Scholars Journal of Medical Case Reports **ISSN 2347-6559 (Online)**
Sch J Med Case Rep 2017; 5(2):85-87 **ISSN 2347-9507 (Print)**

(An International Publisher for Academic and Scientific Resources) DOI: 10.36347/sjmcr.2017.v05i02.006

Paediatric Malignant Melanoma: A Rare Cytodiagnosis

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Abstract: Childhood melanomas are rare tumours which occur before the onset of puberty. A very few cases have been documented in literature so far & the diagnosis requires high index of clinical suspicion. Here, we demonstrate a case of childhood melanoma in a 7 year old female child who presented with a nodular hyperpigmented lesion over the left knee joint. Clinical presentation & cytopathological findings raised a suspicion of malignant melanoma & the diagnosis was further confirmed on histopathological examination & immunohistochemistry.
Keywords: Systemic lupus erythematosus, paediatric age group, autoimmune diseases, autoantibodies.

INTRODUCTION

Malignant melanoma is a disease primarily of the adults [1]. Melanomas developing in individuals prior to the onset of puberty are referred to as childhood melanomas. A review of literature indicates a very low incidence of melanoma in prepubertal age group with an estimated incidence of 0.4% among all melanomas [2]. Childhood melanomas most commonly involve the trunk (50%), followed by lower extremity (20%), head & neck (15%) & upper limbs (15%) and show fairly similar clinical features as compared to melanomas in adults. Melanomas in children may present with recent history of trauma, pain & pruritis [2]. Here, we report a case of malignant melanoma in a 7 year old female child who presented with a nodular hyperpigmented lesion over the left knee joint.

CASE SUMMARY

A 7 year old female child presented with a history of nodular hyperpigmented lesion over the left knee joint for duration of 3 months. The patient had a history of trauma followed by progressive increase in the size of the lesion. Fine needle aspiration was performed. Some smears were air dried & stained with Geimsa stain while some were fixed in 95% ethanol & stained with hematoxylin & eosin stain. Smears prepared were highly cellular & showed presence of predominantly singly dispersed & few loose clusters of tumour cells. The tumour cells had high N: C ratio, exhibited marked anisokaryosis alongwith the presence of vesicular nuclei, large nucleoli & abundant cell cytoplasm. The diagnosis of malignant pathology was made & keeping in view the clinical history & cytological findings a possibility of amelanotic malignant melanoma was also kept. (Fig. 1)

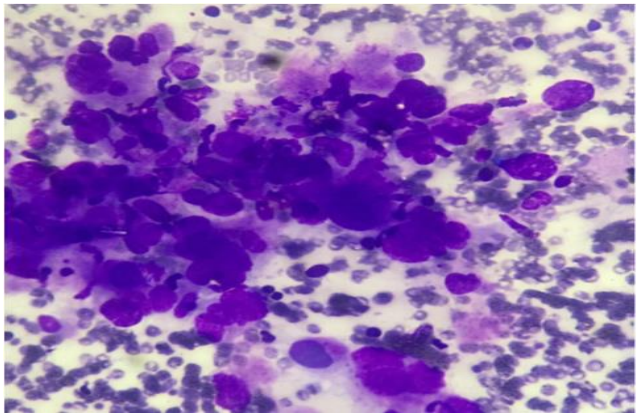

Fig-1: FNAC smears showing loose cluster of tumour cells with high N: C ratio (MGG stain, 40 xs)

Following this, excision biopsy was conducted & skin biopsy specimen was sent for histopathological investigation. Grossly, an elevated nodular hyperpigmented lesion was identified over the skin surface measuring 0.8x0.8x0.5 cm. Multiple sections were processed. Microscopy revealed the presence of a tumour arranged in alveolar & nested pattern in the dermis. The tumour islands were seen separated by small septa. The tumour cells were seen attached to the septa as well as exhibited dyscohesion towards the centre. The individual tumour cells were round to polygonal, had hyperchromatic nuclei & moderate amount of eosinophilic cell cytoplasm. Also present were tumour cells with eccentric nuclei, 1-2 prominent nucleoli & abundant eosinophilic cell cytoplasm. Few binucleate as well as multinucleate giant cells were also seen. Melanin pigment was seen in some of the tumour nests in the upper dermis. Mitotic activity was also noted. Histological features were suggestive of malignant mesenchymal lesion. The possibilities of malignant melanoma & alveolar rhabdomyosarcoma were kept. (Fig 2) Immunohistochemistry was done & it revealed strong diffuse cytoplasmic positivity for S-100 & was negative for Smooth Muscle Actin (SMA). Thus, the diagnosis of alveolar rhabdomyosarcoma was ruled out & final diagnosis of malignant melanoma was confirmed. (Fig. 3)

