Case Report

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It is not always easy to differentiate between primary and metastatic pulmonary malignant melanoma

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Abstract:

Primary pulmonary malignant melanoma is an extremely rare tumor, and its diagnosis is just as difficult to clinically verify. Since malignant melanomas can metastasize even after many years, detailed past medical history and thorough physical examination of the patient are imperative in verifying the diagnosis. In this article, where we present a case with a histopathological diagnosis of malignant melanoma, we would like to emphasize that malignant melanoma can metastasize even many years after treatment.

Keywords:

Metastasis, primary pulmonary malignant melanoma, treatment

Introduction

The incidence of malignant melanoma is gradually increasing worldwide as well as in Turkey. Every year, there are two new cases of malignant melanoma per 100,000 people in Turkey.[1] Less than 10% of these tumors are located in nonskin localizations such as the choroid, oral cavity, paranasal sinuses, esophagus, larynx, anorectum, and liver.[2] Primary pulmonary malignant melanoma is an exceedingly rare tumor. So far, only 50 cases have been reported in the English literature. However, malignant melanoma metastasizing to the lung is not an uncommon occurrence. We present this case because it is seen relatively rarely, and we would like to emphasize that past medical history is pivotal in differentiating between primary or metastatic lesions of malignant melanoma in the lung.

Case Report

A 60-year-old male patient with a complaint of posterior chest pain was referred to our outpatient clinic when computed tomography (CT) of the chest revealed a nodular lesion with smooth margins. Past medical or surgical history of the patient was unremarkable except for the right eye enucleation 22 years ago. Blood chemistry and complete blood count tests were within normal limits. An 18F-fluorodeoxyglucose positron emission tomography (PET) combined with CT was ordered for evaluation of the pulmonary mass and whole-body screening for either distant metastases or an unknown primary tumor. PET-CT results showed a diffusely hypermetabolic (SUVmax: 8.3) nodular lesion with smooth margins measuring 4.1 cm × 5.1 cm located in the inferior and anterior part of the left lower lobe and a diffusely hypermetabolic (SUVmax: 12.7) soft-tissue area located anteriorly and

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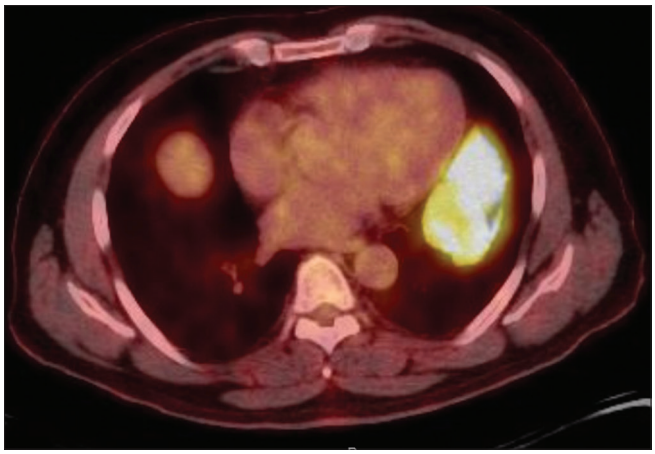

Figure 1: Image of hypermetabolic mass in the left lower lobe of the lung in positron-emission tomography–computed tomography

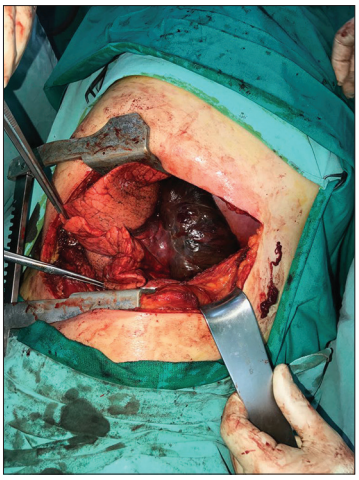

Figure 2: Macroscopic appearance of the tumor

inferiorly to the lesion and extending to the base of the lung [Figure 1]. There was no pathologic uptake of 18F-fluorodeoxyglucose in the PET-CT, except for the said lesion. A diagnostic bronchoscopy was performed, which did not reveal any endobronchial lesions to be sampled. Transthoracic fine-needle biopsy of the lesion was not diagnostic. On these findings, the patient was scheduled for thoracotomy and excisional biopsy of the lesion for both diagnostic and treatment purposes. Intraoperatively, the lesion described in the PET-CT was found to be mostly extrapulmonary, with only minimal attachment to parietal pleura, and there was invasion of the lung parenchyma neighboring the tumor [Figure 2]. An intraoperative consultation with cryosection was reported malignant for a biopsy of the lesion; therefore, the mass was totally excised with sharp and blunt dissection from the parietal pleura and with a surgical stapler from the part where it invaded the lung parenchyma. In histopathological examination, the surgical specimen was found to be entirely consisting of tumor tissue. In microscopic sections, there were extensive fields of necrosis and tumor cells with solidly structured prominent eosinophilic nucleoli characterized by melanin pigment accumulation and with eosinophilic cytoplasms, some of which contained brown pigments. For differential diagnosis, immunohistochemical staining for Melan A and HMB-45 was done, which were both diffusely positive. The Ki67 proliferation index was estimated to be an average of 4%. With these results, histopathological diagnosis was reported as malignant melanoma, with a recommendation for clinical and radiological evaluation of the case for the diagnostic distinction between primary versus metastatic disease.

