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CASE REPORT
Reconstructive

Coincidence of Malignant Melanoma and an Incidently Discovered Parotid Mass Presenting a Diagnostic Challenge

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Summary: Parotid masses coincided with skin tumors in head and neck region may represent a serious diagnostic challenge. Conventional imaging modalities such as computed tomography, magnetic resonance imaging may help to determine nature of the masses. Positron emission tomography - computed tomography imaging is reported to be useful for the detection of malignancy in the parotid gland. But in some situations all of them become insufficient. We present a case of cheek malignant melanoma with an incidentally discovered parotid mass during the investigation. We describe the problems experienced in the course of differential diagnosis and decision making in terms of surgical management. As a result, the most reliable diagnosis of suspicious parotid lesions accompanying head and neck melanomas comes from frozen section analyses. The other diagnostic tools are not reliable enough to allow a safe surgical plan in terms of regional treatment; however, the significance of positron emission tomography - computed tomography in distant metastasis investigation should always be kept in mind. *(Plast Reconstr Surg Glob Open 2018;6:e1897; doi: 10.1097/GOX.0000000000001897; Published online 7 August 2018.)*

OBJECTIVE

Vast majority of metastatic diseases involving parotid gland originate from malignant skin tumors of head and neck region.[1] Among them, malignant melanoma carries a considerably high risk via lymphatic spread.[2,3] Parotid masses detected in the patients having skin tumors in head and neck region may represent a serious diagnostic challenge. Owing to the rarity of metastatic parotid disease compared with the primary parotid tumors, the diagnostic procedures to be pursued in such circumstances did not yet become standardized. Although positron emission tomography (PET) promises highly accurate results in such lesions, false-positive results[4] may lead the surgeons to many unanticipated conditions. On the other hand, due to the poor outcomes of metastatic parotid tumors, immediate diagnosis and early definitive treatment is mandatory.[5] Herein, we present a case of cheek malignant melanoma with an incidentally discovered parotid mass during the investigation. We describe the problems experienced in the course of differential diagnosis and decision making in terms of surgical management.

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CASE REPORT

A 67-year-old male patient referred to our clinic with a histopathological diagnosis of malignant melamoma following an excisional biopsy from the left malar region, with a positive surgical margin. The patient had also a magnetic resonance imaging (MRI) report revealed a suspicious lobulated lesion in the left parotid region with dimensions 26×23 mm coherent with metastatic disease (Figs. 1–3). Following the intravenous contrast medium administration, the lesion was reported to have a minimally heterogenous contrast material uptake. Additionally, a couple of lymph nodes in the left cervical chain, being the largest 8 mm were reported. Histopathologic evaluation is recommended by the radiologist. The details of the microscopic examination revealed Lentigo malignant melanoma, Clark level III, Breslow thickness 0.9 mm, intermediate regression phase with vertical growth pattern. The deep surgical margin was reported to be 2 mm away from the tumor. Ulceration, lymphovascular or perineural invasion and microsatellitosis were not present. The differential diagnosis of the parotid mass for either lymphadenopathy or tumor could not be accomplished. Positron

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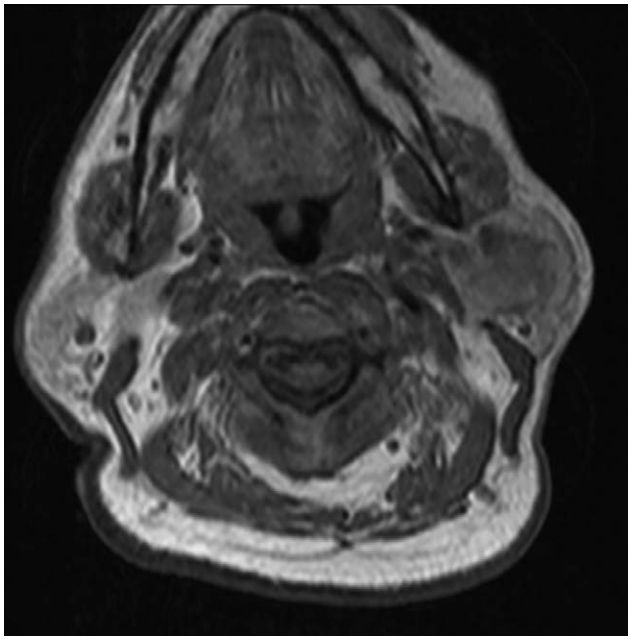

Fig. 1. MRI axial plane image of the parotis mass axial before contrast injection.

