Infected Giant Congenital Nodular Melanocytic Naevus in a 5-week-old Infant

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Abstract

Giant congenital melanocytic naevus (GCMN) is present at birth and will measure ≥ 20 cm in diameter in adulthood. It is rare, with an incidence of fewer than 1 in 20,000 births. Giant congenital melanocytic naevus has an increased risk of extracutaneous abnormalities and transformation into malignant melanoma, but sepsis may increase the risk for mortality in some children. Prompt identification, investigation, and aggressive treatment of identified infections, along with follow-up care for affected children, are essential.

A 5-week-old male infant presented with a widespread birthmark, progressively increasing swellings since birth, high-grade fever and excessive crying of 3 days' duration. He was febrile and irritable. He had a bath suit distribution of hyperpigmented lesions and multiple nodules with areas of ulceration and necrosis. He had numerous satellite hyperpigmented patches. The complete Blood Count (CBC) showed leucocytosis with granulocytosis. He had antibiotics. The histopathology of the tissue biopsy was consistent with a congenital melanocytic nevus.

Ulcerated Giant congenital melanocytic naevus has a high risk of being complicated by sepsis and malignant transformation and has a substantial psychological impact on the family of the affected child. Management of this condition poses a considerable challenge, especially in developing countries where out-of-pocket health financing often precludes access to quality healthcare for the low socioeconomic class without health insurance.

Keywords: Giant congenital melanocytic naevus, malignant transformation, birthmark, malignant melanoma.

Résumé

Nævus mélanocytaire congénital nodulaire géant infecté chez un nourrisson de 5 semaines

Le nævus mélanocytaire congénital géant (MNGC) est présent à la naissance et mesure ≥ 20 cm de diamètre à l'âge adulte. Il est rare, avec une incidence inférieure à 1 sur 20 000 naissances. Le nævus mélanocytaire congénital géant présente un risque accru d'anomalies extracutanées et de transformation en mélanome malin, mais le sepsis peut accroître le risque de mortalité chez certains enfants. Une identification, une investigation et un traitement agressif rapides des infections identifiées, ainsi qu'un suivi des enfants atteints, sont essentiels.

Un nourrisson de sexe masculin âgé de 5 semaines présentait une tache de naissance étendue, des gonflements progressivement croissants depuis la naissance, une forte fièvre et des pleurs excessifs pendant 3 jours. Il était fébrile et irritable. Il présentait des lésions hyperpigmentées en maillot de bain et de multiples nodules avec des zones d'ulcération et de nécrose. Il présentait de nombreuses taches hyperpigmentées satellites. L'hémogramme (NFS) a révélé une leucocytose avec granulocytose. Il a reçu des antibiotiques. L'histopathologie de la biopsie tissulaire était compatible avec un nævus mélanocytaire congénital.

Le nævus mélanocytaire congénital ulcéré géant présente un risque élevé de complications liées à un sepsis et à une transformation maligne, et a un impact psychologique important sur la famille de l'enfant atteint. La

prise en charge de cette affection représente un défi considérable, en particulier dans les pays en développement où le financement direct des soins de santé par le patient empêche souvent l'accès à des soins de qualité pour les personnes de milieux socio-économiques défavorisés sans assurance maladie.

Mots-clés: nævus mélanocytaire congénital géant, transformation maligne, tache de naissance, mélanome malin.

Introduction

Congenital melanocytic naevi (CMN) are benign pigmented proliferations of melanocytes in the skin that are present at birth or develop shortly after birth.[1] When the 'Predicted Adult Size' (PAS) is ≥ 20cm in the largest diameter, it is termed giant congenital melanocytic naevus (GCMN). The incidence is less than 1 in 20,000 in newborns.[1] Its embryogenesis has been associated with mutations in the postzygotic NRAS gene, as well as the overexpression of hepatocyte growth factor (HGF) or scatter factor, among others.[2] There is also the Cramer proposed theory of the melanocytic differentiation pathway, which describes the migration, plasticity, and differentiation of pluripotent stem cells of the neural crest. Anomalies in the melanocyte differentiation pathway in the naevus or leptomeninges may result in melanoma formation in these areas.[3] Furthermore, the pluripotent cells in the nevi may retain the ability to proliferate and differentiate throughout the life of the nevus.[3]

Giant congenital melanocytic nevi are known for their association with neoplastic complications, such as malignant melanoma, and a rapidly growing, ulcerative tumour called nodular proliferative neurocristic hamartoma or neurocutaneous melanosis (NCM).[4-6] While the risk of malignant transformation in CMN is 5-10%, GCMN poses an increased.[6] Sepsis from infected ulcerative tumours may be a more imminent cause of mortality. The psychosocial impact on the patient and the family because of its unsightly appearance is an added malady.[4,7]

