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CASE REPORT

Isolated late metastasis from testicular seminoma presenting as a parotid gland mass: case report and review of the literature

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ABSTRACT

Parotid metastases from non–head-and-neck cancers are rare and may represent a diagnostic and therapeutic challenge. A late metastasis to the parotid gland from a seminoma is an unusual manifestation of disease. A 45-year-old man with a history of testicular seminoma 5 years earlier presented with a rapidly progressing parotid mass. Ultrasonography and computed tomography showed a space-occupying lesion at the angle of the right jaw. The mass was infiltrating into the parotid gland and into the parapharyngeal space. A primary parotid neoplasm was suspected, and panendoscopy combined with open biopsy was performed. Histology examination confirmed a seminoma metastatic to the parotid gland, and comparison with the primary tumour showed identical histology. The patient received chemotherapy for recurrent seminoma in accordance with the PEI (cisplatin, etoposide, ifosfamide) protocol. After 4 courses of chemotherapy, salvage radical parotidectomy with removal of all suspicious residual tumour tissue was performed.

This case illustrates the difficulties that may be encountered in the differential diagnosis of parotid gland masses and underlines the necessity for a detailed clinical history and for strong interdisciplinary collaboration between oncologists and pathologists to correctly diagnose cases with such unusual presentations.

KEY WORDS

Seminoma, parotid gland, late metastasis

1. INTRODUCTION

Cutaneous malignancies in the head and neck commonly metastasize to the parotid gland. Squamous cell carcinomas of the skin may metastasize in up to 5% of patients, with the parotid lymph nodes being the most frequent site for spread[1]. In addition, carcinomas in the upper aerodigestive tract may also metastasize to the parotid lymph nodes[2]. Extremely rare neoplasms in the head-and-neck region that have been reported to metastasize to the parotid gland include malignant hemangiopericytoma, atypical fibroxanthoma, Merkel cell carcinoma, epithelioid hemangioendothelioma, and chondrosarcoma[3–5].

Parotid gland metastases from carcinomas in sites not in the head and neck are rare. Among the histologic subtypes most commonly encountered are renal cell carcinoma[6], breast cancer[7], lung cancer[8], and prostate cancer[9]. Rarely reported entities include adrenal neuroblastoma, rhabdomyosarcoma, leiomyosarcoma, hepatocellular carcinoma, liposarcoma, and urachus adenocarcinoma of the urinary bladder[10–13].

Immunohistochemistry has improved the differential diagnosis of such lesions. Germ cell tumours in the testis usually metastasize to retroperitoneal lymph nodes, lungs, liver, and brain. Other lymphatic or organ metastases are rare, especially in the head-and-neck area. Nonetheless, a few cases of germ-cell neoplasia metastatic to cervical lymph nodes have been reported in the English-language literature; some of these represented the first manifestation of the primary tumour[14–17].

Qiu *et al.*[18] reported the first and only case to date of seminoma metastatic to the parotid gland. Here, we present a similar rare case of a singular late metastasis from a testicular seminoma, presenting as an extensive parotid gland mass 5 years after completion of primary polychemotherapy.

2. CASE DESCRIPTION

A 45-year-old man presented in January 2012 with a large progressive and painless space-occupying lesion that had been present for 6 months in the area of the right mandibular angle. Ultrasonography showed a hypoechoic, inhomogeneous, diffusely perfused intraparotid lesion, 6×4 cm in size [Figure 1(A,B)]. Computed tomography of the neck, chest, and abdomen with contrast enhancement showed a space-occupying lesion 8.0×7.7 cm in

size, with infiltration of the parotid and parapharyngeal space and destruction of the head of the mandible and the ascending mandibular branch [Figure 1(C,D), arrow]. There was no evidence of other organ or lymph node involvement.

The patient's history showed that inguinal hemicastration of the left testicle had been carried out at another urology department in 2007 because of a seminoma weighing 1.2 kg, with minimal elements of an immature teratoma. At that time, a solitary retroperitoneal lymph node metastasis, up to 12 cm in size, had been found. Lactate dehydrogenase measured 499 U/L (normal: <250 U/L); β-human chorionic gonadotropin (β-HCG), 17.4 mIU/mL (normal: <5 mIU/L); and alpha-fetoprotein (AFP), 420.5 ng/mL (normal: <10 ng/mL). None of the imaging examinations performed at the time showed distant metastasis. The TNM classification was pT4 pN3 L0 V0 cM0, Union for International Cancer Control stage IIC, with an intermediate prognosis in accordance with the International German Cell Cancer Collaborative Group classification. After 4 cycles of PEB (cisplatin, etoposide, bleomycin) chemotherapy, a persistent necrotic renal hilum lymph node was resected by the retroperitoneal approach, with left-sided nephrectomy with curative intent. Histology examination showed no evidence of vital tumour tissue.

