Metastatic balloon cell melanoma-A rare differential in the diagnosis of clear cell tumors

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Abstract

Balloon cells may occur in both benign nevi and malignant melanoma. Sometimes they dominate the histological picture and cause difficulties in the diagnosis. We report a case of metastatic balloon cell melanoma in the inguinal lymph node of a 65 year old female. Since the primary was not known to us ,there was difficulty in distinguishing it from other metastatic clear cell tumors.

INTRODUCTION

A potential pitfall in the histological assessment of malignant melanoma is the inability to recognize unusual melanoma variants. Lymph node metastasis of balloon cell melanoma has the potential to mimic other metastatic clear cell tumors. We encountered one such diagnostic challenge in the inguinal lymph node metastasis of a 65 year old female with an unknown primary tumor.

CASE REPORT

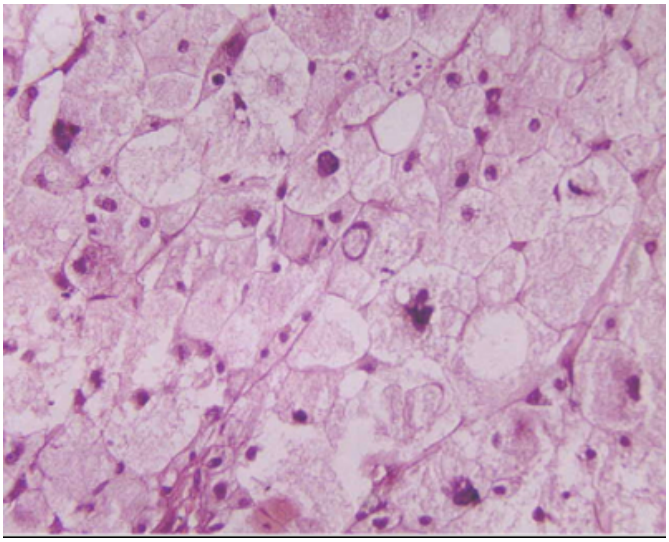
A 65 year old female labourer presented to the surgical OPD with multiple enlarged lymph nodes in the left inguinal region. Patient gave history of undergoing surgery for the excision of a mass on the medial surface of the left foot one year before. She had lost all the records regarding the surgery and final histopathological diagnosis of the tumor. She had not taken any treatment after the surgery. Systemic examination of the patient was normal. Routine and radiological investigation of the patient also did not reveal any abnormality. Excision biopsy of the inguinal lymph node was done and sent to us for histopathological examination.

PATHOLOGICAL FINDINGS

Microscopic examination of the inguinal lymph node showed diffuse replacement of the lymph node parenchyma by sheets of large round to polygonal cells with abundant vacuolated cytoplasm and distinct cell borders. These tumor cells were showing pleomorphic, hyperchromatic nucleus with irregular contours and frequent intranuclear cytoplasmic pseudoinclusions(fig1).Occasional cells with multiple vacuoles in the cytoplasm scalloping the nucleus, remarkably resembling the lipoblasts were also seen. Pigment was not identified. Based on these features, along with strong immunohistochemical positivity for HMB-45, ,the diagnosis of metastatic balloon cell melanoma in the left inguinal lymph node was rendered.

Figure 1

Figure 1: Pleomorphic balloon cells containing intranuclear cytoplasmic pseudoinclusion in the center(H&E stain,400)



DISCUSSION

The protean morphology of malignant melanoma is diagnostically challenging. Balloon cell melanoma is a histologic variant composed predominantly of large cells with abundant , vacuolated cytoplasm. The balloon cell nevus was first described over 100 years ago. Since then

balloon cell changes of melanocytes have been noted in numerous tumors including melanoma, blue nevus and spitz nevus. Sometimes balloon cells dominate the histological appearance and cause difficulties in the diagnosis by mimicking other clear cell tumors.

Balloon cell melanomas are characterized by large vacuolated or clear cells with distinct cytoplasmic borders, nuclear pleomorphism and intranuclear cytoplasmic pseudoinclusions[1]. Melanin pigment is usually absent in balloon cell melanoma. Mitosis may be absent or rare in these tumors[2]. The metastases of balloon cell melanoma may or may not be composed largely of balloon cells and balloon cell metastasis have been reported in a melanoma that did not contain them in the primary tumor[3]. Therefore this possibility should be considered in the differential diagnosis of metastatic clear cell tumors.

Exact reasons for balloon cell transformation in melanoma cells is not known. Whether these changes reflect cellular deterioration or proliferative changes is a matter of debate[4]. The disturbance in melanin synthesis and its precursors, progressing to cell vacuolization support degenerative character of the process[5]. Several other authors also consider balloon cells as the expression of a degenerative process caused by the immunological defence of the subject combined with therapy[6]. This is supported by the evidence of high survival rates in some cases. August C[7] et al also favor the hypothesis of a regressive phenomenon in the balloon cell transformation in melanoma cells. However the immunohistochemical and electron microscopic findings suggest that the balloon cells are most likely metabolically active melanocytic cells[8].

Lymph node metastasis of amelanotic balloon cell melanoma should be differentiated from other metastatic clear cell tumors like clear cell carcinomas of renal, adrenal or pulmonary origin, liposarcoma and sebaceous gland carcinoma[9]. Immunohistochemistry and electron microscopy are of great help in this regard. Balloon cells show positively for S-100 protein, HMB-45, Melan-A, NK/1-C3 [13]. MART-1 has also been found to be a useful marker for the detection of metastatic melanomas in the lymph nodes[10]. Melan-A is found to be a more important marker in the diagnosis of balloon cell melanoma than the classic melanoma antibody HMB- 45[7]. Ultrastructurally balloon cells are characterized by the presence of numerous cytoplasmic vacuoles and abnormal melanosomes which confirm their melanocytic origin. The cytoplasmic vacuoles represent the grossly dilated melanosomes.

Thus malignant melanoma is well known for its protean morphologic appearances. Interestingly, the most unusual morphologic appearance are more frequently observed in metastatic than in primary lesion which may lead even experienced pathologists to misdiagnose the lesion. In conclusion, pathologists should be aware of the rare occurrence of metastatic amelanotic balloon cell melanoma in the lymph node and consider it in the differential diagnosis of metastatic clear cell tumors with unknown primary neoplasms. The findings in this case present that a full awareness of the spectrum of morphologic presentations of metastatic melanoma as well as of the clinical history are for greater precision in its diagnosis and for avoidance of the pitfall of misdiagnosing nonmelanoma with similar appearances.

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