DIFFUSE NEONATAL HEMANGIOMATOSIS, ATRIAL SEPTAL DEFECT AND SYRINGOMA OF THE THIGH: CASE REPORT AND LITERATURE REVIEW

Abdu HA,[1] Yakubu AA,[2] Farouk ZL [3]

[1]Department of Paediatrics,Dalhatu Araf Specialist Hospital Lafia, Nasarwa State. Nigeria
[2]Department of Surgery, Dalhatu Araf Specialist Hospital Lafia, Nasarwa State. Nigeria
[3] Department of Paediatrics, Aminu Kano Teaching Hospital .Kano State, Nigeria

Corresponding Author's Current Address
Halima Abdu, *Department of Paediatrics, Jos University Teaching Hospital,*
TEL:+2348166036997, E-mail:halima.abdu@yahoo.com

Abstract
Vascular birthmarks are common in the neonatal period and may be either hemangiomas or vascular malformations. Hemangiomas are usually few benign, pediatric tumors of endothelial cell which may regress, however diffuse neonatal hemangiomatosis is a rarer syndrome characterized by hundreds of hemangiomas affecting the skin and visceral organs and associated with poor prognosis. A male neonate is discussed who presented at birth with hundreds of cutaneous hemangiomas, arterio-venous mixed malformation and syringoma of the left thigh with an Atrial Septal Defect (ASD). Thrombocytopenia was absent. Skin lesions noted to be regressing daily but the tumor over the left thigh was static. Teratogencity was considered following ingestion of a supplement consumed throughout pregnancy. Psychosocial issues that need to be addressed remain bedrock in the management of these patients.

Keywords:
Hemangiomatosis ,atrial septal defect,syringoma, ,thrombocytopenia, psychosocial

Introduction

Hemangiomas are unique, benign, pediatric tumors of endothelial cells characterized by an initial phase of rapid proliferation, followed by slow involution, often leading to complete regression and which may be present at birth or during the first few months of life.[1] Although most of these tumors are small and innocuous, some may be life- or function-threatening, or have associated structural congenital anomalies.[2,3]The term Benign neonatal hemangiomatosis was first proposed by Sternal et al [4] consisting of a syndrome of hundreds of hemangiomas occurring exclusively in the skin and following a benign course with spontaneous resolution. Diffuse neonatal hemangiomatosis however, is a rarer syndrome characterized by multiple hemangiomatosis affecting the skin and visceral organs and is often associated with poor prognosis. A description is given of a neonate with a rare combination of hemangiomatosis, Atrial Septal Defect, and syringoma of the left thigh.

Case Report

A 9 hour old male neonate was admitted into the Special Care Baby Unit of the Dalhatu Araf Specialist Hospital Lafia, Nasarawa State on account of multiple papular lesions distributed all over the scalp and body and a large mass over the left thigh at birth. There was a history of ingestion of a herbal preparation containing chlorophyll from the first trimester till delivery; 4 glasses per day. No bleeding from any orifice was noted with exception of slight bleeding from the thigh mass but no other systemic symptoms were reported.

On examination the child had discrete erythematous superficial macula- papular none compressible lesions over his body and scalp numbering about 288 that varied in size from 2mm to 1cm.Lesions on the sole of his feet were mixed; deep seated with bluish hue and red superficial papules. He was febrile (38^{o}C), pale with hyperaemic conjunctivae and not cyanosis. Birth weight was 3kg, head circumference 32cm and length 48 cm. A larger left thigh with an almost circumferential fungating bleeding tumor and discrete necrotic edge measuring about 15 X 5cm was seen. In the cardiovascular system he had a widely fixed 2nd heart sound with a soft ejection systolic medium pitched murmur best heard at the left upper sterna border; grade 2/6. The abdomen was distended with the liver 2 cm below the coastal margin but no bruit heard.

Laboratory studies revealed packed cell volume of 29% necessitating transfusion, platelet count of 141 x10^{9}/L while urea, electrolytes and creatinine were essentially normal. Maternal retroviral status was negative. Radiography of the long bones of the lower extremities showed soft tissue mass swelling with no bone involvement. Coloured Doppler

Ultrasound scan of the tumour on the leg showed multiple cystic areas with mixed venous and arterial communications. No lesions were noted in liver, kidney or brain using Doppler USS, Echocardiography showed an ostium primum ASD measuring 0.24 cm. An ophthalmic examination was however not done.

Management included the counselling of the family members,antibiotics, daily tumour dressing and biopsy from the limb lesion. Skin lesions were involuting and regressing daily but the fungating mass remained static for period of one week patient was in our institution.