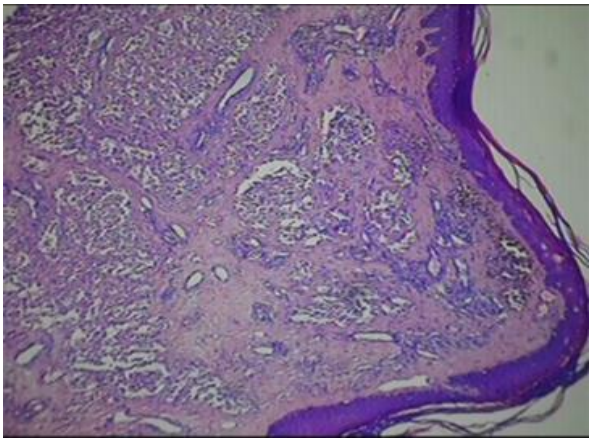

Fig-2: Tumor cells arranged in alveolar pattern (H&E, 10 xs)

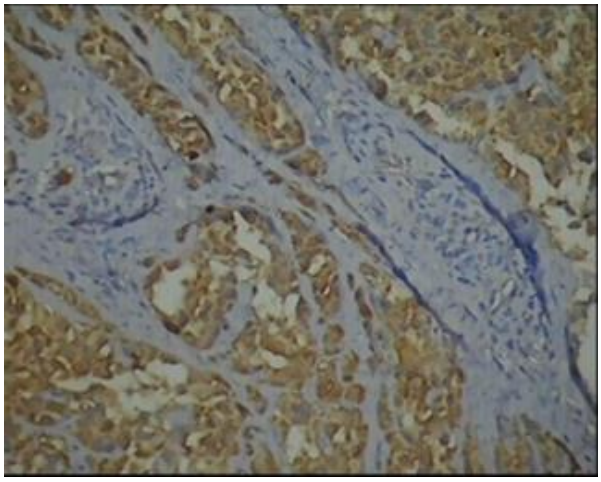

Fig-3: S-100 positivity in Malignant Melanoma on IHC

DISCUSSION

The overwhelming majority of melanomas arise after puberty with a peak incidence in the 6th & 7th decade of life & a very few cases of childhood melanomas occurring before puberty have been reported. Children comprise only 2% cases of melanoma [3, 4] & melanomas account for 3% malignancies in patients below 20 years of age [5]. The annual incidence of malignant melanoma in first decade of life is even more low & has been estimated at 0.8 per million compared to 6.3 per million in the second decade of life [6].

Myhre, reported 4 patients in 9-14 years age group among 1014 cases with malignant melanoma over a period of 10 years (1953-1962) and gave an incidence of 0.4%. [7] Lerman *et al*. in 40 years of records from the Memorial and James Ewing Hospitals located 12 patients younger than 14 years of age. [8] Boddie *et al*. studied the records of the M. D. Anderson Hospital covering 31 years and gave an incidence of

0.4%. [9] Rao *et al*. in a review of the files of the St. Jude Children's Research Hospital between 1967 and 1988, reported 33 cases of malignant melanoma in patients 20 years of age and younger [10].

In adults, malignant melanomas most commonly involve the sun exposed sites like head & neck. Childhood melanomas most commonly involve the trunk (50%), followed by lower extremity (20%), head & neck (15%) & upper limbs (15%) and show fairly similar clinical features as compared to melanomas in adults [2].

Here, in our case the patient was below ten years of age & the site of involvement was the knee joint which is not a sun exposed site. Like childhood melanomas the child presented with the history of recent trauma followed by progressive increase in the size of the lesion. Clinical presentation & cytopathological findings raised a suspicion of malignant melanoma which was further confirmed on histopathological examination & immunohistochemistry.

CONCLUSION

Childhood melanomas are very rare tumours of paediatric age group. FNAC is a useful & rapid tool for making the diagnosis. A correlation with the clinical presentation along with histopathological examination & IHC further help to confirm the diagnosis.

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