

CASE REPORT

Congenital Harlequin Ichthyosis: A Rare genetic Disorder

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Introduction

Harlequin Ichthyosis (HI) is an extremely rare genetic disorder. Harlequin baby is a variant of ichthyosis which is severe in form and found very rarely. Its incidence is 1 in 300000 child.¹ This is an autosomal recessive disorder.^{2,3} Harlequin ichthyosis (HI) is a lethal disease.⁴ Affected neonates rarely survive beyond first few days of life but very rare cases may survive for several months or years.⁵ This is characterized by thickened, rough, dry and armor like plates of skin. There are deep cracks in between skin. HI appears with severe thickened and scaly skin on the entire body. In addition, ectropion, lack of development of the external parts of the nose and ears, eclabium and open mouth, hypoplastic fingers, anonychia and mobility limitation of the joints are some other clinical features of the HI.⁶

Patients with HI are at high risk for hypothermia/hyperthermia, dehydration, respiratory distress, hypoventilation, malnutrition, hypernatremia, seizure, and skin infection.⁷ HI is associated with preterm birth and often leads to death due to neonatal complications such as fluid loss and septicemia.⁵ In our country incidence is not known exactly but only few cases were reported. Here we are presenting a severe form of ichthyosis baby born by caesarean section in our hospital

Case report

A 22 years old lady, primi gravida with consanguineous marriage was admitted in Holy Family Red Crescent Medical College and Hospital (HFRCMCH) on 10.10.2017 at her 30 weeks of gestation with the complaints of lower abdominal



Fig 1 The patient with deep cracked skin, open wide mouth, abnormal eyes, and flatted nose and ear.

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Received: 27 July 2019; **Accepted:** 29 August 2019

pain and per vaginal watery discharge for 4 days. This was her planned pregnancy. During her pregnancy she had regular antenatal checkup at sonargaon health complex. Anomaly scan was done at 20 weeks gestation which was unremarkable. Her pregnancy was uneventful till 30 weeks gestation. She developed lower abdominal pain and per vaginal watery discharge and got herself admitted in HFRMCH. She had no history of Diabetes Mellitus, Hypertension, Bronchial Asthma, Thyroid disease. Her LMP was on 17.03.2017 and EDD was on 24.12.2017. She was married for 5 years and this was her 1st pregnancy. On examination she was mildly anaemic, non icteric, normotensive. Per abdominally Symphysis-Fundus Height (SFH) was 32 cm. FM was present and FSH was 147/mint. Mild uterine contraction was present. On P/V examination, OS was 3 cm dilated, effacement was 50%, presentatoin was breech, membrane ruptured, show was present. Patient under went CS on 11.10.2017. A male baby was delivered by breech extruction and that was a Harlequin Ichthyosis. Apgar score was 7 and weight was 2.5 Kg. Baby died after 3 days due to sepsis.

Discussion

The Harlequin Ichthyosis disorder is a rare genetic condition where an infant is born with a thick yellow, very hard skin. The skin has large diamond shaped plates separated by deep fissures much like a fish. The word Ichthyosis has come from Greek word ikthys and Latin word ichtyos both meaning fish. These skin abnormalities affects the shape of eyelids, nose, mouth, ears and limit the movements of arms and legs. At birth, infants are covered with hard hyperkeratonic armor, composed of large, thick, yellowish brown, and very sticky plates.³ After birth, deep red fissures occurs on these hard and inflexible plates that extend to the dermis, resulting in a joker-like skin. Infants with Harlequin Ichthyosis might have microcephaly, ectropion, and eclabium.² External auditory meatus and nostrils appear rudimentary and immature.⁸ In addition, patients with Harlequin Ichthyosis have respiratory failure as a result of restricted chest expansion and skeletal deformities. Feeding problems may result in low blood sugar, dehydration, and kidney failure. In addition, temperature instability and infection is common.⁷ Almost all these clinical features were observed in our case.

It is an autosomal recessive condition. There is 25% chance of recurrence in subsequent pregnancy. There is defect in A12 (ABCA 12) gene on chromosome 2. This gene is responsible for caring information for transport of lipids to keratinocytes in the skin. Hashemzadeh et al⁹ also observed Harlequin Ichthyosis in a case of premature baby at 30 weeks gestation in a consanguineous parents. Prenatal diagnosis would be the first step for early detection of the disease. Therefore, obtaining the family history, consanguinity between the parents, and the presence of other skin disorders in offspring would be very helpful for early diagnosis of the disease. Microscopic examination of the amniotic fluid cells and ultrasound for assessment of the shape of fetal mouth at 17 weeks of pregnancy might be useful for the early detection.¹⁰ But in our case anomaly scan at 20 weeks failed to detect any anomaly.

The mortality of HI is high and most of the victims die within a few weeks of birth because of secondary complications such as infection and dehydration.² However, survival contributes to the type of mutations; victims with the compound heterozygote mutation survive more than those with the homozygote mutation. In addition, advances in the postnatal treatments and cares improve the prognosis of the disease.¹¹ The survival rate increases to more than 50% with early prescription of oral retinoids. The patients' quality of life improves with supportive cares. In addition to the routine care such as checking vital signs, patients should be kept in a warm and humid incubator. Hydration should be performed.¹² As accessing to the peripheral vessels can be difficult, an umbilical venous catheter is needed. Taking shower twice per day, saline compresses and gentle emollients must be used to keep the skin soft and to accelerate the desquamation. Water and electrolyte disturbances must be managed as well: Environment must be cleaned up to prevent infection; hence, repeated cultures of the skin is essential to detect the hazardous microorganisms.² In this condition there is hyperkeratosis and loss of projective skin barrier.

As a result there is abnormal removal of scales from the skins that leads to deposition of dead skin. So there is hyperkeratosis of skin and the baby is prone to develop skin infection. Our baby survived only 3 days and died due to sepsis.

Conclusion

Harlequin fetus is a rare manifestation of severe congenital ichthyosis. It is usually fatal in first few days of life. In this case consanguinity was present. Baby died within 3 day of life. Prenatal diagnosis if possible should be offered to woman with previous affected babies. DNA analysis for ABCA 12 mutation will clinch the diagnosis. Characteristic features on prenatal USG tends to appear late so the scan should be repeated even when the 2nd trimester scan is normal and also helpful when DNA diagnosis is unavailable.

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