The differential diagnosis for the patient's new presentation included a primary malignancy in the parotid gland, osteosarcoma, or metastasis from the known seminoma. For further diagnostic clarification, an open parotid biopsy was performed. Intraoperatively, a well-vascularized, lividly soft tumour was found, and multiple samples were taken. Urologic assessment showed no evidence of a local recurrence. Screening for tumour markers showed a normal alpha-fetoprotein level of 1.9 ng/mL and a slightly raised total HCG, with β-HCG being 7.7 mIU/mL.

Re-evaluation of the histology slides from the primary tumour specimen showed exclusively seminomatous differentiation. The tissue was composed of solid aggregates of large polygonal cells,

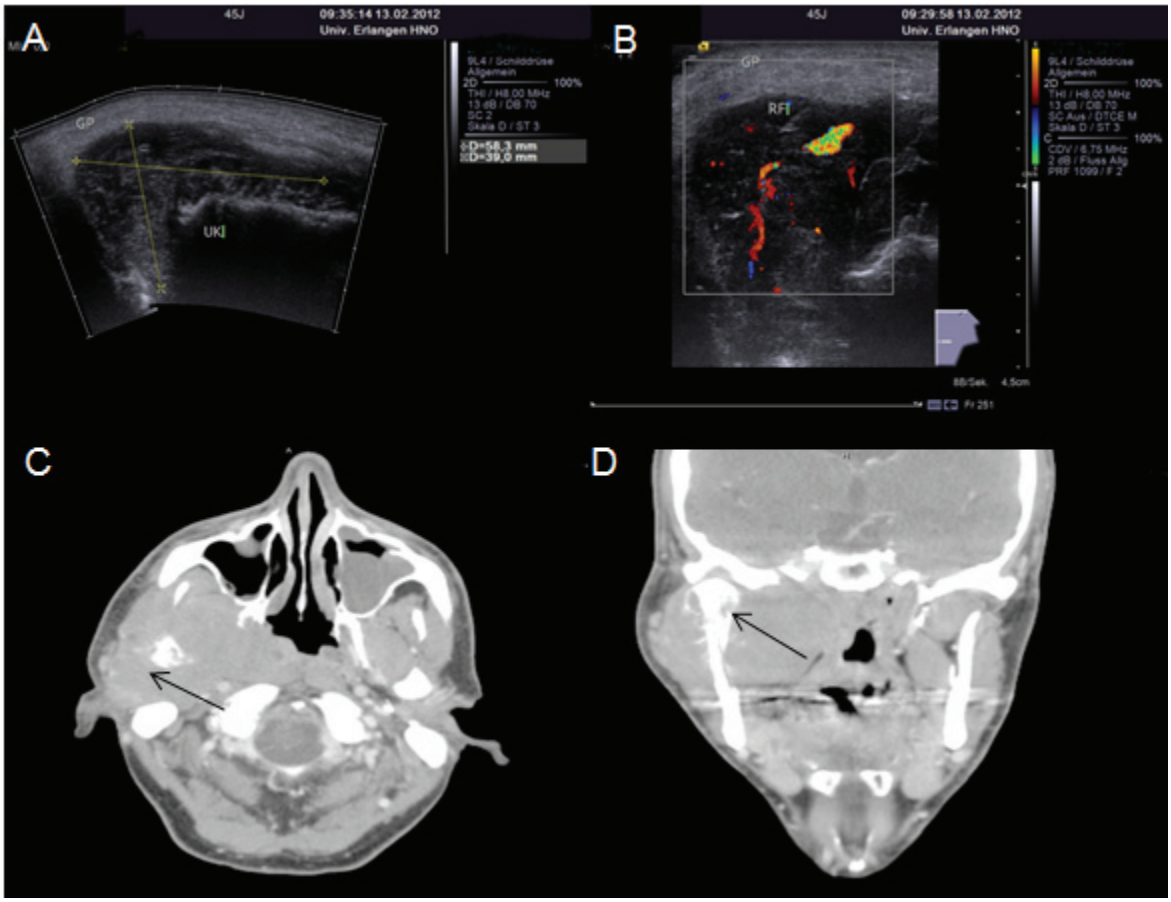

FIGURE 1 (A,B) Ultrasound image of the parotid tumour on the right side, showing a highly suspicious, hypoechoic, inhomogeneous, diffusely perfused, polycyclic intraparotid space-occupying lesion with unclear boundaries, 6×4 cm in size. (C) Axial contrast computed tomography of the head and neck shows a space-occupying lesion with soft-tissue density, 7.5×5.7 cm in size, infiltrating the right masticator space and parotid space. Medially, the tumour extends into the parapharyngeal space. (D) Coronal contrast computed tomography of the head and neck shows osteolytic destruction of the right ascending branch of the mandible with destruction of the head of the mandible (arrow). Cranially, the space-occupying lesion extends up to the base of the skull, but does not appear to be infiltrating it.

