

# Case Report

## Successful treatment of primary pulmonary melanoma

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### ABSTRACT

Presented is a rare case of a primary melanoma of the lung in an 89 year old male patient. Primary melanoma of the lung has been previously reported in the English literature in about 30 patients. Surgical resection either with lobectomy of pneumonectomy and a lymph node dissection has been shown to be the best chance of long term survival. This is the oldest patient on record where surgical resection was successful.

### KEY WORDS:

melanoma; lung; thoracic; primary

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### Introduction

Melanoma has rapidly increased in incidence in recent years. It is the most deadly form of skin cancer. Metastasis to the lung is not uncommon and carries a poor prognosis. Melanoma of the lung without evidence of extra-pulmonary disease (primary pulmonary melanoma) is very rare and its clinical significance is not fully understood due to the paucity of published data. This condition could either be true primary pulmonary melanoma or signify metastatic disease of which the primary was missed or regressed. This article reviews the guidelines set for determining the nature of the disease and discusses the clinical significance of the diagnosis.

### Clinical Summary

An 89-year-old male with a 50 pack year smoking history, was found to have an incidental finding of a solitary mass in the left lower lobe of the lung. A CT scan revealed a 4.5 cm left lower lobe mass with no mediastinal lymphadenopathy. Positron emission tomography scan showed the mass to be fluorodeoxyglucose avid with no evidence of systemic or regional metastasis.

The patient was a good surgical candidate with no major co-morbidities, so video assisted left lower lobectomy with

mediastinal lymph node dissection was performed. Intra-operative frozen section was reported as a non-small cell carcinoma. The patient was discharged home on the fifth postoperative day. The final pathology report contradicted the frozen section and revealed the tumor to be a poorly differentiated malignant neoplasm consistent with malignant melanoma. Immunohistochemistry revealed the tumor to be negative for TTF-1 staining but positive for melanocyte associated proteins; S100 Melanin A and HMB-45.

To rule out the diagnosis of melanoma metastasis from a primary site, the patient underwent a thorough repeat skin examination and fundoscopic examination. Previous biopsies were reviewed and were found to be negative for melanoma. Finally a full body Positron emission tomography scan showed no evidence of malignancy aside from the primary lung tumor. Even with all the tests done to rule out metastasis, an occult primary that was not identified is always a possibility(1).

On reviewing his history, over the 5 years previous to the lobectomy the patient had undergone biopsies of multiple skin lesions, which resulted in findings of squamous cell and basal cell carcinoma. Review of these slides revealed none of these to be melanoma. A thorough eye examination revealed no evidence of retinal melanoma.

The patient is alive and well at the time of the writing of this article 5 years after the lobectomy. There is no evidence of recurrent disease on follow up CT scans or Positron emission tomography scans.

### Discussion

Malignant melanoma is most commonly a primary neoplasm of the skin but has been described in such mucosal sites as the oral cavity, paranasal sinuses, esophagus, larynx, vagina, and anorectal region (2). Melanoma originates from melanocytes that arise from pleuripotent neural crest cell the melanocytes.

No potential conflict of interest.

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Melanoma is one of the fastest growing malignancies over the past decade with an increase of 3 percent per year among the white population. Primary melanoma of the lung is extremely rare and accounts for 0.01 percent of all lung tumors (3). It is found as in this case 30% of the time as an incidental finding on chest radiography (3). On the other hand metastatic melanoma disease in the lung only presents as a solitary lesion 1% of the time (2).

For the lesion to be a primary melanoma, there are certain criteria that must be met (3). 1. Junctional changes like “dropping off” or “nesting” of melanoma cells just beneath the bronchial epithelium. 2. Invasion of the bronchial epithelium by melanoma cells. Malignant melanoma associated with the epithelial changes. 3. The lesion should be a solitary lung tumor. 4. No evidence of cutaneous, mucous membrane or ocular melanoma. 5. Absence of any other detectable tumor at the time of diagnosis.

Some likely explanations regarding the presence of melanoma in the lung are (4) the following. 1. Migration of benign melanocytes during embryogenesis. 2. Melanocytes and melanocytic proliferations have been identified in the larynx and esophagus. 3. The larynx, esophagus, and the lungs all share a common embryologic origin suggesting possible migration of melanocytes. 4. Spontaneous regression of previous skin lesions. 5. Melanogenic metaplasia in the submucosa.

From a practical perspective, what does it mean to a patient who is diagnosed with melanoma of the lung? The overall 5 year survival of all patients with lung cancer not accounting for stage is 16%. The 5 year survival of stage 4 melanoma metastatic to the lung is 7-9% (5). So a patient would have a better prognosis with lung cancer rather than metastatic melanoma to the lung. The primary melanoma of the lung data is from case reports and as per a detailed review of 20 of the published cases (2), the 5 year

survival is at least 10% and there was not enough follow up in 15 % of the patients who were still alive at the time of publication of the respective case reports.

The evidence suggests that surgical resection with appropriate oncologic margins is the treatment of choice. Lobectomy or pneumonectomy represent the best chance of long-term survival and was documented in 2 of the 30 cases in the literature that survived 10 and 11 years post-operatively (6,7). In two cases of segmental resection there was recurrence (3) so anatomic lobectomy or pneumonectomy with mediastinal lymph node dissection or sampling should be recommended for these patients. The role of adjuvant chemotherapy or radiotherapy isn't known in this disease, but is unlikely to be more effective than in melanoma from other sites where it has been shown to be marginally if at all effective in prolonging survival.

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