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Case Report

An Atypical Presentation of Halo Nevus in Child; Case Report

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Abstract

Halo nevus also known as Sutton nevus, is a benign type of nevus commonly found in children that presents with a central pigmented part surrounded by a hypopigmented zone, which is usually symmetrically round or oval.

We present an atypical presentation of separate entity of Halo Nevus in 7-year-old boy.

Keywords: *Halo Nevus; Sutton Nevus; Inflammatory Nevus; Hyperkeratotic Nevus*

Introduction

Halo nevi affect up to 5% of caucasian children between six to fifteen years old in an equal sex distribution. It is more common in patients with increased number of nevi and/or personal or familial history of vitiligo. It may be seen in common acquired nevi but rarely in melanoma. The most common location is the back and multiple lesions are present in approximately half of all cases.

Nevi in children involute in 3 different pathways via halo phenomenon, a regression pattern, and a gradual involution without evidence of regression pattern or halo phenomenon.

Different perilesional phenomena of melanocytic nevus can be demonstrated in two categories: depigmentation which found in halo nevus and eczema which found related to Meyerson nevus.

Halo phenomenon is a sequelae from an immunological mechanism in which nevocellular antigens are recognized by both humoral and cell-mediated immune systems. Oligoclonal T cells are activated against nevus cells which additionally target surrounding melanocytes, resulting in halo formation. Another recent study, tumor necrosis factor related apoptosis-inducing ligand has been suggested as a causative cause for both halo nevus and vitiligo.

Four clinical stages of evolution in halo nevus, with the duration of the process ranging from months to decades. Stage 1 starting as pigmented nevus surrounded by a halo of depigmentation (appearance of the halo), stage 2 developed as a pink nevus surrounded by a halo of depigmentation (loss of pigment within halo nevus), stage 3 circular area of depigmentation with total or partial disappearance of

the nevus (disappearance of the nevus), and stage 4 finally normal-appearing skin after repigmentation of the halo (disappearance of the halo). It is important to assess the clinical features of the halo nevus.

Case Presentation

Clinical evaluation revealed a pigmented tan papular lesion localized on the back (right lumbar region) was found, measuring three by three millimetres, with measuring nineteen by thirteen millimetres of surrounding hypopigmentation. The lesion is papule, which is not common in halo nevus. It is categorized in halo nevus stage 1. Duration of the lesion was about 4 years ago. Clinical assessment revealed additional two halo nevi lesions particularly on right lateral thoracic region and right thoracoabdominal region in respectively which are categorized in clinical halo nevus stage 2 (Figure 1). The lesion at right lumbar region showed central pigmented part surrounded by a symmetrical rim of depigmentation. The clinical presentation at right lumbar region was excised with atypical appearance and worrisome feature from parental anxiety and there was no clear suspicion of malignancy. For clinicoepidemiologic profile of our patient; multiple Halo nevus were found in trunk (≥ 3). He had no symptomatic itching during outpatient visiting. There was no associated vitiligo, atopic dermatitis, hypomelanosis of Ito nor nevus spilus. Koebnerization was found from his mother's history. The family history of vitiligo, thyroid disorder and other autoimmune disorders among first or second degree relatives were not found.

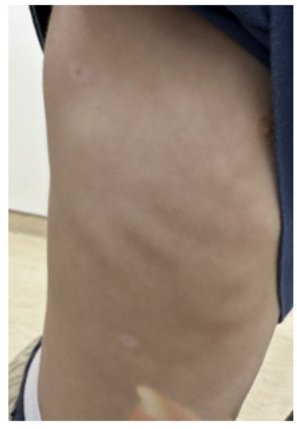

Figure 1: *Halo nevi lesions at thoracoabdominal region (stage 2).*

Histology (Figure 2) showed focally thinned, hyperkeratotic epidermis. Nests and some solitary units of melanocytes were found at dermoepidermal junction and upper dermis. In the upper dermis, dense infiltration of lymphocytes and histiocytes around the melanocytes was found. Increased expression of Melan-A and Ki 67 were found in immunohistochemistry stains. Hyperkeratosis, an epidermal hyperplasia are found in nevus. The patient 's paraffin-embedded block including halo nevus tissue sample was evaluated for mutant BRAF V600E expression by immunohistochemistry and immunohistochemical staining intensity was graded in high level (strong 3+). This benign pigmented nevus was considered positive for this tumor marker. According to clinicohistopathological correlation, the diagnosis of inflammatory and hyperkeratotic halo nevus was established.