with rounded open nuclei and a pale-staining rim of cytoplasm. The tumour foci were surrounded by characteristic thin fibrous septa containing isolated mononuclear inflammatory cells. There was extensive tumour necrosis and minimal foci of abortive tubule formation suggestive of a transition to an immature teratoma. However, no evidence of a clear-cut nonseminomatous component was present.

Immunohistochemical investigation showed diffuse expression of placental alkaline phosphatase and the c-Kit receptor (CD117) in almost all of the seminoma cells. In addition, scattered tumour cells showed reactivity with pankeratin marker (KL1). The tumour cells were negative for AFP, CD30, and β-HCG. The retroperitoneal node metastasis showed pure seminoma. The preoperative parotid gland biopsy showed normal salivary gland acini [Figure 2(A), right], surrounded by seminoma tissue [Figure 2(A), left], with histologic characteristics identical to those of the primary tumour, without a detectable teratomatous component [Figure 2(B)]. Strong membranous expression of CD117 was seen in all tumour cells [Figure 2(C)]. Placental alkaline phosphatase showed more variable expression in the tumour cells [Figure 2(D)].

Because of the extent of the metastasis, with bone infiltration, the tumour was considered inoperable, both oncologically and in view of the resulting morbidity. At the interdisciplinary tumour board, chemotherapy with curative intent was indicated. In accordance with guidelines, this therapy started with the PEI regimen (cisplatin 20 mg/m^2 on days 1–5 as a 30-minute infusion over 30 minutes; etoposide 75 mg/m^2 on days 1–5 as a 1-hour infusion; and ifosfamide 1200 mg/m^2 on days 1–5 as a 1-hour infusion). A total of 4 courses were administered.

Re-staging based on contrast computed tomography showed partial remission, with suspicion of residual intraparotid tumour [Figure 3(A)]. On ultrasonography, a hypoechoic area 22.0×17.5 mm in size was identified in the deep caudal part of the gland, corresponding to the computed tomography findings [Figure 3(B)]. Measurement of β-HCG was in the normal range. The tumour board recommendation favoured salvage surgery over tight clinical observation because of the young age of the patient and the possible nonseminomatous components of the primary and the metastasis. Preoperative facial nerve electromyogram yielded a House index of I.

Radical parotidectomy with facial nerve monitoring and selective neck dissection was performed

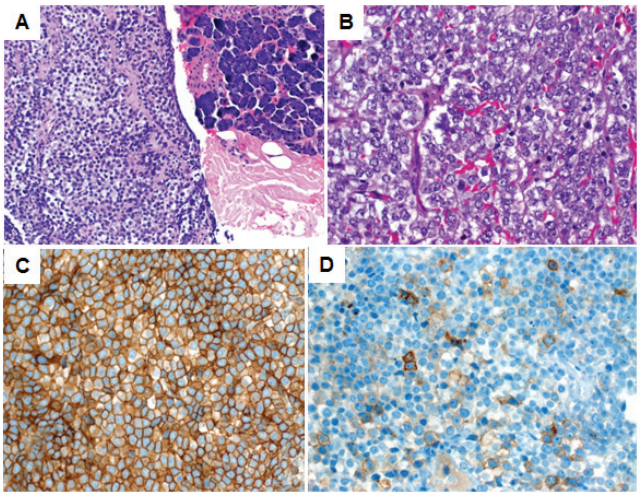

FIGURE 2 (A) Histology evaluation shows normal salivary gland acini (right), surrounded by seminoma tissue (left). 100× original magnification. (B) At higher magnification, the parotid metastasis appears identical to the primary tumour. 400× original magnification. (C) Immunohistochemistry shows strong membranous expression of the Kit receptor CD117, as in the primary tumour. 400× original magnification. (D) Placental alkaline phosphatase immunoreactivity varies considerably in the tumour. 400× original magnification.