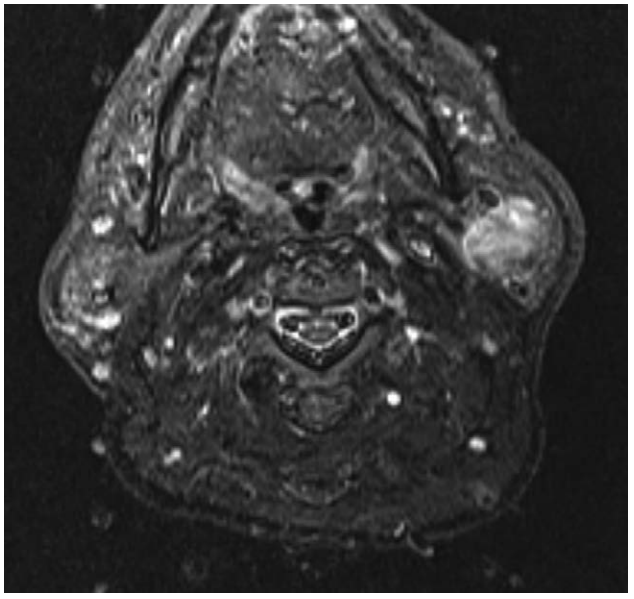

Fig. 2. MRI axial plane image of the parotis mass after contrast injection.

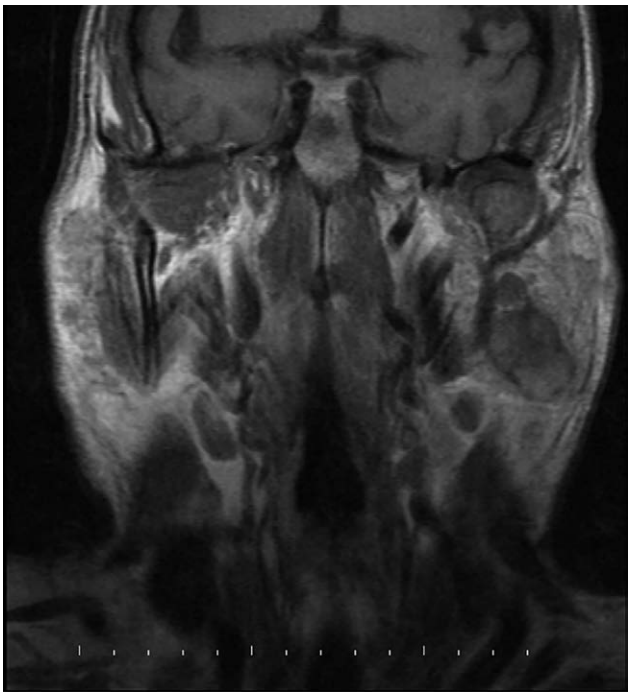

Fig. 3. MRI coronal plane image of the parotis before contrast injection.

