HARLEQUIN ICHTHYOSIS: A CASE REPORT

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ABSTRACT: Harlequin ichthyosis (HI) is a rare severe form of congenital ichthyosis, which may be fatal and affects infants before birth, characterized by thickening of the keratin layer in fetal human skin.HI has an incidence of about 1 in 300,000 births. Generally transmitted through autosomal recessive inheritance and is due to mutation in the ABCA12 gene located on chromosome 2(2q34). Prenatal diagnosis remains difficult but may be possible in high risk pregnancies by performing a fetal skin biopsy or by 3D ultrasonography.
CASE REPORT: We report a case of HI for its rarity and briefly review the literature.
CONCLUSION: This case has been reported for the rarity of HI and to create awareness among paediatricians to identify the condition promptly.

KEYWORDS: Harlequin, Ichthyosis, ABCA12 Gene, Erythroderma.

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INTRODUCTION: Harlequin ichthyosis (HI) is a rare genetic disorder with severe erythrodermic ichthyosis that causes a distinctive & alarming appearance at birth. It is one of the most severe form of congenital ichthyosis, characterized by a thickening of the keratin layer in fetal skin.(1) The neonate is encased in an 'Armor' of thick scale plates separated by deep fissures. The skin is easily pregnable by bacteria and other contaminants resulting in serious risk of fatal infection. Dehydration, respiratory failure and hypothermia are the other causes of increased mortality. In addition, the eyes, ears, mouth and other appendages may be abnormally contracted.

CASE REPORT: A 37 week, term (AGA) female baby was born with characteristic appearance that immediately prompted a diagnosis of HI. This was the first baby born to a primigravida mother, out of second degree consanguineous marriage, born at Al Ameen Hospital, Vijaypur, with uneventful antenatal and insignificant family history. Baby had abnormal phenotypic appearance. Antenatal 2D USG report of present pregnancy was normal.

On examination the baby weighed 2500grams, with a head circumference of 33cm & length of 47cm. The skin of the baby was split into plaques of rigid fixed skin, separated by deep red fissures (Fig. 1). The tightness of the skin pulls around the eyes & mouth, forcing the eyelids & lips to turn inside out, revealing the red inner linings (Ectropion and ecalabium respectively).

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The chest & abdomen of the infant may be severely restricted by the tightness of the skin, making breathing difficulty. The ears appear to be missing, but are really fused to the head by the thick skin. Hands and feet were tight & constricted, fingers & toes were hypoplastic with tapered distal ends which were held in flexed contractures like 'Mittens' (Fig. 2). Movements were restricted and sucking was ineffectual.

There was no seizure/CNS depression/systemic abnormalities.

The baby was monitored regarding the temperature, hydration status, electrolyte balance and antibiotic coverage was given. The baby expired after 18 hrs. due to respiratory failure.

DISCUSSION: The name harlequin is derived from the dress of harlequin clowns (Resembling the costume of Arlecchino) that have diamond like patches similar to the plaques seen on the skin of the affected babies. With increasing survival, the term "Harlequin fetus" has been replaced by HI.[1] It is also called 'Ichthyosis congenita' or 'Keratosis diffusa foetalis'. HI has an incidence of about 1 in 300,000 births.[2] As per scientific literature reports in 2007, there have been reports of 101 cases in worldwide medical literature.[3] HI is an inherited autosomal recessive trait disease.[4,5] caused by mutations of the ABCA12 gene (Adenosine triphosphate-binding cassette A12), resulting in defective lipid transport significantly impacting the normal development of the skin barrier.[6,7] Diffuse hyperkeratinization & desquamation are characteristic of HI.[8]

Clinical features include severe cranial and facial deformities. Poorly developed or even absent ears. The eyelids are severely everted (Ectropion), which leaves them very susceptible to trauma- often bleed upon birth. The lips are pulled and fixed into a wide grimace (Eclabium). Arms, feet, and fingers are almost always deformed-with minjmal range of movement, and may be hypoplastic.

This being a near fatal condition, antenatal diagnosis is the best modality of management.

Modalities of Antenatal Management: A 2D USG showing polyhydramnios, fixed flexion of the extremities, short digits, a flat nose, bilateral clubfeet, clenched hands, a short neck, a flat face profile, thick lips, eclabion, open eyes, ectropion, a constantly open mouth, micrognathia, hypoplasia of the ears, choroid plexus cysts, & a short umbilical cord are suggestive of HI & whenever possible a 3D or 4D USG should be followed. Another modality is fetal skin biopsy by fetoscopy done between 20th to 22nd week which on light microscopy shows premature keratinization. Electron microscopy may show atypical intraepidermal vesicles at 16th weeks gestation. Amniocentesis at 17th week may show intracellular lipid vesicles in shed keratinocytes. the investigation of choice for prenatal diagnosis is DNA-based prenatal testing using fetal genomic DNA from amniotic fluid cells at 16 weeks.[9]

These babies are at risk of risk of dehydration due to high fluid losses transcutaneously. Hyponatremia, skin infections (Gram positive and Candida spp.), pneumonia secondary to aspiration of desquamated material in the amniotic fluid are other complications.

The management of such cases basically involves stabilization of vitals and airway, breathing & circulatory compromise due to encasing of the thorax by hyperkeratotic skin. The protection of eyes from exposure by artificial tears & antibiotic ophthalmic ointments. At later stage, the ectropion can be corrected by surgery. Skin should be covered with sterile lubricants to soften it, thus facilitating desquamation.

The baby should be nursed in a humidified crib to ensure thermoneutrality. Umbilical vein access should be established for administration of the fluids, nutrients & medications as it is extremely difficult to get a peripheral vascular access in these babies. The babies being prone to dehydration and electrolyte disturbances - should be monitored for the same. Antibiotic- broad spectrum should be started prophylacticaly.

Retinoids are the most effective class of the drugs in HI. They prevent cracking of the skin & facilitate desquamation and this hastens up pliability. Pliability is an important variable that renders immense benefit in improving the movement range, prevention and early correction of contractures, including ectropion and eclabium.

It is advisable to keep the babies with HI sedated for pain control. Management also comprises genetic counselling, social and professional psychological support.

HI neonates do not survive the neonatal period. Death occurs due to dehydration, systemic infection or impaired respiration.[10]

CONCLUSION: This case has been reported for the rarity of HI and to create awareness among paediatricians to identify the condition promptly.

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Fig. 1

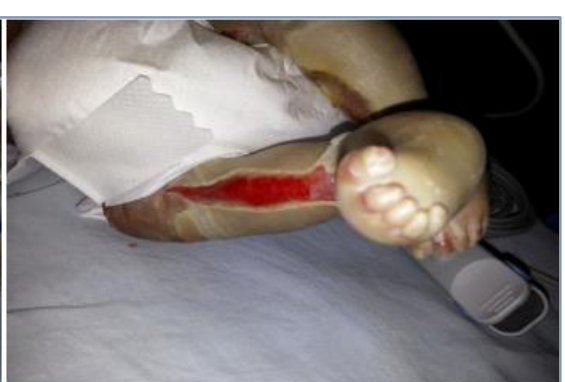

Fig. 2

Typical features of HI with splitting of skin into plaques, separated by deep red fissures; obliterated facial features with thickened skin, undeveloped nose & pinna; severe ectropion and eclabium.