Common blue nevus with satellitosis on the scalp

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Summary

Blue nevi are benign tumors of dermal melanocytes. They are typically dark blue to grey-black papules or nodules with well-defined borders. Within the spectrum of blue nevi there are several subtypes. In this case, we present a 71-year-old African American female who presented with a blue-black macule on the scalp concerning for a melanoma. After a shave biopsy, there was dark black pigmentation at the base of the biopsy specimen with areas of satellite pigmentation, a presentation that caused concern for transient metastases of a melanoma. However, histopathological examination of the lesion showed a banal appearing blue nevus with skip areas, no evidence of atypical melanocytes or mitotic activity, thus a diagnosis of blue nevus with satellitosis was rendered. To our knowledge, this is the 6th reported case of blue nevus with satellitosis mimicking malignant melanoma.

KEY WORDS: blue nevi; melanoma; satellitosis; atypical nevus.

Introduction

Blue nevi are typically dark brown to blue papules, nodules, or plaques that arise in early childhood or adolescence. There is a number of subtypes of blue nevi including common, cellular, combined, patch-like, target, plaque-like, sclerosing, hypopigmented, epitheloid, and atypical. Common blue nevi present as a dome-shaped, well circumscribed papule or nodule up to 1 cm in diameter. These more commonly occur in females, and present in early childhood or adolescence. They are benign tumors of dermal melanocytes commonly occurring in areas where dermal melanocytes remain after gestation, namely the scalp, sacral region, and dorsal aspect of distal extremities. Blue nevi may also be found on mucosal membranes (1, 2). Histologically they show heavily pigmented nodules of dermal, dendritic appearing melanocytes with little to no mitotic activity (3). They appear as symmetrical proliferations of dermal melanocytes. The base of lesion lies at the epidermal surface, while the apex extends to the reticular dermis. The hallmark sign of a blue nevus is spindle-shaped dendritic melanocytes with thin, branching dendritic processes. These melanocytes tend to situate around vessels, nerves, and appendages. In cases of common blue nevi, nuclei are elongated and hyperpigmented, and there is no cytological atypia or mitotic activity (4).

Cellular blue nevi are a less common variant that clinically appear as a central papule with a surrounding macular component in the sacrococcygeal and buttock regions (3, 5). On histological examination there are round, spindled cells with pale cytoplasms and oval nuclei. Similar to common blue nevi, there are also bipolar or dendritic melanocytes with varied amounts of melanin (5). Spindles of melanocytes appear in bundles without melanin pigment, and circular nodules can be seen in the dermis. These nodules may protrude into the subcutaneous fat (1, 5). Compound blue nevi are a rare variant commonly found on the trunk, extremities, and head and neck area. The histological features include the dermal characteristics seen in common blue nevus, as well as hyperpigmentation and dendritic cell proliferation in the epidermis (5).

Malignant blue nevi are a rare type of malignant tumor of melanocytes that can arise in cellular blue nevi. These tumors have histological features of melanomas, including atypical mitoses and necrosis, along with features of typical cellular blue nevi (6). These tumors are most commonly found on the head, particularly the scalp, and are over 1 cm in diameter. They are characterized by high rates of metastasis, thus making their early diagnosis critical for treatment (1-3).

In this report, we describe a 71-year-old female presenting with a dark macule on the scalp with the clinical appearance of satellitosis on shave biopsy. As regular borders diminish and satellite lesions appear, a propensity toward a differential diagnosis of malignant
melanoma develops (7). In this case, we show that this clinically worrisome lesion in fact had a quite banal appearance on histology, and a diagnosis of blue nevus with satellitosis was made. Histologic examination can more clearly differentiate malignant tumors from atypical benign counterparts.

Case report

A 71-year-old African-American female presented for evaluation of a dark brown to black macule on her scalp. She reported that it had been present for several years, was stable in size, was asymptomatic and had not bled, but she did note that it had become slightly elevated and tender. She had no personal or family history of melanoma or non-melanoma skin cancer. Her exam revealed a darkly hyperpigmented macule with a central papular component on the right vertex of her scalp. The lesion was 15 x 7 mm, and contained a 4 mm central papule. Surrounding the central lesion there was an associated 3 mm macule just to the left, and two closely associated 1 mm macules just to the right (Figure 1). This site was biopsied with a shave technique and notably there was significant dark brown to black pigment at the base of the biopsy site with a clinical appearance of satellitosis (Figure 2). The specimen was sent to pathology for examination. Microscopic sections showed dermal melanocytic proliferation composed of bland dendritic heavily pigmented cells in a sclerotic stroma with accentuation around adnexal structures. There were accompanying melanophages. There was no junctional component, significant atypia, and dermal mitotic activity was lacking. Several contiguous satellite lesions with similar histologic appearance were visualized (Figure 3).

