


CASE REPORT

Tumor-to-tumor metastasis to Warthin tumor presenting as an initial sign of breast carcinoma: A case report

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Abstract

Metastases of distant primary tumors on the parotid gland are very rare. Tumor-to-tumor metastasis to salivary gland tumors is extremely rare. A case of a 69-year-old woman with a large left parotid gland mass with no previous salivary gland problems or cancer. Fine-needle aspiration (FNA) showed evidence of a Warthin tumor. A total left parotidectomy was performed. The final pathology report showed a Warthin tumor containing two metastases of adenocarcinoma. The immunohistochemistry of the metastases led to the diagnosis of primary breast cancer. A negative FNA does not rule out the possibility of a malignant parotid tumor or metastasis, and a parotid lump should be presumed to be a secondary tumor until proven otherwise if the patient has a history of any distant primary cancer. Our patient case serves as a reminder that a new distant primary cancer might be the cause of a parotid lump.

KEYWORDS

breast cancer, parotid gland, salivary gland tumor, tumor-to-tumor metastasis, Warthin tumor

1 | INTRODUCTION CASE REPORT

Metastases of distant primary tumors on the parotid gland are very rare,¹ as are tumor-to-tumor metastases to salivary gland tumors.² We present a case in which lobular breast carcinoma metastases were found within a Warthin tumor of the left parotid gland. The pathology of the distant metastases steered the diagnostics of the primary breast tumor. To our knowledge, such a case of tumor-to-tumor metastasis to Warthin tumor with breast cancer as the donor has not previously been published in the English literature.

2 | CASE

A 69-year-old woman with hebephrenic schizophrenia and hypertension was referred to the tertiary ENT clinic with a 2-month history of a mass on the left side of her neck. There was no previous history of salivary gland problems or cancer. The patient was a non-smoker.

The patient was examined at the ENT clinic. Clinical examination revealed a 5 × 9 cm mass in her left parotid gland. Palpation-guided fine-needle aspiration (FNA) of the mass was performed. The cytology showed evidence of a Warthin tumor (Figure 1). A contrast-enhanced CT scan of the neck showed a 3.6 × 2.8 × 4.5 cm tumor in the left

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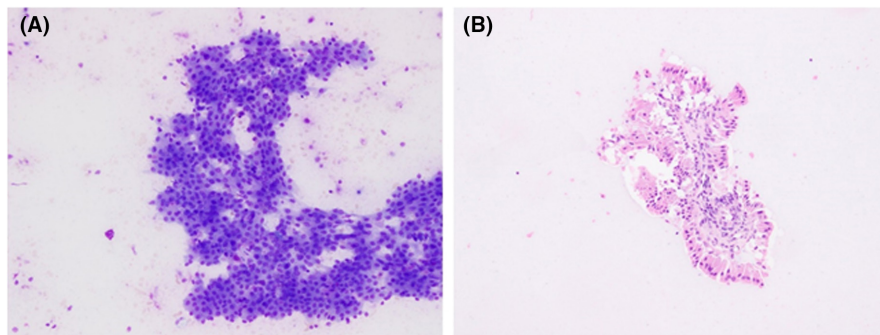


FIGURE 1 Cytological features of the Warthin tumor showing oncocytic cell clusters. (A) Cytologic smear, MGG (100×). (B) Cell block, H&E (100×)

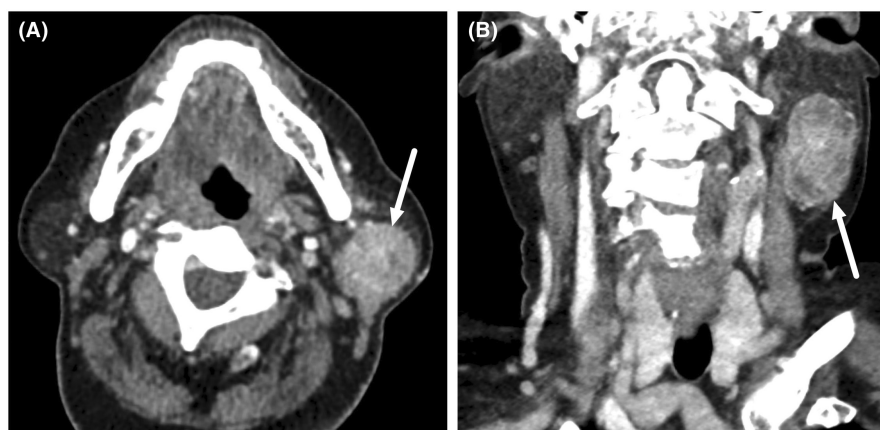


FIGURE 2 Axial (A) and coronal (B) contrast-enhanced CT images showed a large enhancing tumor (arrows) in the left parotid gland

parotid gland (Figure 2). According to the radiologist, the tumor was likely to be either a malignant parotid gland tumor or a metastasis from squamous cell carcinoma. A total parotidectomy of the left parotid gland was performed. The frozen section showed that the tumor was a Warthin tumor.