Case history

A five-week-old male infant was brought into the Emergency Paediatric Unit with a history of multiple dark marks and swellings on the skin since birth, excessive crying and a high-grade fever of 3 days. The largest swelling was tied off, and a serosanguinous discharge was present. Examination revealed an irritable, febrile child with multiple jet-black macules, patches, and plaques on the skin, conjunctiva and oral mucosa. The most prominent patch had a bathing suit distribution involving approximately 70% of the back, gluteal skin, and 50% of the thigh proximally. It measured 27 cm by 16 cm in its widest diameter. The surface of this shiny black skin had convolutions and two large nodules with foul-smelling, necrotic surfaces oozing serosanguinous fluid. Both nodules were tender. The perineum and the groin were wet with serous fluid. Except for irritability in this child, the physical examination of the central nervous system (CNS) was normal.

The complete blood count revealed leukocytosis with granulocytosis; however, blood culture and other investigations were not performed due to financial constraints. A large nodule and hyperpigmented skin were biopsied. We made a diagnosis of sepsis in a child with Giant congenital melanocytic naevus.

Histopathologic findings of neoplastic melanocytic cellular clusters in entire layers of the epidermis and infiltration of the papillary and reticular dermis were in keeping with a diagnosis of Congenital Melanocytic Naevus with neurocritic differentiation.

The patient was co-managed by the paediatrician, plastic surgeon and dermatologist. There was marked clinical improvement; he had treatment for the sepsis, and we discharged the baby after about a week of antibiotics. We counselled his parents on the need for follow-up and the increased risk of malignancy with this condition. The patient was lost to follow-up, though he was said to have died about a month later following a febrile illness.

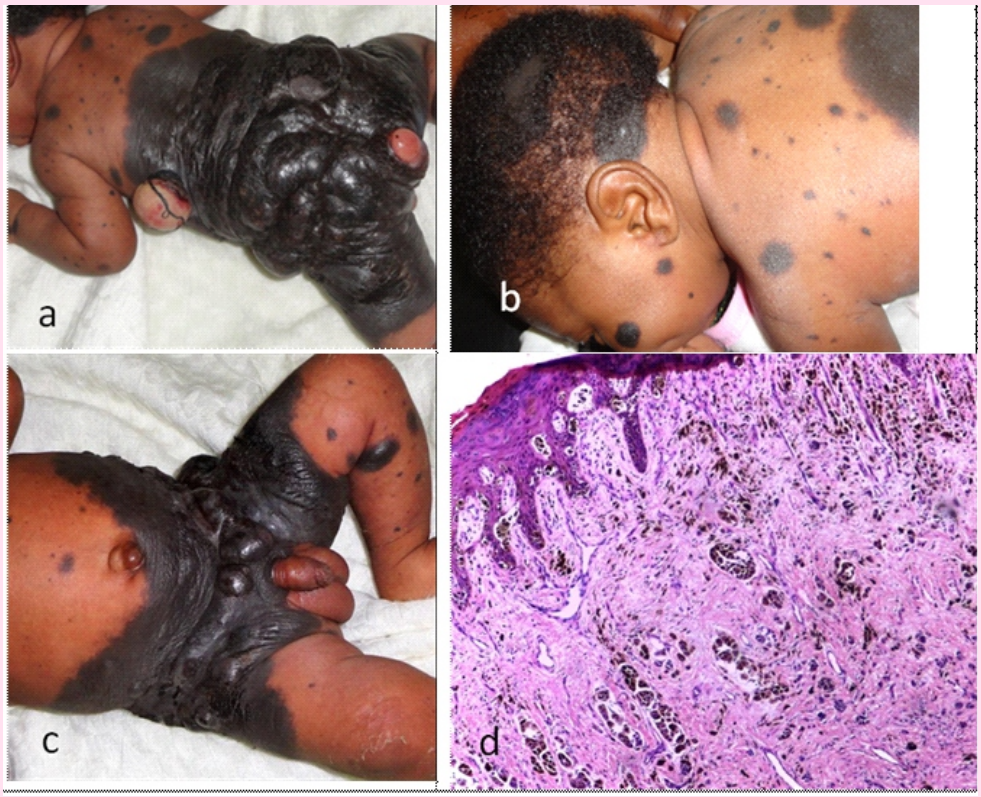

Figure 1: a Bath suit distribution of melanocytic naevus and ulcerated nodular masses, b multiple satellite lesions, c anterior view of the naevus, d Section of a nodule; few nest of large pleomorphic, poorly aggregating cells are noted near the dermo-epidermal junction arranged in patterns reminiscent of neural tissue.