Patient was referred to Aminu Kano Teachin,,g Hospital for possible CT Angiography and histology of the biopsy taken. Follow up revealed removal of patient from hospital care by the family after mother started manifesting psychotic symptoms. The histology report of the biopsy showed arterio-venous malformations and a syringoma.

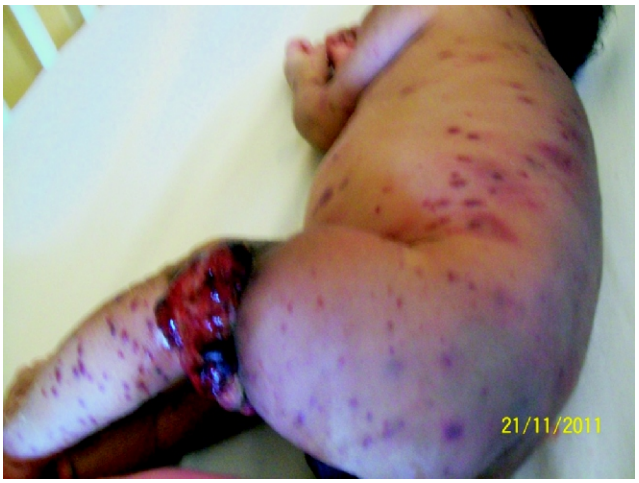

Fig 1: Neonate with hemangiomatosis and left thigh mixed arterio-venous malformation

Discussions

Hemangiomas are the commonest vascular tumors of infancy which are biologically active, few in number, and most are usually medically insignificant.[1] Diffuse or Disseminated Neonatal Hemangiomatosis (DNH)describes the uncommon presentation of few to hundreds of small, generalized hemangiomas, often with visceral (usually hepatic) involvement.[2] Thirty percent of infantile hemangiomas are present at birth with 87 percent of affected neonates having cutaneous hemangiomas as the first sign of disease. In terms of appearance superficial hemangiomas are bright red and elevated ("strawberry" marks) while deep hemangiomas are blue or skin-colored. This neonate had 288 hemangiomas with mixed combination [Figure 1].

The classic hemangiomas are characterized by an initial phase of rapid proliferation, followed by slow involution, often leading to complete regression with occasional rare variants presenting fully formed at birth, becoming static or rapidly involuting.[3]

The liver is the most common extracutaneous site of hemangiomas, but virtually any organ may be affected, including brain, intestine, oral mucosa, eyes, spleen, and kidney. [4,5] This patient could have benefited from an expert opthalmological review especially with evidence of hyperaemic conjunctivae. The diagnosis of visceral hemangioma is established by ultrasonographic studies in 57 per cent, CT scan in 73 percent and by MRI in 84 percent of patients,while large tumors considered for resection, direct angiography or, more recently, CT angiography, helps confirmed the diagnosis. [6,7]

High output cardiac failure may occur by two to nine weeks of age as a result of vasoactive influence on the pulmonary vasculature and is a common cause of death. Cardiac malformations are rare possible associations with hemangiomatosis especially in segmental types[8] Sidwell et al[9] described a case of neonatal hemangiomatosis with an Atrial Septal Defect as a cause of severe heart failure due to a combination of increased flow through the right heart, high cardiac output from the massive arterio-venous shunting and multiple hepatic hemangiomas. Arterial emboloization has been used inconsistently to reduce increased cardiac output.

Involvement of the skeletal muscles of the thigh with no obvious bone involvement on X-ray is not a common organ involvement. Maffucci's Syndrome (hemangiomatosis osteolytica)[10] a congenital syndrome characterized by hemangiomas at birth, skeletal deformities and echondromas (benign cartilaginous growth) usually have malignant degenerations. A severe thrombocytopenia as a result of platelet trapping and coagulopathy may accompany some large single lesions or diffuse hemangiomatosis-the Kasabach-Merritt syndrome.[11] Despite normal platelets in few patients as hemangiomas grow, these infants often require inpatient evaluation and treatment because

most develop significant thrombocytopenia and disseminated intravascular coagulopathy.