The final pathology report revealed that the tumor of the left parotid gland was a Warthin tumor containing two carcinoma metastases (Figure 3). The immunohistochemistry of the metastases showed that the carcinoma cells stained with Pan Cytokeratin, Cytokeratin 7, estrogen receptor (ER), GATA3, mammaglobulin, and GCDFFP-15. CD20, CD3, and CD5 were negative, as were the Cytokeratin 20 and progesterone receptor (PR). The histomorphology and results from the immunohistochemical stainings suggested that the primary tumor was likely to be a lobular carcinoma of the breast.

Mammography and breast ultrasound were performed. The imaging revealed a 10 × 6 × 8 cm tumor in the upper medial lobe of the right breast. The core biopsy showed that the tumor was a Grade II lobular breast carcinoma with ER 95%, PR 0%, HER2 negative, and a proliferation rate (Ki-67) of 14% (Figure 4). The whole-body CT scan and the whole-body gamma scan showed bone metastases. Treatment plan included Letrozole (at 2.5 mg) and Denostumab (120 mg injection every 6 weeks) and check-ups with oncologist every 3 months. Now, 15 months after the treatment began, the patient is stable.

3 | DISCUSSION

Most salivary gland tumors occur in major salivary glands, most commonly in the parotid gland (70%–81%). Most parotid tumors are benign, such as pleomorphic adenoma and Warthin tumor.^{3,4} Warthin tumors almost exclusively occur in the parotid gland,⁴ but as Bajpai showed can rarely be found in minor salivary glands.⁵ In cases of Warthin tumor, malignant transformation is very uncommon (0.3%).⁶ Malignancies of the parotid gland account for approximately 25% of all parotid gland tumors and metastatic cancers usually arise from cutaneous malignancies of the head and neck region, squamous cell carcinoma, and melanoma of the skin being the most common.^{3,7} Distant primary metastases of the parotid gland are very limited, as the literature suggests that only 10%–20% of parotid metastases are from infraclavicular primary tumors. The most common distant primary tumors usually originate from the lungs, kidneys, and breasts.¹

Tumor-to-tumor metastasis is an extremely rare phenomenon,⁸ and few cases with a salivary gland tumor as the recipient have been published. Laco et al.² showed tumor-to-tumor metastases to a Warthin tumor from lung and renal cancers, but this phenomenon with breast cancer as the donor has not been previously published.

Palpation- or an ultrasound-guided FNA is important in distinguishing between benign and malignant tumors of the parotid gland. The FNA has moderate sensitivity (78%)