Postoperative follow-up in the hospital was unremarkable, and the patient was discharged on day 4. The patient's written informed consent for publication was obtained, and the patient was referred to the Oncology Department for further treatment and follow-up.

Discussion

Malignant melanoma, though its incidence is lower than that of basal or squamous cell carcinomas of the skin, is the most frequent type of malignant skin tumor with a strong potential for metastasis. Noncutaneous melanoma is <10% of all melanomas.

The histopathological diagnosis of our patient was malignant melanoma; therefore, to make a distinction between primary or metastatic disease, we used the diagnostic criteria proposed by Jensen and Egedorf[3] which are still in use today.

1. No previous skin biopsy for a pigmented skin lesion: The patient was referred to the Dermatology Department for consultation. After a thorough physical examination of the skin and all nevi, it was concluded that there were no skin lesions bearing a risk of melanoma, or any scars of previous skin biopsies, which the patient also denied
2. Exclusion of noncutaneous melanoma in any other organ: The preoperative PET-CT scan was reevaluated for pathologic 18F-fluorodeoxyglucose uptake in any other organ, there were none
3. Surgical specimen consisting of only one solid tumor: The Pathology Department confirmed that the surgical specimen was a solid tumor
4. Tumor morphology matching that of a primary tumor: The Pathology Department also confirmed that the morphology of the tumor is in compliance with a primary tumor
5. No personal history of surgery for an ocular tumor: Following investigation of this criterion, it was revealed that the patient had had enucleation of his right eye 22 years ago, and the pathological diagnosis of the surgery was malignant melanoma. Thus, the tumor was considered to be the metastasis of choroidal melanoma.

Ocular malignant melanoma is the most common type of noncutaneous malignant melanoma and also the most common type of primary intraocular malignancy.[4] The general mortality rate of ocular malign melanoma is reported as 35% in 5 years and 50% in 10 years.[4] Although the malignant melanoma of the skin tends to metastasize primarily through the lymphatics, since the ocular tract has no lymphatic drainage, the systemic metastases of ocular malignant melanoma generally occur via a hematogenous route.[4] The most frequent site of metastasis for ocular melanoma is the liver, followed by the lungs.[4] Metastases tend to increase in the 2nd and 8th year after the diagnosis.[2] Nearly 70% of the patients are diagnosed with metastasis by the end of the first 10 years following enucleation.[4]

Ocular melanoma very rarely metastasizes after a disease-free period of 20 years following treatment of the primary tumor.[2] A search of literature returns only eight cases of ocular melanoma that has metastasized after at least 20 years following enucleation, though none of the cases involved metastases to intrathoracic organs.[5-9] The probability of metastasis of ocular melanoma is modifiable by several morphological and clinical factors such as the histologic type, mitotic activity, age of the patient, and size and location of the tumor.[4] Such features of the tumor could not be ascertained because the medical records and pathology report of the enucleation the patient had 22 years ago could not be obtained. Consequently, we could not speculate on the prognostic factors influencing the disease-free period of 22 years in this patient's case.

For patients with distant metastasis of ocular melanoma, the gold standard treatment is total excision with negative surgical margins.[10] It has been reported that the median survival for patients with a curative resection is 7 months, whereas, for patients who were not treated, the median survival is 4 months.[5] Patients who are declared surgically unresectable are treated by chemotherapeutic agents such as tyrosine kinase inhibitors (vemurafenib, dabrafenib, and trametinib) and immunotherapeutic agents (ipilimumab).[10,11] However, reports of studies utilizing these agents are limited to case reports in the literature.

Conclusion

Confirming a diagnosis of primary pulmonary malignant melanoma is extremely challenging. It mandates the exclusion of a cutaneous or noncutaneous primary malignant melanoma. It should be kept in mind that a malignant melanoma can metastasize even many years after diagnosis and treatment of the primary lesion. Therefore, for cases with malignant melanoma, a detailed past medical and surgical history is crucial in the distinction of primary or metastatic disease.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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