Pulmonary Melanoma

Primary vs Metastatic

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We report one of the few cases of apparently primary pulmonary melanomas documented by both clinical and autopsy examination. The possibility of spontaneous regression of a melanoma primary in another site after metastasis has occurred may explain some of these cases.

Of the ten cases of presumably primary melanoma of the lung reported in the English literature, most cannot be accepted without some reservation. We report one of the few cases in which absence of a primary extrapulmonary melanoma was documented by both clinical and autopsy examination. Nevertheless, the existence of a primary pulmonary melanoma remains somewhat equivocal because of the remote possibility of spontaneous regression of a primary melanoma of the skin or other site after a pulmonary metastasis has occurred.

CASE REPORT

The patient was an 80-year-old previously healthy white man who was found to have a coin lesion of the right middle lobe on routine chest x-ray examination during an admission work-up for diagnosis of lower G1 bleeding. (Discharge diagnosis was bleeding hemorrhoids.) A one month follow-up chest x-ray film showed enlargement of the lesion to 1.5 cm diameter, and he was admitted with a diagnosis of probable carcinoma of the lung. He underwent exploratory thoracotomy with excisional biopsy of the lesion which was located in the fissure between the right upper and middle lobes.

The specimen consisted of a 1.5 cm firm, black tumor mass with attached rim of lung parenchyma. Microscopic examination showed a pleomorphic malignant neoplasm containing dark brown pigment granules (Fig 1). Fontana-Masson stain of the granules was positive for melanin, and electron microscopy showed melanosomes within the tumor cells (Fig 2). A right hilar lymph node was negative for metastatic disease.

Extensive examinations for primary melanoma in the skin, scalp, nail beds, genital and anal regions, and eyes were repeatedly performed; however, no lesion was found. There was no lymphadenopathy. The patient had several cutaneous squamous cell carcinomas excised in the mid-1970s, but there was no history of other skin lesions. There was no clinical evidence of involvement of any other organ, and CT scan of the brain, liver-spleen scan and bone scan were negative.

The patient received a two-month outpatient course of radiotherapy to the chest, totaling 5,000 rads. He developed increasing dyspnea on exertion and was found to have increased opacity of the lungs in the distribution of the radiation fields. He was readmitted with a diagnosis of probable radiation pneumonitis and pneumonia. His dyspnea worsened to the point that mechanical ventilation was required, and he became hypotensive and died 11 days after admission.

At autopsy, careful examination of the skin showed no evidence of melanoma. Dissection was restricted to the chest. A microscopic 2 mm focus of metastatic melanoma was present in the left upper lobe; otherwise, the thoracic organs were free of tumor. Diffuse radiation...
Table 1—Primary Pulmonary Melanomas as Reported in the Literature

<table>
<thead>
<tr>
<th>Year</th>
<th>Author</th>
<th>Age</th>
<th>Sex</th>
<th>Location</th>
<th>Previous Melanoma</th>
<th>Autopsy</th>
<th>Survival From Initial Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1888</td>
<td>Todd1</td>
<td>60</td>
<td>M</td>
<td>ND</td>
<td>ND</td>
<td>+</td>
<td>1 day</td>
</tr>
<tr>
<td>1916</td>
<td>Kimkel and Torrey2</td>
<td>55</td>
<td>M</td>
<td>RLL</td>
<td>ND</td>
<td>+</td>
<td>ND</td>
</tr>
<tr>
<td>1941</td>
<td>Carlucci and Schleussner4</td>
<td>40</td>
<td>F</td>
<td>right hilus</td>
<td>LUL, LLL</td>
<td>+</td>
<td>6 m</td>
</tr>
<tr>
<td>1953</td>
<td>Allen and Spitz2</td>
<td>48</td>
<td>F</td>
<td>RML, RLL, hilus</td>
<td>0</td>
<td>0</td>
<td>4 m</td>
</tr>
<tr>
<td>1963</td>
<td>Salm5</td>
<td>45</td>
<td>M</td>
<td>bronchus</td>
<td>+</td>
<td>0</td>
<td>alive at 2 years</td>
</tr>
<tr>
<td>1965</td>
<td>Rosenberg, et al6</td>
<td>46</td>
<td>F</td>
<td>LUL bronchus</td>
<td>+</td>
<td>+</td>
<td>6½ m</td>
</tr>
<tr>
<td>1965</td>
<td>Reid and Mehta8</td>
<td>60</td>
<td>F</td>
<td>bronchus of RLL</td>
<td>0</td>
<td>0</td>
<td>alive at 11 years</td>
</tr>
<tr>
<td>1967</td>
<td>Allen and Drash9</td>
<td>40</td>
<td>F</td>
<td>RLL, small bronchus</td>
<td>0</td>
<td>0</td>
<td>ND</td>
</tr>
<tr>
<td>1983</td>
<td>Cagle et al10</td>
<td>80</td>
<td>M</td>
<td>fissure between RUL and RML</td>
<td>0</td>
<td>+</td>
<td>5½ m</td>
</tr>
</tbody>
</table>

ND = not documented; RUL = right upper lobe; RML = right middle lobe; LLL = left lower lobe; RLL = right lower lobe; LUL = left upper lobe.

*Second case involved trachea only

Discussion

Eight of the ten previously reported cases of presumably primary melanomas of the lung cannot be accepted unequivocally (Table 1).7,7 The three earliest cases do not provide sufficient documentation to rule out an extrapulmonary primary source.8,9 In two cases, the patients had melanomas previously excised from other locations,10 and in three other cases, the diagnosis of primary melanoma of the lung was based only on clinical grounds.11,12 Only two cases had an autopsy examination to rule out an occult extrapulmonary primary source.13

The present case revealed no evidence of an extrapulmonary primary melanoma during either the clinical examination or autopsy. There was no past history of melanoma. Since autopsy dissection was restricted to the chest, a primary source arising in the meninges, eye, gastrointestinal tract or genitourinary tract could not be completely ruled out. However, it is unlikely that other organs were involved since there was no symptom or physical finding to suggest this, and all special diagnostic procedures gave negative results. Although most of the previously reported cases of pulmonary melanoma were associated with the bronchus, such was not identified in the present case.

Whether or not primary melanoma of the lung can be diagnosed in a case such as this is controversial because spontaneous regression of primary melanomas of the skin after regional lymph node metastases have occurred is well documented.14 Such a phenomenon may explain some of these cases; however, it does not rule out the possibility of true pulmonary primary lesions. Morphologic criteria, such as junctional change with nesting of melanoma cells just beneath the bronchial epithelium, have been proposed as the key to diagnosis of a primary pulmonary melanoma; however, such criteria remain to be substantiated.15,7

Before a diagnosis of primary melanoma of the lung is made, clinical examination to rule out an extrapulmonary lesion should be exhaustive, and the patient must be closely questioned regarding previous skin lesions which may have regressed or been excised. Primary melanomas arising in less common locations such as meninges, eye, gastrointestinal tract or genitourinary tract should be ruled out. Whenever possible, an autopsy examination should be performed.

References

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