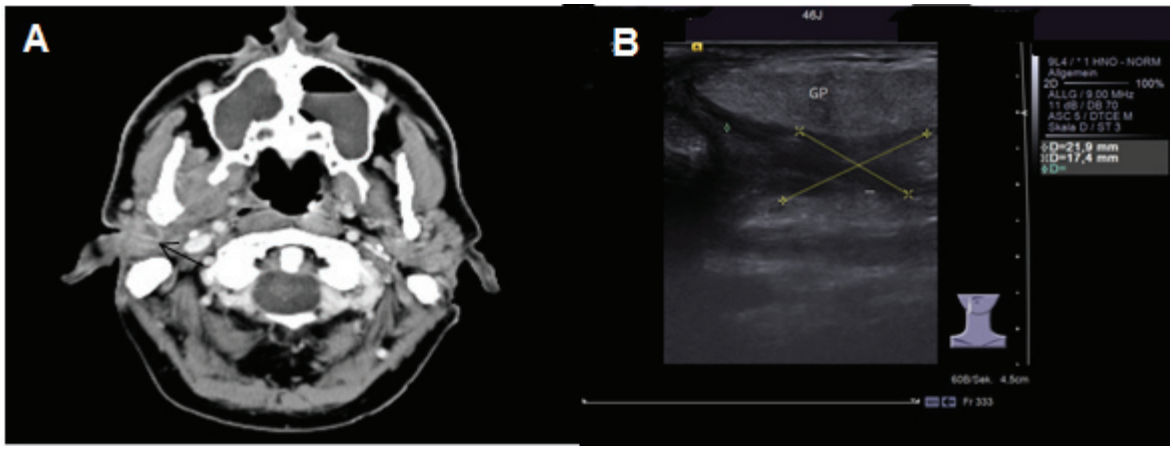

FIGURE 3 (A) After completion of chemotherapy for the recurrence, axial contrast computed tomography of the head shows a residual intraglandular tumour with central necrosis (arrow). (B) On ultrasonography, a hypoechoic area 22.0×17.5 mm in size was identified in the deep caudal part of the gland, corresponding to the computed tomography findings.

in July 2012. After partial facial nerve resection because of tumour infiltration, reconstruction of the ocular branch using an end-to-end anastomosis was performed. Partly cicatrized, brittle, and necrotic nonvital-appearing tumour tissue was seen intraoperatively in the medial part of the gland, corresponding to the preoperative imaging findings. This tissue was macroscopically resected with healthy margins. The post-chemotherapy resection specimen showed extensive necrosis and histiocytic reaction without detectable viable residual tumour tissue.

Immediately postoperatively, the patient had an incomplete peripheral facial nerve paresis, House index V. An eyelid weight was implanted shortly afterwards, and intensive rehabilitation was initiated. The case was discussed once again at our interdisciplinary tumour board with respect to postoperative radiotherapy. Because of the non-malignant operative specimen, close clinical follow-up was indicated.

3. DISCUSSION

Testicular germ cell tumours are extremely chemotherapy-sensitive. Pure seminomas are also sensitive to radiation, and most cases are highly curable using first-line treatment regimens. In most patients with disseminated germ cell tumours, 3–4 courses of standard-dose PEI should be regarded as the treatment of first choice[19,20]. After first-line polychemotherapy for advanced seminomas, approximately 8% of patients will relapse[21]. Second-line chemotherapy with further cisplatin-based regimens can result in long-term disease-free survival in up to 50% of patients[22]. According to the findings of a large case series, adverse prognostic factors in patients with metastatic germ cell tumours who relapsed after cisplatin-based first-line chemotherapy were refractory disease or very early relapse; elevated AFP or high β-HCG; metastasis to bone, brain, or liver; and nonseminomatous histology[23]. Late relapses (that is, more than 2 years after primary treatment) are comparatively rare and a matter of controversy in the literature. According to one case series, surgery should be considered the preferred mode of therapy for late relapses of testicular cancer; chemotherapy is supposed to have only modest success in this entity. However, from the data published in the report, most of the cases appeared to consist of nonseminomatous tumours[24]. According to a larger, more recent review, chemotherapy and salvage surgery should both be considered for the rare cases of seminoma relapse that occur after polychemotherapy[25].

Interestingly, although the primary tumour in the patient described here was classified as a partial non-seminoma because of the elevated AFP level, the relapse occurred as a pure seminoma. The recurrence was initially judged to be inoperable, and ifosfamide-based chemotherapy was administered successfully, followed by surgical removal of the residual tumour mass, which was classified as potential teratoma in the differential diagnosis. However, the histology evaluation showed a complete histopathologic response and, fortunately, no evidence of residual vital tumour.

4. CONCLUSIONS

There is a potential risk for late distant metastases from testicular seminomas, even in cases of complete remission after first-line treatment. When relapses occur, aggressive multidisciplinary treatment is indicated because recurrent disease is still curable. The present case underlines the need for strong interdisciplinary collaboration between clinicians and pathologists when diagnosing a parotid tumour.

5. ACKNOWLEDGMENTS

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6. CONFLICT OF INTEREST DISCLOSURES

The authors have no financial conflicts of interest to declare.

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