Clinical Case Reports

Open Access

CASE REPORT

A rare type of congenital Sturge-Weber Syndrome: presenting with history of perinatal asphyxia

Obuoha Ejike, Calistus Odume, Uchenna Ekwochi, Ikenna Ndu & Ugochukwu Imanyikwa

Department of Paediatrics, ESUT and ESUT Teaching Hospital Parklane, Enugu, Nigeria

Correspondence
Obuoha Ejike, Department of Paediatrics, ESUT and ESUT Teaching Hospital Parklane, Enugu, Nigeria. Tel: +19032797563 or +2347082939817; Fax +1 903 630 1126; E-mail: obuoha@gmail.com

Funding Information
No sources of funding were declared for this study.

Received: 24 July 2015; Revised: 22 November 2015; Accepted: 17 March 2016

Clinical Case Reports **2016; 4(8): 725–727**

doi: 10.1002/ccr3.561

Key Clinical Message

The presentation of a newborn with perinatal asphyxia and poor developmental milestones in a resource-poor setting. Many a times, obscured, unsuspected, and uncommon etiologies compound well-known causes of failure to thrive; in this case a rare finding of Type III Sturge-Weber Syndrome was revealed by Brain CT scanning.

Keywords

Failure to thrive, hypoxic ischemic encephalopathy, perinatal asphyxia, port-wine birthmark, Sturge-Weber Syndrome – type III.

Introduction

Sturge-Weber Syndrome (SWS) also called encephalotrigeminal angiomatosis, belongs to a group of disorders collectively known as phakomatosis ("mother spot" disease). It is found worldwide. The incidence of SWS is estimated at 1:50,000. It is a neurocutaneous syndrome which includes heterogeneous group of disorders characterized by abnormalities of both the integuments and the central nervous system [1]. SWS is a congenital, nonfamilial (inheritance is sporadic) disorder caused by the guanine nucleotide- binding protein (G protein) and q polypeptide (GNAQ) gene mutation [2]. This results in altered regulation of structure and function of blood vessels, innervations of blood vessels, and expression of extracellular matrix and vasoactive molecules. The hallmark of SWS, usually obvious at birth, is a congenital facial cutaneous hemangioma (also known as port-wine stain or facial nevus flammeus). This feature is almost always present (in up to 96% of patients) usually along the ophthalmic and maxillary distributions of the trigeminal nerve [3]. Another feature which involves the leptomeninges is the leptomeningeal angiomata. It is demonstrable by neuroimaging, may be unilateral or bilateral and commonly located in the parietal and occipital regions. Neurologic manifestations include seizures, focal deficits, for example, hemiparesis and hemianopsia which may be transient, headaches, and developmental disorders; ophthalmic manifestations include buphthalmos and glaucoma. The Roach scale [4] used for classification identifies the following: Type I (72–75%) – with facial and leptomeningeal angiomas; Type II (13–15%) – facial angiomas alone (no cns lesion); and Type III (4–5%) – isolated leptomeningeal angiomas. Glaucoma may or may not be present in any of the types. Only rarely (approx. 5%) is intracranial involvement present without associated cutaneous nevus [5, 6]. In the majority of cases (72%) the nevus is unilateral and ipsilateral to the intracranial abnormality. The most common clinical manifestation is childhood seizures, present in 71–89% of cases [5] that are often refractory to medical therapy [4]. These usually begin in the first few years of life and are often associated with developmental delay and hemispheric symptoms including hemiplegia/hemiparesis and or hemianopsia [6]. Approximately, a third of patients have a choroidal or scleral angiomatous involvement which may be complicated with retinal detachment, buphthalmos, or glaucoma [4].

This case also presented with a history of perinatal asphyxia, seizures, and failure to thrive. In our setting, with associated poor obstetric care services leading often to perinatal asphyxia and limited investigative facilities, a clinical diagnosis of neurodevelopmental delay/

impairments would often suffice in a case like this but for clinical curiosity, resources, and willingness of the parents to pay for CT scan.

