Case Report

Holoprosencephaly with Synophthalmia: A Perinatal Autopsy

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Abstract

Holoprosencephaly with Synophthalmia is a rare congenital developmental disorder which was diagnosed by perinatal autopsy. This case report presents a detailed gross and histologic examination of eyes and brain of a baby with synophthalmia. Incidence of synophthalmia is 1 in 16000 born animal and 1 in 25000 that end in miscarriage. (Tabers cyclopedic medical Dictionary ISBNO-8036-O654-O) A 24 years primi presented with IUD at 29 weeks of her gestation. On internal examination forebrain failed to separate and, had cyclopia (Single Eye) and nose in the form of proboscis (Tubular appendage). Histopathological examination confirmed eye ball structure. Final autopsy diagnosis was Holoprosencephaly with Synophthalmia. Genetic cause and toxin can interfere with embryonic forebrain dividing process. One highly teratogenic substance is Cyclopamine (Teratology Society). Cause of death identified as multiple congenital anomalies. Karyotyping was indicated but not feasible due to delayed autopsy. This case presented here not only of its rarity but also rarity of its diagnosis by perinatal autopsy. Legal and ethical constrains need to be addressed carefully otherwise perinatal autopsy which is gold standard in diagnosing perinatal death will be a dying art.

Key Words: Holoprosencephaly, Synophthalmia, Perinatal Autopsy Primipara, Malformation

Introduction:

Holoprosencephaly with Synophthalmia is a rare congenital developmental disorder. It is a cephalic disorder in which the pros encephalon (the forebrain of the embryo) fails to develop into two hemispheres. Hox gene which guide placement of embryonic structures fail to activate along the midline of the head allowing the structures that are normally paired on the left and right to merge. As per the observation of the National Institute of Neurological Disorders and Stroke (NINDS), "In most cases of holoprosencephaly, the malformations are so severe, that babies die before birth. [1]

Case History:

A 24 Years primi presented with IUD at 29 years of gestation. USG done at the same time reported only baby with midline facial defect. Birth weight of the baby was 800 gms.

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Head Circumference (HC) was 20 cm, Crown Ramp length (CR-Length) was 28 cm, Chest Circumference (CC) was 23 cm, and Femur Length (FL) was of 6 cm.

On external examination no structures of face developed except a midline aperture containing eye- ball. (Fig. 1)

On internal examination forebrain fails to separate and represented by triangular globular structure and single optic nerve. (Fig. 2)Histopathology confirmed eye – ball structure. (Fig. 3) Other viscera were normal. No abnormality detected in placental and umbilical cord biopsy. Final autopsy diagnosis made as Holoprosencephaly with Synophthalmia. Cause of death was multiple congenital anomalies.

Discussion:

According to the National Institute of Neurological Disorders And Stroke (NINDS) in most cases of Holoprosencephaly the malformations are so severe that babies die before birth. In our case also baby died before birth and the foetus presented with most severe facial defect that is cyclopia and the nose in the form of proboscis. In our case the USG findings was baby with midline facial defect.

On autopsy the additional information obtained was Holoprosencephaly. According to the study of C Rose et al in which autopsy revealed new information in 25% of cases [2] and according to Jones N et al post- mortem

examination provides additional information in 38% of cases. [3]

Ideally in all cases of congenitally malformed babies karyotyping should be done but in our case the time interval between the death of the baby and the autopsy done was not feasible to take sample for karyotyping.

Some of the physicians think that antenatal sonography is enough for diagnosing the cause of death. However illustrated by Routine Antenatal Diagnostic Imaging with Ultrasound(RADIWU) [4, 5] antenatal ultrasound fails to identify a large proportion of major congenital anomalies for which autopsy is a must as in our case Holoprosencephaly was missed by imaging.

Throughout the world perinatal autopsy rate is declining due to social, ethical and legal constrains but to diagnose a genetic syndrome which is essential for accurate counselling for future pregnancy planning perinatal autopsy is a must.

References:

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Fig.1: Holoprosencephaly with Synophthalmia

Fig.2: Holoprosencephaly

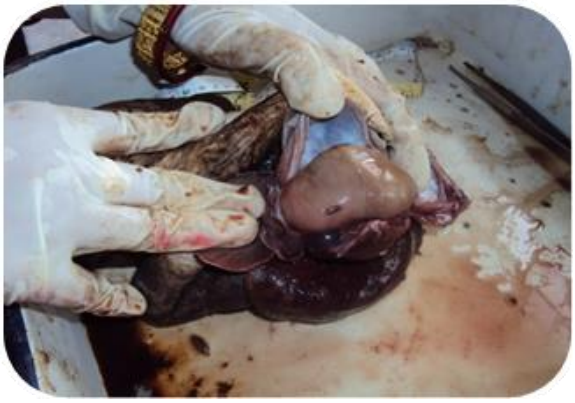

Fig. 3: Histology of Cornea & Iris