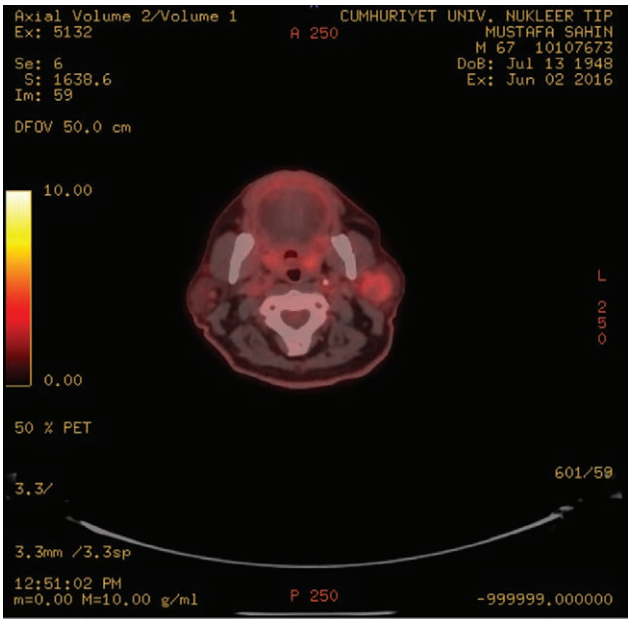

Fig. 4. PET-CT image of the parotis mass.

emission tomography - computed tomography (PET-CT) was performed to evaluate the metabolic and carcinogenic nature of these lesions and a presumable distant metastasis. PET result revealed a mass with metabolic dimensions 21 × 22 mm, displaying a pathologically increased heterogenous 18 fluoro deoxy glucose (18-FDG) uptake (Maximum Standardized Uptake Value: 4.8). Similar increased uptake pattern was also evident for the adjacent lymph nodes in the left cervical chain (Maximum Standardized Uptake Value: 4.1) (Fig. 4). These findings were interpreted as highly suggestive for metastatic disease; therefore, a wide reexcision, parotidectomy, and functional neck dissection were planned. Following reexcision, the defect was covered with a full-thickness skin graft.

During the surgical procedure, the parotid mass is found to be cystic in nature. After the completion of superficial parotidectomy, the specimen is sent for frozen section. The parotid mass is diagnosed as a Warthin tumor. Afterward, the 2 submandibular lymph nodes previously reported to have highly suspicious malignancy signs

are excised and sent frozen section and are reported to be reactive nodes. Despite this findings, because of the impossibility of excluding deep parotid involvement, a deep parotidectomy is undertaken carefully preserving the facial nerve branches. In line with the frozen section results the operation is further not widened.

Postoperatively, the patient experienced a neuropraxia in the marginal mandibular branch of facial nerve, which subsided in a month. The definitive histopathological evaluation confirmed the results of frozen section findings. Deep parotid specimen is reported to be free from malignancy. Three months postoperatively, cervical ultrasonography showed no signs of lymphadenopathy. The patient did not have a problem in the end of the first postoperative year.

DISCUSSION

The cutaneous malignancies located in frontotemporal scalp, face, and ear have a high risk for metastasis to parotid-area lymph nodes.[3,6] The first lymphatic drainage area of ocular adnexa, forehead, and the lateral part of head is the parotid region.[7] On the other hand, the majority of parotid gland metastasis take their origin from squamous cell carcinoma or malignant melanoma situated in the head and neck region.[1,8] Therefore, the detection of parotid mass in patients with such primary tumors should lead the surgeon to exclude the possibility of a metastatic involvement. Although only histopathological examination can provide the accurate diagnostic result, ultrasonography (USG), CT, and MRI are useful methods in the preoperative evaluation of parotid mass.

However, in this case, we have chosen to proceed directly to PET-CT imaging for a couple of reasons. In a clinical series, primary melomas of the upper face are found to metastatize to the parotid region and neck dissection levels I–III in 91% of the cases.[3] Although MRI is accepted as the choice of imaging modality in evaluating malignant salivary lesions in the head and neck, a couple of studies could not find a considerable difference between CT and MRI.[9,10] The capability of anatomical diagnostic imaging techniques are limited for determining malignancy in either normal sized or enlarged lymph nodes.[11,12] For this reason, metabolism-oriented imaging techniques taking the advantage of rapid and abundant glycose utilization of tumor cells[11,13] became widespread in the screening of metastasis.