Perinatal asphyxia may be defined as an oxygen deprivation that occurs around the time of birth and may be caused by several perinatal events [7].This condition affects an estimated four million neonates each year and causes one million neonatal deaths worldwide and 98% of these occur in low and middle income countries [7, 8]. Many of the affected infants recover from hypoxic episodes; however, some develop hypoxic ischemic encephalopathy (HIE) leading to varying degrees of neurological impairment and organ damage. Several factors that have been found to be associated with and increase the morbidity of perinatal asphyxia include, low socioeconomic status, inadequate antenatal care, and poor intrapartum care due to unskilled birth attendance, intra- partum asphyxia, preterm delivery, low birth weight, and presence of obstructed labor amongst others [8–11]. To address this, Neonatal Resuscitation program courses have been implemented at various levels. However, in resource-poor setting, perinatal asphyxia remains a major cause of severe and permanent neurological impairment and failure to thrive in neonates and early infancy [9–11].

Case Report

A 2-month-old male infant was delivered at 32-week gestation following preterm rupture of the membrane at a mission hospital in Enugu, Nigeria. He did not cry immediately after delivery, and was admitted in the neonatal unit of the hospital for 5 days. He was said to have started crying few hours after admission. The uneventful pregnancy was supervised in a private hospital in Enugu. The child was mix-fed, received BCG, OPV°, and HBV only. He did not attain any developmental milestone. He remained ill from birth, having on-and-off fevers. He was treated with over-the-counter medications at home before he was admitted in a private hospital on account of febrile illness, cough, and inability to open his right eye, where he was treated and discharged. The child's condition continued to deteriorate with inability to cry, inability to suckle at breast, persisting inability to open his right eye, and weakness. This necessitated his referral to our center. There was history of startling and convulsions. The elder siblings were females, alive, and well. There was no family history of genetic or congenital disease. On presentation, he appeared to be small for his age, weighed 3 kg, with a height of 51 cm, occipitofrontal circumference 28 cm, microcephalic head, pale, anicteric, acyanosed, well-hydrated, and no peripheral lymphadenopathy. Heart rate was 100 beats/minute, respiratory rate was 48 breaths/minute, there was no cry on stimulation, there was hyper-reflexia of left lower limb, normotonia in the other limbs, mild hepatomegaly and splenomegaly, decreased air entry bilaterally, and normal external male genitalia. He was admitted as a case of perinatal asphyxia/hypoxic ischemic encephalopathy stage 3. Supportive management was instituted. The child died 5 days after admission.

Investigations and results

Investigations revealed the following: random blood sugar – 69 mg/dL, oxygen saturation – 95%, total white blood count – 5.9×10^9/L, neutrophil – 60%, lymphocyte – 48%, eosinophil – 2%. The blood film showed normal white and red blood cell pictures and was positive for malaria parasite.. Chest X-ray showed vague perihilar mottling. Serology was negative for toxoplasmosis, rubella, cytomegalovirus, hepatitis B and C, and syphilis.

Report of CT scan

Noncontrast CT scan of neurocranium was conducted in the axial plane with sagittal and coronal reconstruction using Cere Tom 8 slice machine. Note asymmetry in head positioning: there is a depressed flap of bone in the left frontal region. Imaged brain shows extensive calcification of the cortical and periventricular parenchyma limited to the supratentorial brain (Fig. 1). The pattern of calcification is both gyriform and nodular. Nodular calcification is also present within the basal ganglia. There is moderate degree of generalized enlargement of the cerebral

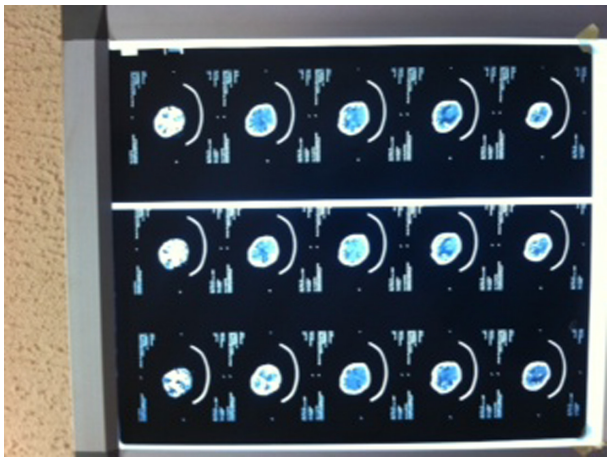

Figure 1. Imaged brain shows extensive calcification of the cortical and periventricular parenchyma limited to the supratentorial brain. The pattern of calcification is both gyriform and nodular. Nodular calcification is also present within the basal ganglia. There is moderate degree of generalized enlargement of the cerebral ventricles in association with reduction in the thickness of the cerebral cortical mantle. The orbits and other structures in the skull base are unremarkable.

ventricles in association with reduction in the thickness of the cerebral cortical mantle. The orbits and other structures in the base of the skull are unremarkable.