Syringomas are uncommon slow growing benign myxoid sweat-gland tumor of the skin, which have a reported incidence of <0.01% among primary skin tumors. It is a rare association with hemangiomas.The neoplasm usually is found in the upper half of the dermis, seldom connects to the epidermis, but where it closely approaches the epidermis, milia-like structures may be found.It is rare in children and its presence on the thigh as seen in this child is a rarer location. The management of syringomas is total surgical excision to avoid tumor recurrence and close follow up because of the rare possibility of malignant transformation and visceral metastasis.[12]

Systemic corticosteroids, both systemic and intra-lesional are the main treatment for hemangiomas that cause functional impairment or life-threatening.[1,143] High flow hemangiomas can be treated with anti-angiogenesis agents such as interferon alpha$_2$-b or embolization which this patient may benefit from if available.[15]Adverse effects of these agents includes hemodynamic changes, viral symptoms ,blood dyscrasias and depression. Surgical care with laser and resection is most commonly indicated when involution is incomplete or leaves excess fibrofatty tissue or redundant skin. Lesions that are peduculated bulky, or ulcerate may need to be excised prior to involution.

Is it possible that maternal herbal ingestions could be implicated in this malformation? Chlorophyll which is the active ingredient is a substance developed from plant biology photosynthesis. Side effects noted has majorly been skin irritantion, causing skin hives, rash, pruritus or swollen skin.[16] No study has looked into such an association and may be an area for possible future research.

No similar constellation of findings as seen in this patient has been documented in the literature. The goals in hemangioma treatment are to prevent loss of life or function, and to prevent scarring before or as a result of treatment.

Conflicts of interest/competing interests: NONE

References

1. Bruckner AL, Frieden IJ. Hemangiomas of infancy. *J Am Acad Dermatol*. 2003 April; 48(4):477-93
2. Yoon SS, Charny CK, Fong Y, Jarnagin WR, Schwartz LH, Blumgart LH, DeMatteo RP. Diagnosis, management, and outcomes of 115 patients with hepatic hemangioma. *J Am Coll Surg*. 2003 Sep; 1997(3):392-402.
3. North PE, Waner M, James CA, Mizeracki A, Frieden IJ, Mihm MC Jr. Congenital non-progressive hemangioma: a distinct clinic-pathologic entity unlike infantile hemangioma. *Arch Dermatol*. 2001 Dec;137(12):1607-20
4. Vorse HB, Smith EL, Luckstead EF, Fraser JJ. Hepatic hemangiomatosis of infancy. *Am J Dis Child* 1983;137:672-8
5. Fishman SJ, Mulliken JB. Hemangiomas and vascular malformations of infancy and childhood. *Pediatr Clin North Am* 1993;40:1177-1200
6. KristidisP, DeSilva M, Howman-Giles R, Gaskin K J. Infantile hepatic hemangiomas: investigation and treatment. *J Paediatr Child Health.1991*;27:57-61
7. Khaled ME, Christine OM, Jonathan RD, Joel FP, Jonathan MW, Jay PH. Vascular malformations and hemangiomatosis Syndromes: Spectrum of imaging manifestations.*AJR 2008*;190(5):1291-1299
8. Denise W, Metry MD, Aimee H, Carolyn A, IlonaJ, Frieden. Association of solitary, segmental hemangiomas of the skin with visceral Hemangiomatosis. *Arch Dermatol*.2004;140:591-596
9. Sidwell RU, Daubeney PE, Porter W, Roberts NM. Neonatal Hemangiomatosis and arterial septal defect: are rare causes of right heart failure in infancy. *Pediatr Dermatol*.2004;21(1):66-9
10. Paul SC, Whay H, Larry RW, Norman R, John FL, Leonel J V.Maffucci's syndrome (hemangiomatosis osteolytica):A report of four cases. *J Vas Surg*.1992;16(3):364-371. http://dx.doi.org/10.1016/0741-5214(92)90369-J
11. Hesselman S,Micke O,Marquardt T,,et al. Kasabach- Merrit syndrome: a review of the therapeutic options and a case report of successful treatment with radiotherapy and interferon alpha.*BJR*.2002;75(890):180-184
12. Guitar J,Rosenbaun MM,Requena L.'Eruptive syringoma':a misnomer for a reactive eccrine

gland ductal proliferation?.J Cutan Pathol.2003;30:202-5

13. Edgerton MT. The treatment of hamangiomas; with special reference to the role of steroid therapy. *Ann Sur.1976*;183;517-532
14. Stanley P, Geer GD, Miller JH, Gilanz V, Landing BH, Boechat IM. Infantile hepatic hemangiomas: clinical, radiographic investigations, and treatment of 20 patients.*Cancer.1989*;64:936-949
15. Chang E, BodyA, Nelson CC, et al Successful treatment of infantile hemangiomatosis with interferon alpha$_2$-b.*J Padiatr Hematol Oncol.*1997;237-244
16. On AR.Liquid Chlorophyll benefits: Adverse effects of Liquid chlorophyll. http://www.simple-remedies.com/health-tips-3/liquid-chlorophyll-benefits.html. Accessed 5th February 2012.