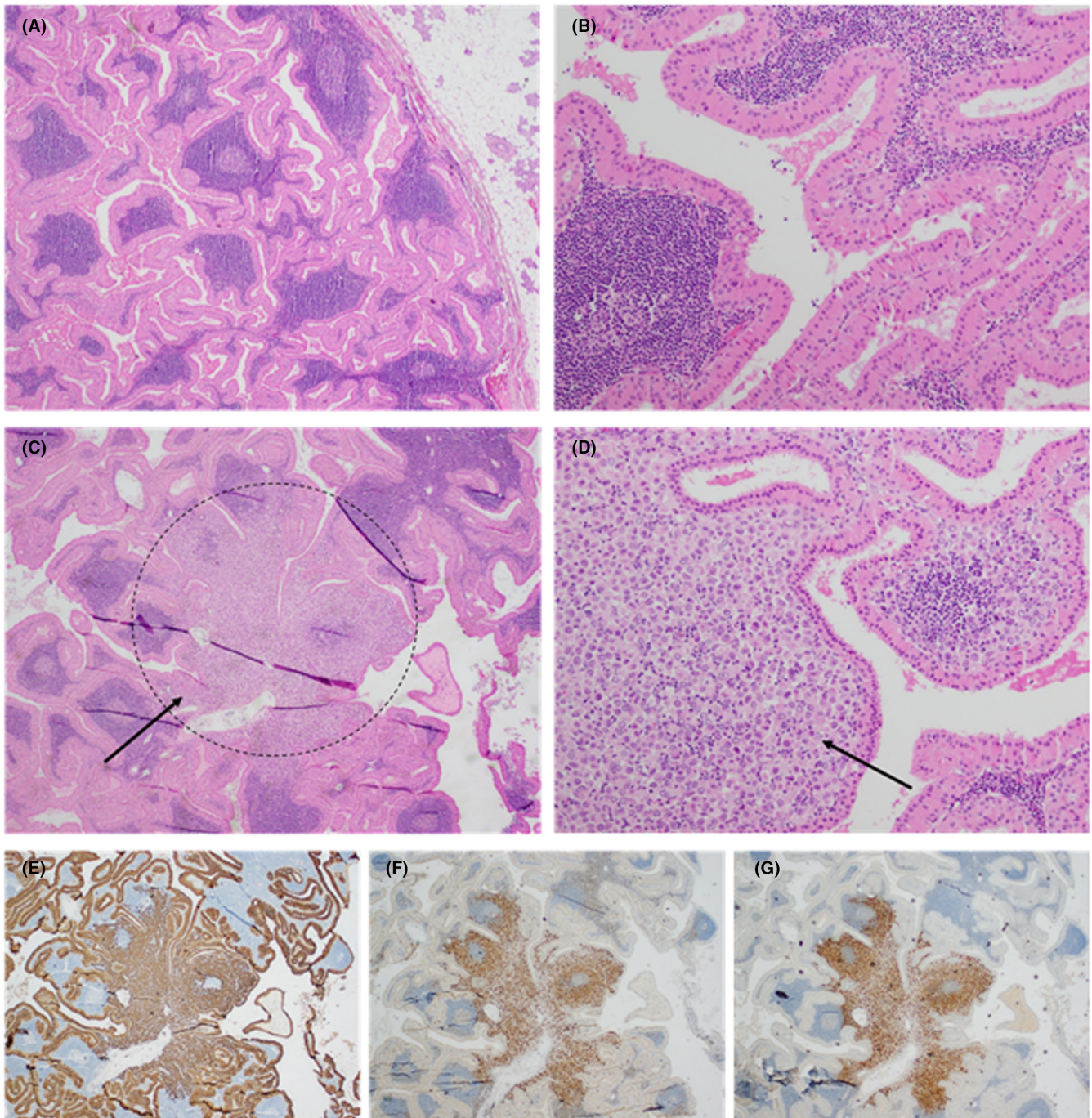


FIGURE 3 (A, B) Histological features of the Warthin tumor, H&E (20× and 100×). (C, D) Histological features of the breast cancer metastasis in Warthin tumor, H&E (20× and 100×). Metastasis indicated with a circle and arrows. (E–G) Immunohistochemistry sections of the breast cancer metastasis stained for pancytokeratin (E), GATA3 (F) and estrogen receptor (G) (all images 20×). H&E, hematoxylin and eosin stain

and high specificity (98%), but as with our patient, a negative FNA does not rule out malignant disease.⁹ Clinicians should always consider the possibility that a parotid gland tumor might be malignant, despite a negative FNA.

Breast carcinoma is the most common cancer among women, invasive ductal carcinoma (IDC) being the most common subtype. Invasive lobular carcinoma (ILC) makes up 10%–15% of all breast carcinoma cases. Although ILC tumors have a good prognosis, they can metastasize easily,

as seen with our patient already having distant parotid and bone metastases when the primary breast tumor was diagnosed.^{10,11}

Few cases of parotid gland metastasis from breast carcinoma have been published in the English literature, and only 14 cases were reported worldwide between 1982 and 2010.¹² Many patients had a history of breast cancer. A parotid lump should be presumed to be a secondary tumor until proven otherwise if the patient has a history of breast

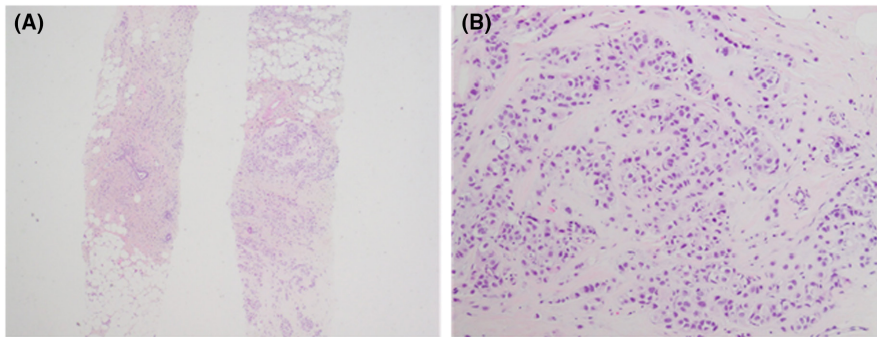


FIGURE 4 (A, B) Histological features of the breast tissue core biopsies showing primary invasive lobular carcinoma (ILC) H&E (20× and 100×). H&E, hematoxylin and eosin stain

cancer or any other distant primary cancer.¹³ Although our patient's hebephrenic schizophrenia might have contributed to the late diagnosis of the large primary breast tumor, this case serves as a good reminder that clinicians ought to remember that new distant primary cancer can be the cause of a parotid lump.

AUTHOR CONTRIBUTIONS

Iisa Mansikka: Conceptualization; investigation; project administration; writing – original draft; writing – review and editing. **Ipo Kinnunen:** Conceptualization; supervision; writing – review and editing. **Jussi Hirvonen:** Conceptualization; supervision; writing – review and editing. **Paula Vainio:** Conceptualization; supervision; writing – review and editing. **Jarno Velhonoja:** Conceptualization; investigation; supervision; writing – review and editing.

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CONFLICT OF INTEREST

The authors have no potential conflicts of interest.

DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

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