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CASE REPORTS

Agnathia-Synotia-Microstomia (Otocephaly): A case report in an African woman

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Introduction

Pharyngeal arches appear in the 4th and 5th weeks of development of the human embryo. The 1st pharyngeal arch develops into the incus and malleus, premaxilla, maxilla, zygomatic bone; part of the temporal bone, the mandible and it contributes to the formation of bones of the middle ear. The musculature of the 1st pharyngeal arch includes muscles of mastication, anterior belly of the digastric mylohyoid, tensor tympani and tensor palatini.[1]

The second pharyngeal arch gives rise to the stapes, styloid process of the temporal bone, stylohyoid ligament, the lesser horn and upper part of the body of the hyoid bone. The stapedius muscle, stylohyoid, posterior belly of the digastric, auricular and muscles of facial expressional all derive from the 2nd pharyngeal arch.[1]

Otocephaly has been classified as a defect of blastogenesis, with structural defects primarily involving the first and second branchial arch derivatives. It may also result in dysmorphogenesis of other midline craniofacial field structures, such as the forebrain and axial body structures.[2]

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Case Report: We report a case of Agnathia-Synotia-Microstomia (otocephaly) in a 24-year-old, para 0 gravida 1, African woman.

She presented to her general practitioner with a fever of 39°C and was diagnosed as possible malaria. She was given sulphadoxine/ pyrimethamine combination (SP). An injection of kanamycin, oral amoxicillin course and paracetamol were also given. She had missed a period and a pregnancy test done then confirmed her pregnancy. An ultrasound scan (USS) requested by the general practitioner showed a 5weeks 3 days gestational sac. The fetal pole was still to appear. There was a 25mm right ovarian cyst but no fibroids. Malaria parasite slides done subsequently came back negative. She recovered well from this febrile illness.

She was referred for obstetric care at 20 weeks of gestation. There was no known alcohol intake during pregnancy. She tested HIV negative. Her past medical history was non- significant. There was no consanguinity. Her blood group was A Rhesus positive and VDRL/TPHA was negative. Her blood pressure was normal throughout pregnancy.

Repeat USS done at 29 weeks gestation requested by the obstetrician, showed gross polyhydramnios with amniotic fluid index of approximately 344mm. The limbs were visualized and were normal. There was slight prominence of the ventricular system but no hydrocephalus or significant ventriculomegaly. The stomach bubble was not visualized and the radiologist (AN) suspected possible upper GI obstruction.

She delivered by lower segment caesarian section for pre-labour rupture of membranes, polyhydramnios and fetal distress at 34 weeks gestation. A male infant was delivered with

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gasping respirations and bradycardia. The birth weight was 2100g. The Apgar score was 2/10 and 2/10 at 1 and 5 minutes respectively. The baby was noted to have no mouth opening and the line of the mouth was seen in the vertical axis. He had down slanting palpebral fissures. The mandibles appeared absent with ears that were very low set in the neck almost fusing at the midline like a bow tie. (see Figure I and II).

Figure I:Bow tie ears and microstomia.

Figure II: Lateral view.

Resuscitation was initially attempted but was very difficult. Ventilation with a bag and mask was done with very poor response. Attempt to intubate through the nose failed, as there was resistance to the passage of the endotracheal tube.

The head circumference was 33cm, which was appropriate for gestational age. He had polydactyly with an extra digit on each hand. He was also noted to have an imperforate anus. No other gross structural abnormalities were noted (Fig III and IV)

Figure III: Extra digits.

Figure IV: Imperforate anus.

The newborn's father was informed of the condition of the baby and counseling was initiated. The father and close family members managed to see the baby before the baby died about an hour after delivery. Family declined a post mortem. The family advised the mother against seeing the baby.

Discussion

Agnathia-synotia- micostomia (otocephaly) is a very rare condition resulting from malformation of the first and second branchial (pharyngeal) arch. An incidence of 1:70 000 has been reported.[2,3] Agnathia and ventromedial displacement of ears such that they are malpositioned as low lying dysplastic structures (melotia) or inferiorly fused at the anterior nuchal midline with their long axes at 90^0 to the midline are the hallmark features.[2]

A number of cases have been reported in the literature[2,3,4] but we believe this is the first report of such a case in an African woman.

There is a reported case of antenatal use of topical 1% salicylate associated with otocephaly[5]. Rossa M Ibba *et*

al describe a case of otocephaly in a fetus whose mother had been taking anti asthmatic drugs throughout pregnancy. They postulated that there could be a relationship between the drugs, mainly theophyllines, and the craniofacial abnormalities.[6] We could not find any reports of otocepahaly associated with use of any of the drugs given to our patient. Sulphadoxine/Pyrimethamine has been documented to be a safe anti malarial in pregnancy and is the recommended drug for treatment of uncomplicated malaria in pregnancy especially in the first trimester.

Kanamycin was given at 5 weeks gestation while facial development of the human embryo occurs mainly between the fifth and eighth weeks of post conception we postulate that it could have contributed to the abnormalities. Amoxycillin is considered safe for use in pregnancy while kanamycin has been reported to be ototoxic to the fetus but we could not find reported structural defects associated with its use.[7]

Three dimensional ultrasonography has been reported to pick up this condition antenatally.[9,10,11] Our patient had an USS scan at 29weeks which picked up the associated polyhydramnios which has been reported to occur in this condition but did not pick up the facial abnormalities. The radiologist however commented that the marked polyhydramnios made the visualization difficult. Of the five cases reported by Faye Petersen et al, none was diagnosed antenatally and 2 had polyhydramnios. This highlights the difficulty of antenatal USS diagnosis of this rare condition.[2] There have been a few reports of US diagnosis in he 2nd trimester Patou Tantbironj et al reported a case diagnosed antenatally by USS at 24weeks gestation.[9]

McKelvey et al reviewed the causes of persistent non-visualization of the fetal stomach.[12] In our patient, the stomach could not be visualized and we suggest that otocephaly should be included in the possible differentials if antenatal USS shows polyhydramnios and non-visualization of the stomach especially in resource limited settings where further diagnostic tests are limited. Polyhydramnios has been well documented as an associated feature agnathia-synotia-microstomia.[13]

This condition is almost always fatal though there have been few reported cases of infants who survived for a few months.[4]

The baby had polydactaly. Various abnormalities associated with otocephaly have been described.[2] A postmortem was not done on this baby. This would have assisted in defining if there were any other associated abnormalities besides those described earlier.

The aetiogy is postulated to be both genetic and environmental and therefore it is important to realize that as if it is genetic then the gene is also present in the African population.[14]

The psychological burden on the parents and immediate family was immense. There is need for good and sustained counseling antenatally on possible abnormalities in a fetus where there is polyhydramnios. It was very difficult for these first parents and the family to reconcile the baby's abnormalities and their cultural beliefs.

Conclusion

In a resource limited setting where even ultrasound scan is not universally available, agnathia-synotia-microstomia (otocephaly) should be included in the possible causes for causes of polyhydramnios and both the patient and family should get adequate antenatal counseling and preparation for the possibility of congenital abnormalities including agnathia- synotia-microstomia.

Kanamycin should not be used in confirmed or suspected pregnancy as it is known to be ototoxic and its teratogenic effects in humans are not clearly defined.

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