Discussion

Blue nevi are an uncommon dermal melanocyte tumor that have attracted attention due to occasionally having a similar clinical presentation to malignant melanoma (8). Malignant melanoma often appear as brown-black nodules, with the “ABCDE” mnemonic commonly used as diagnostic criteria for biopsy: asymmetry, irregular borders, variegated color, diameter > 6 mm, and enlargement of the lesion (9). In both superficial spreading (SSM) and nodular melanoma (NM), a blue-black, and sometimes pink to red nodule or papule will develop from a vertical growth phase either following a horizontal growth phase from existing nevi (SSM) or de novo (SSM and NM). Histologically, the architectural patterns of melanoma are distinct. There is asymmetry along two axes, nests of melanocytes vary in shape and size, and these melanocytes extend down the adnexal epithelium. Often, there is an abundance of melanocytes at the dermal-epidermal junction, pagetoid spread of melanocytes can be seen, and significant cellular proliferation and mitotic figures can be seen (10).

In our case, there was a heavily pigmented lesion with pigment at the base of the biopsy specimen with clinical satellitosis. This presentation caused concern for transient metastases of melanoma. However, stained sections demonstrated bland heavily pigment-
ed dendritic melanocytes in a sclerotic stroma with some melanophages. Significant atypia and mitotic activity were lacking. Multiple small similar satellite lesions were visualized. These appeared consistent with previously reported blue nevi termed plaque-type blue nevus (11). Satellite lesions may form by spread along appendageal or perivascular structures, or in a larger field of dermal melanocytosis (12). There have been five cases of blue nevus with satellitosis reported to date (7, 11-14). Table 1 shows the

Table 1 - Demographic characteristics of previously reported cases of blue nevus with satellitosis (7, 11-14).

<table>
<thead>
<tr>
<th>Case</th>
<th>Location</th>
<th>Age</th>
<th>Gender</th>
<th>Description of lesion(s)</th>
<th>Histological appearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kang and Chung, 1999</td>
<td>Forearm</td>
<td>31</td>
<td>Female</td>
<td>8 mm blue-black papule with 0.5-1 mm macular satellite lesions</td>
<td>Nevus cells dispersed in papillary and reticular dermis, periappendageal and perivascular concentration of nevus cells in satellite lesions, satellite lesions with melanocytes located around and within vessels</td>
</tr>
<tr>
<td>del Rio et al., 2000</td>
<td>Scalp</td>
<td>66</td>
<td>Male</td>
<td>Bluish-black nodule 18 x 15 mm, blue-brownish center, clear marginal ring, peripheral blue border in the margin, four additional bluish dots in vicinity</td>
<td>No malignant change</td>
</tr>
<tr>
<td>Sahin et al., 2001</td>
<td>Scalp</td>
<td>69</td>
<td>Male</td>
<td>Multinodular blue-black 18 x 25 mm with satellite lesions at periphery</td>
<td>Hyperpigmented spindle-shaped cells invading subcutaneous fat along fibrous septum</td>
</tr>
<tr>
<td>Lourari et al., 2012</td>
<td>Scalp</td>
<td>70</td>
<td>Male</td>
<td>Enlarged long-term blue nodule with new satellitosis around the lesion</td>
<td>Groups of dermal fusiform cells and abundant melanophages, without signs of malignancy</td>
</tr>
<tr>
<td>Yonei, Kimura, Furukawa, 2013</td>
<td>Forearm</td>
<td>24</td>
<td>Male</td>
<td>Blue-black nodule with irregular borders 10 x 7 mm with 1-2 mm guttate satellite lesions</td>
<td>Nevus cells dispersed dermis, hyperpigmented, spindle-shaped melanocytes infiltrated among the collagen bundles, periappendageal and perivascular concentrations of the nevus cells, similar findings in satellite lesions</td>
</tr>
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demographic characteristics of both our case and previous cases. The size and location of our case is similar to those previously reported. Unlike in previous cases, in our case the lesion had not noticeably enlarged, however, the patient did not have a good history of this nevus as it was on her scalp. Kang and Chung first reported nevus cells aggregating around vessels in both the main and satellite lesions, suggesting spreading along the perivascular space (12). In conclusion, this is a new case of blue nevus with satellitosis with clinical presentation similar to malignant melanoma.

Conflicts of interests
None.

References