm was palpable in the left parotid gland area. The skin was soft, smooth and without obvious tenderness. Ultrasound examination: a 2.3cmx1.3cm cystic mixed-echo mass was detected behind the left parotid gland, which was dominated by solid components, with clear boundary and irregular shape. CDFI: no obvious blood flow information was observed, and Adler grade 0. Ultrasound diagnosis: mixed-echo mass in the left posterior parotid gland, considering lymphoma or others, further examination such as contrast-enhanced ultrasound was suggested. Parotid gland mass resection was performed. Pathological results: Parotid gland mass tended to mucoepidermoid carcinoma. Immunohistochemistry: CK7 (+),

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CD117 (dot +), CEA (partial +), S-100 (-), EMA (+), CK5/6 (+), Vimentin (focal +), CD34 (-, vascular +), P63 (+), Ki67 nuclear positive rate is about 2-10%. Combined with histological morphology and immunohistochemical phenotype, the lesions were consistent with mucoepidermoid carcinoma (high grade) (Figure 3 and 4).

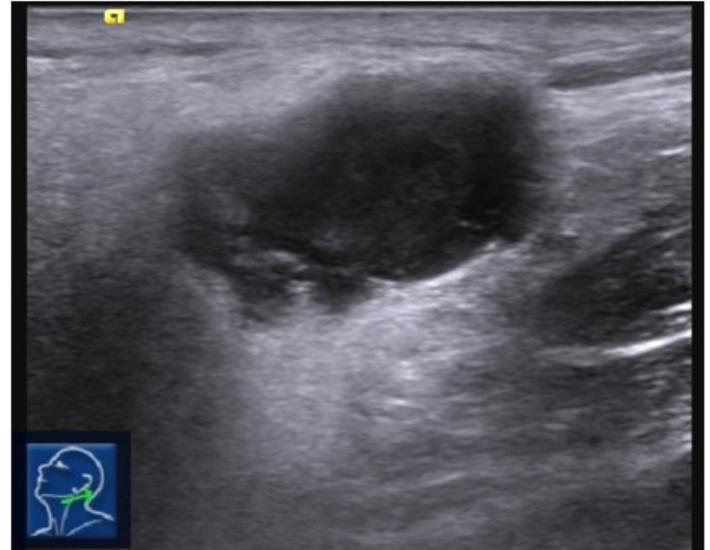


Figure 3: Two-dimensional ultrasonography showed mixed-echo mass in the left parotid gland with clear boundary and irregular morphology

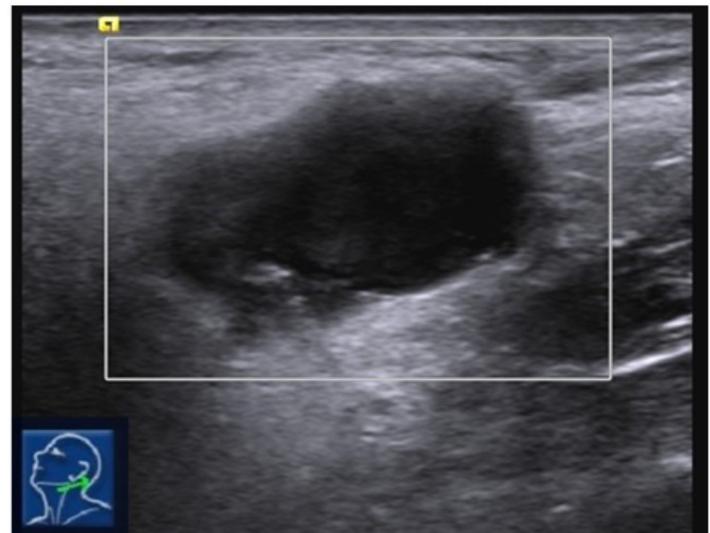


Figure 4: Color Doppler ultrasonography showed no obvious blood flow information in the mixed-echo mass

4. Discussion

4.1. Ultrasonographic Features and Pathological Basis of Mucoepidermoid Carcinoma of Parotid Gland

Typical ultrasound images of mucoepidermoid carcinoma of the parotid gland showed hypoechoic masses with enhanced posterior echogenic changes, unclear boundaries, incomplete or irregular morphology, low and uneven internal echogenicity, and inclusion of very hypoechoic or anechoic cystic cavities containing mucus [3].

The pathological basis of unclear mass boundary is that tumor cells often have obvious infiltration in glandular parenchyma. Meanwhile the growth pattern is caused by infiltration [6]. The histology of mucoepidermoid carcinoma includes epidermoid cells, mucoepidermoid cells and intermediate cells. There are mucoepidermoid cells on the wall of the cyst, resulting in anechoic cavities in the mass.

Because of the different proportion of epidermoid cells, mucoepidermoid cells and intermediate cells in and between tumors, and different tumor cell differentiation, the clinical manifestations and the sonographic findings of mucous epidermoid carcinoma can be varied [7]. Mucous epidermoid carcinoma of the parotid gland can be divided into low level, middle level and high level three types, this is closely related to prognosis [8]. The high grade type is reflected in the obvious malignant signs, such as unclear boundary, irregular shape and uneven internal echo. The low-grade type shows clear boundary and regular morphology, similar to the ultrasound appearance of benign tumors.

4.2. Differential Diagnosis

With the different differentiation of tumor cell in mucous epidermoid carcinoma, high differentiation of tumor cell is representing for low-grade malignant. The ultrasonographic part is characterized by low echo conglomeration, clear border and regular morphological structure, similar to benign tumor [8]. This is also the reason of misdiagnosis of case 1, such as pleomorphic adenoma, worthing tumor (The latter often has a long history, slow bag piece growth, scarce blood flow information, and it's more common in men with smoking history). It would be better to combine with the clinical diagnosis. Mucoepidermoid carcinoma with low differentiation has a relatively high degree of malignancy. Its sonograms are low-echo masses with irregular morphology and abundant blood flow, which are easy to distinguish from benign tumors [9]. Other salivary gland malignancies may also be hypoechoic masses with irregular morphology, abundant blood flow and enhanced posterior echogenicity, but very little hypoechoic or anechoic in the tumor due to lack of mucous content. However, it is difficult to distinguish between these malignancies when necrotic cystic changes occur [10].

5. Conclusion

In conclusion, mucoepidermoid carcinoma of the salivary gland can be divided into low grade, middle grade and high grade according to the degrees of malignancy [11]. On the whole, it has the common sonographic manifestations of salivary gland malignancy [12]. At the same time, it still has its characteristics. Low grade mucoepidermoid carcinoma is easily misdiagnosed as benign tumor [13]. Therefore, attention should be paid to differential diagnosis. Ultrasound is a good method for the diagnosis of mucoepidermoid carcinoma of salivary gland, which is simple, non-invasive and reproducible [7].

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