Discussion

It is important to assess the clinical features of the halo nevus. A biopsy in not indicated if the pigmented part is regular in appearance. Biopsy might be indicated in the presence of atypical or worrisome features so it was performed in our patient. A V600E mutation in the

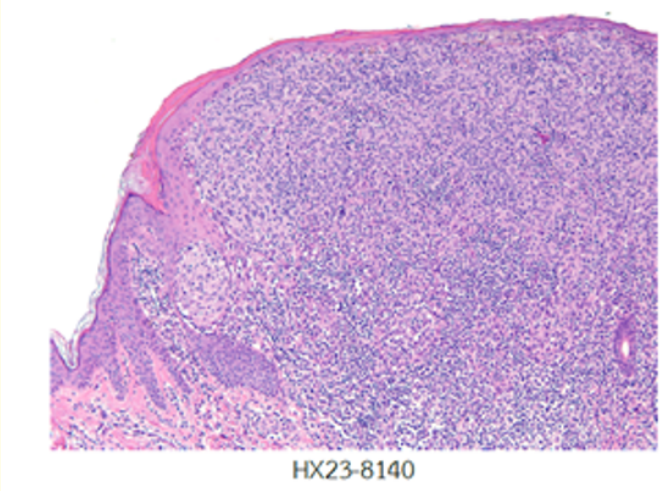

Figure 2: *On magnification (X23), histopathology showed focally thinned, hyperkeratotic epidermis with small nests of nevus cells with abundant melanin in the basal layer of the epidermis. In the upper dermis, dense lymphocytic infiltration and clusters of histiocytes around the melanocytes.*

BRAF gene in our patient was confirmed for positive study which can be associated with sun exposure, are present in 88% of acquired melanocytic nevi. Due to unavailability of blood-based BRAF V600E mutation assay for other associated cancers especially papillary thyroid cancer and colorectal cancer in our hospital, we suggest the patient to do further investigation from blood-based BRAF V600E mutation assay specifically for thyroid cancer and colorectal cancer when he will move to live in abroad. The main differences between histopathological appearance of a halo nevus and melanoma can be summarized as follows; nevi cells are arranged in nests, while in melanoma, there are isolated atypical melanocytes in the epidermis and aggregates in the dermis. There is also a difference between the symmetric appearance of nevi and the asymmetric appearance of melanoma. Mature cells with rare or lack of mitosis are characteristic of a nevus when compared with the numerous mitotic immature cells in melanoma. There is dense lymphocytic infiltration and histiocytic clusters around melanocytes in halo nevi, in contrast to melanoma, where the inflammatory infiltrate is concentrated in the periphery. Halo nevi is common in children and young adults. It develops from a benign acquired melanocytic nevus but can also be seen in dysplastic nevi and rarely in melanoma. Further investigations are necessary to detect clear clinical lesion in order to distinguish between benign and malignant origins in halo nevi. From our case, a detailed clinical history and clinical examination (e.g. previous dark pigmentation but there is more one halo nevus) are important and can already provide diagnostic clues. Biopsy is necessary in these cases to avoid missing melanoma and microscopic features can help clinicians to make the decision between excision biopsy or follow-up [1-8].

Conclusion

In conclusion, this case demonstrates that atypical features of halo nevi arising in child should be considered for biopsy and positive study of V600E mutation in the BRAF gene for tissue from halo nevi. Eventhough this is a benign acquired melanocytic nevus in our patient but however it is also necessary for further investigation the BRAF V600E mutation assay especially for papillary thyroid cancer and colorectal cancer in this patient.

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