Discussion

The most common feature of Sturge-Weber syndrome is a facial birthmark or port-wine stain present at birth [1–3] and typically involving at least one upper lid and forehead [2]. Variations in the size of the stain has been reported and may be limited to one side of the face or involve both sides [2, 4]. In persons with dark pigmentation, the stain may be difficult to recognize [2]. In rare instances as in this case presentation, there is an absence of port-wine birthmark [2]. This type of SWS is noted to have leptomeningeal angioma, with no facial cutaneous nevus flammeus and glaucoma and is identified through brain scan. It can also be confused with other diagnosis prior to the brain scan [2]. While social stigma is lessened by the absence of port-wine birthmark, the unknown natural course of the syndrome is frustrating for parents and professionals treating the condition [2, 4]. Cerebral atrophy is radiologically demonstrated in this patient which is in keeping with developmental delay and nonattainment of milestones. Startling and convulsions is a pointer to seizure or seizure disorder which may be associated with cerebral calcifications. Inability to open right eye and refusal to cry on stimulation may be related to stroke-like syndrome seen in SWS. Finally, extensive calcification of cortical and periventricular parenchyma with global cerebral atrophy were in keeping with CT scan findings in SWS. It is obvious that absence of port-wine birthmark may delay or cause a wrong diagnosis at presentation before CT scan result proved otherwise.

Conclusion

Not all cases of neurodevelopmental delay with seizures are due to complications of perinatal asphyxia. Sturge-Weber Syndrome type III, is one such uncommon cause.

Recommendation

Clinicians should endeavor to investigate patients thoroughly to unravel the primary cause(s) of any condition whenever possible. High index of suspicion, scarce and expensive investigations may be necessary to make diagnosis of rare conditions like type III SWS with no cutaneous manifestations.

Conflict of Interest

No conflict of interest declared.

References

1. Nelson textbook of pediatrics. 2011. 19th ed. W.B. Saunders company. Pp. 2046–2052 http://dx.doi.org/10.1016/B978-1-4377-0755-7.00589-3
2. Akers, A. L., K. L. Ball, M. Clancy, A. M. Comi, M. E. Faughnan, R. Gopal-Srivastava, et al. on behalf of the Brain Vascular Malformations consortium. 2013. Overview, progress, and future directions. J. Rare Disord 1:1–2013.
3. Hay, W. W., A. R. Hayward, M. J. Levin, et al. 2002. Current pediatric diagnosis & treatment. McGraw-Hill/Appleton & Lange, McGraw-Hill Companies Inc., New York.
4. Reiser, M. F. (2007) Magnetic resonance tomography. Springer-Varlag, Belin Heidelberg. DOI: 10.1007/978-3-540-29255-2.
5. Wyllie, E., A. Gupta, and D. K. Lachhwani. 2006. The treatment of epilepsy, principles & practice. Williams and Wilkins, Lippincott, Philadelphia PA.
6. Muzio, B. D. and F. Gaillard. (2005-2014) www.Radiopaedia.org
7. Bithoney, W. G., H. Dubowitz, and H. Egan. 1992. Failure to thrive/growth deficiency. Pediatr. Rev. 13:453–460.
8. Raynor, P., and M. C. Rudolf. 2000. Anthropometric indices of failure to thrive. Arch. Dis. Child. 82:364–365. http://dx.doi.org/10.1136/adc.82.5.364.
9. Gahagan, S., and R. Holmes. 1998. A stepwise approach to evaluation of undernutrition and failure to thrive. Pediatr. Clin. North Am. 45:169–187. http://dx.doi.org/10.1016/S0031-3955(05)70588-5
10. Schmitt, B. D., and R. D. Mauro. 1989. Nonorganic failure to thrive: an out-patient approach. Child Abuse Negl. 13:235–248. http://dx.doi.org/10.1016/0145-2134(89)90010-0
11. Maggioni, A., and F. Lifshitz. 1995. Nutritional management of failure to thrive. Pediatr. Clin. North Am. 42:791–810.
12. Babson, S. G. 1970. Growth of low-birth-weight infants. J. Pediatr. 77:11–18. http://dx.doi.org/10.1016/S0022-3476(70)80039-7
13. Cronk, C., A. C. Crocker, S. M. Pueschel, A. M. Shea, E. Zackai, G. Pickens, et al. 1988. Growth charts for children with Down syndrome: 1 month to 18 years of age. Pediatrics 81:102–110.