Fine needle aspiration biopsy is a standard procedure in the differential diagnosis of both parotis tumors[14,15] and malignant melanoma tumors.[16–18] Despite the popularity of fine needle aspiration biopsy, this technique has some certain shortcomings. The need for of a specialized cytologist,[18] probability of false-negative results particularly in cyctic or necrotic lesions due to inadequacy of the cellular material are among them.[19]

Therefore, if fine needle aspiration biopsy (FNAB) establishes that tumor is malignant, it is precious, but benign results are often regarded as suspicious.[20] Recent studies suggest that FNAB alone is not adequate for the assessment of the extent of the parotid surgery,[15,19] and frozen section is provided as the most reliable method for parotid masses.[19,21]

Taking into account the drawbacks of MRI imaging and fine needle aspiration along with their inadequacy in establishing accurate diagnosis of a metastatic disease in our case and also the high risk of malignant melanoma metastasis to parotid region, we decided to evaluate the region with PET-CT imaging and to establish the definitive diagnosis directly with frozen section.

PET-CT imaging is reported to be useful for the detection of malignancy in the parotid gland.[22–24] Moreover, it is reported to have a higher sensitivity and specificity compared with CT\MRI\USG, for the diagnosis of lymph node involvement in head and neck cancers.[25] FDG PET-CT is particularly superior to CT and/or MR for initial diagnosis and staging for parotid masses.[24] Additionally, the combination of 18F-FDG PET and conventional CT or MRI may eliminate the potential drawbacks of 18F-FDG PET and therefore leads to more accurate results.[26,27] Wahl et al.[28] showed the high FDG uptake of human melanoma cells in a xenograft rat model. The sensitivity and specificity of PET in the detection of malignant melanoma metastasis is reported as 94.2% and 83.3%, respectively.[4] Nevertheless, there is always a possibility of false-positive result particularly in cases like papillary thyroid carcinoma, bronchogenic carcinoma, infected epidermal cyst, Warthin tumor, pleomorphic adenoma, uterine leiomyoma, stitch granuloma, endometriosis, and surgical-site infection.[4,20,26,29] The widespread use of PET for various reasons leads to the detection of asymptomatic parotid lesions. The focal intraglandular depositions observed in patients without a preexisting parotid disease history are called as indensitomas.[30] Although these depositions are generally caused by lesions benign in nature, metastatic lymph nodes and other malignant tumors may also display such features. Warthin tumor, being the second common parotis tumor after pleomorphic adenoma, is the most common parotid incidentaloma particularly among the smokers.[31] In our case, as PET-CT demonstrated an increased pathological uptake both in the parotid mass and adjacent neck lymph nodes, superficial parotidectomy is performed for frozen section evaluation. Even if the parotid mass had been benign in nature, the definitive surgical treatment should have been at least a superficial parotidectomy. When frozen section revealed a Warthin's tumor, we thought not to further widen parotidectomy, initially. Nevertheless, as ruling out an occult deep lobe involvement was not possible by any means at that stage, a deep parotidectomy was added, as well. Because the lymph neck lymph node sampling for frozen section did not reveal malignancy, neck dissection was not undertaken.

Detection of a suspicious lesion in parotid region represents a challenge in the management of head and neck melanomas. This challenge becomes further complicated when a suspicious mass is accompanied by a malignant melanoma or a squamous carcinoma in the head and neck region. Although a number of diagnostic tools (CT, MRI, PET-CT, FNAB) are used extensively, despite the unquestionable benefits of these tools, the straightforward reality is the decisiveness of a histopathologic diagnosis. Herein,

following the detection of a parotid lesion on conventional CT, none of the abovementioned diagnostic tools would have been able to determine the exact nature of the parotid lesion. Even the PET-CT result overtly misled us for a high probability of a metastatic involvement. Although we were fully aware of the possibility of false-positive results related to many benign parotid tumors, this information did not help us at all in this case. Only after the frozen section report of suspicious lymph nodes, we were able to limit the operation. PET-CT solely helped us to exclude the existence of distant metastasis. It seems that the most reliable diagnosis of suspicious parotid lesions accompanying head and neck melanomas comes from frozen section analyses. The other diagnostic tools are not reliable enough to allow a safe surgical plan in terms of regional treatment; however, the significance of PET-CT in distant metastasis investigation should always be kept in mind.

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