Discussion

Congenital melanocytic naevus (CMN) results from a developmental skin abnormality caused by a mutation in the NRAS gene, benign proliferation of melanocytes in the dermis, epidermis or both.[8] Congenital melanocytic naevus can be classified according to size: small (<1.5 cm), large (1.5-19 cm) and giant (≥20 cm) diameter.[1] Some authors have proposed further classification into small, medium, large and giant.[9] Giant congenital melanocytic naevus commonly affects the trunk, limbs and head in decreasing order of frequency.[8] It may be solitary, growing proportionately with the child, or a large lesion surrounded by satellite lesions, and sometimes involving the central nervous system and bones.[8] The garment naevus involves large areas, such as a bath trunk naevus and a coat sleeve, which typically cover a central area usually concealed by a bathing costume or the entire arm or proximal shoulder, respectively.[8] This child had a GCMN in garment naevi (>20 cm) with multiple satellite lesions (>50) on the skin and mucous membranes, oral mucosa and conjunctiva. Hale et al. documented an association between the increasing number of satellite lesions and melanoma (P = 0.04) as well as the occurrence of neurocutaneous melanosis (NCM) (P = 0.06). Patients who developed melanomas had larger naevic lesions compared with those who did not have melanomas.[7] Other rarer malignancies in them include rhabdomyosarcoma and liposarcoma.[5] Associated brain malformations include arachnoid cysts, choroid plexus papillomas, cerebellar astrocytomas, spinal dysraphism, and type 1 Arnold-Chiari malformation.[10]

The lesion is typically brownish with well-defined borders and hypertrichosis. In newborns, it may be lighter in colour and have few or no hair follicles. The surface may be rough, warty or convoluted. The rugosity and nodules ought to increase as the child grows.[1] In the index patient, the garment naevus had a jet-black, convoluted surface with nodules and no obvious hair follicles. The skin over the nodules appeared necrotic and infected.

Central nervous system (CNS) melanoma is a major limiting prognostic factor in children with CMN. Brain MRI in infancy is preferred on account of the increased risk (12%) of malignant melanoma (MM) in those with abnormal findings when compared to those with normal CNS at birth (1%).[11,12] Clinical management and accurate prognosis will largely depend on this finding.[11] Kinsler et al. and Waelchli et al. advocate brain MRI scans before 6 months of age to best visualise the distinct melanin signal before complete myelination occurs.[11,13] While normal findings are reassuring to the clinicians and family, abnormal findings will indicate the need to monitor for seizures and annual neurodevelopmental abnormalities.[13]

The prognosis is unfavourable when GCMN is associated with melanoma or neurocutaneous melanosis.[1] All patients with childhood melanoma associated with GCMN died within 5 years from diagnosis in a review of 20 such children with prepubertal melanoma by Trozak et al.[14] A case report by Katibi et al. corroborated this finding.[15] This dismal prognosis results from late presentation. The tumour arises deep in the naevus (dermis); hence, there is a delayed recognition, and its proximity to lymphatics and blood vessels will enhance the metastatic spread of the malignancy.[14]

Treatment in garment naevi is very challenging and ought to be individualised considering age, size and location of the lesion, risk of malignancy, the possibility of NCM, as well as possible functional impairments resulting from surgical procedures. The unsightly scar following the serial surgical excision of the naevus is another complication. Other non-surgical treatment modalities for GCMN include psychological support and clinical procedures such as dermabrasion, skin curettage, shave excision, chemical peels, and laser treatment, primarily for superficial lesions.[4,5]

Approximately 50% of melanomas in patients with large congenital melanocytic nevi (CMN) do not arise on the nevus lesion.[7] Some authors, however, advocate for prophylactic surgical excision of certain heterogeneous, rough lesions, and those with other reasons are difficult to follow clinically. The focus should be on reducing the risk of melanomas and improving aesthetics and functional outcomes in a particular patient.[16]

Giant Congenital Melanocytic Naevus is challenging for the patient, family, and managing clinicians. Proper counselling, psychotherapy and follow-up are essential in their management. Children with this lesion are recommended for immediate referral to a specialist.[7] However, in developing countries with a largely uninsured population and poor access to healthcare, such children have an increased risk of neglect, abuse and increased mortality. Support groups for individuals with rare congenital diseases can be helpful. Advocacy may enhance the political will to improve the lot of affected children.

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