

# Anthracosis Mimicking Metastatic Melanoma in a Sentinel Lymph Node

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## Abstract

Sentinel lymph node (SLN) biopsy provides a pathological lymph node staging in patients with clinical stage I/II melanoma. In most cases, we will find melanoma metastases if SLN is brown or black. But there are other entities that give black color to SLN, the most frequent is tattoo pigment. We report the first case of anthracosis in a SLN biopsy of melanoma mimicking melanoma metastases. We also review other causes of black pigment in SLN.

**Keywords:** Melanoma; Sentinel lymph node; Pigment; Anthracosis; Tattoo pigment

**Abbreviations:** SLN: Sentinel Lymph Node

## Introduction

Sentinel lymph node (SLN) biopsy was introduced in the 1990's for melanoma staging. It provides a pathological lymph node staging in patients with clinical stage I/II melanoma. Studies have shown that the evaluation of sentinel node improves the prognostic accuracy of these patients, although it is debated whether it has any therapeutic value [1]. We present a case of anthracosis mimicking, macroscopically and microscopically, a positive melanoma sentinel lymph node.

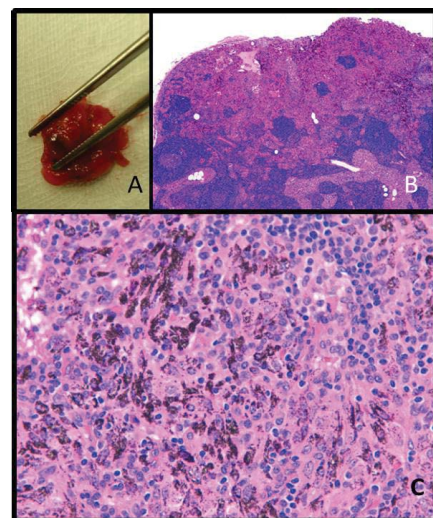
Our patient is a 75 year old woman, nonsmoker, who had always lived in Madrid, Spain. She had on her left arm a nodular melanoma, with ulceration, Clark IV, Breslow 2.2 mm, without evidence of a prior nevus. After technetium 99 scan and gamma camera, we were able to identify drainage area and SLN. There were two adenopathies in the left axilla and one in the left supraclavicular area. During the surgery, the left supraclavicular node was macroscopically black, but not enlarged (size less than 1 cm diameter) (Figure 1A). We performed a histological examination with hematoxylin and eosin stain and immunohistochemistry for HMB-45, S-100 protein, and Melan-A. All lymph nodes resulted negative for melanoma cells. The supraclavicular lymph node showed a conserved architecture, with expansion of peripheral sinuses that were occupied by numerous macrophages with intracytoplasmic anthracotic pigment (sinus reactive histiocytosis). The pigment had a granular anthracotic brown-blackish appearance (Figures 1B and 1C).

Anthracosis is the term used to describe the effects of soot inhalation. This condition is usually seen in coal workers, although other environmental factors can produce it: air pollution, cigarette smoking or some fuels used for cooking and home heating [2]. Our patient had never worked as a coal miner, nor worked with stool; and she was a nonsmoker as well. We believe that the anthracotic node can be secondary to air pollution. In patients with melanoma, the presence of anthracosis in a lymph node (most often supraclavicular and cervical) can simulate, macroscopically, a false metastatic SLN. When a black adenopathy is found, we should conduct a careful microscopic examination and immunohistochemistry, because it is important to distinguish anthracosis from metastatic melanoma. Histologically, anthracosis is seen as a granular brown pigment inside the macrophages that are by the peripheral sinus node, maintaining a preserved architecture. There is only one report of anthracosis mimicking a malignant melanoma; it was in the esophagus of an Asian patient, and after a misdiagnosis, she underwent a thoracic esophagectomy [3].

There are other entities that can simulate a false-positive melanoma

sentinel node (Table 1). The most frequent is tattoo pigment [4,5]. We must be careful when finding black pigment in the nodes, because it can coexist with metastases [5].

In summary, we report the first case of a melanoma patient and anthracotic SLN mimicking macroscopically melanoma metastases. We consider it important to not make a lymphadenectomy to the intraoperative finding of a pigmented lymph node. Dermatologists should know about these conditions to avoid a misdiagnosis that can affect the therapeutic approach and increase morbidity in melanoma patients.



**Figure 1:** Anthracotic sentinel lymph node.

A. Sentinel lymph node with black pigment.

B. Histopathology revealed subcapsular black pigment. Hematoxylin-eosin stain. Original magnification 40X.

C. Higher magnification shows granular black pigment inside the macrophages. Hematoxylin-eosin stain. Original magnification 200X.

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Disease	Type of pigment	Atypical cells	Birefringence under polarized light	Immunohistochemistry
Metastatic melanoma	Melanin	YES	NO	S-100, HMB45, Melan A +
Anthracosis	Coal	NO	YES	Negative
Tattoo	Coal and other pigments	NO	NO	Negative
Lipofuscine deposit	Lipofuscin	NO	NO	Negative
Hemochromatosis	Iron	NO	NO	Prussian Blue
Adenopathy after arthroplasty	Polyethylene metal, cement	NO	YES	Oil red O

**Table 1:** False-positive melanoma sentinel node.

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