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Harlequin Ichthyosis: A Case Report

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Abstract: *Ichthyosis is a very heterogeneous family of skin disorders with harlequin ichthyosis being the most severe genetic form. It is a rare autosomal recessive condition, characterized by dry, severely thickened skin with large plates of hyperkeratotic scale, separated by deep fissures. Infants are very susceptible to metabolic abnormalities and infections. They usually do not survive for very long, but several long term survivals have been noted. The vast majority of affected individuals are homozygous for mutations in the ABCA12 gene, which cause a deficiency of the epidermal lipid transporter, resulting in hyperkeratosis and abnormal barrier function. We report a case of a newborn with harlequin ichthyosis, born to unrelated parents, who had been given topical treatment along with other supportive treatment and expired on 6th days of life.*

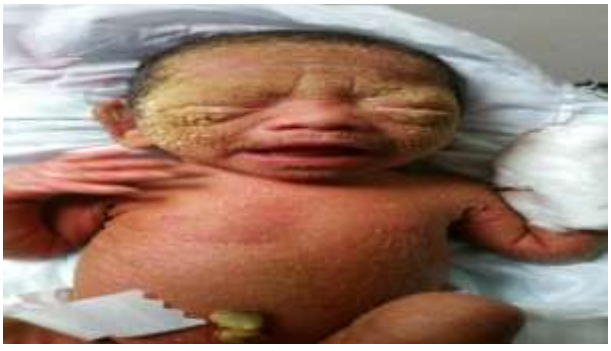
Keywords: *ABCA12 gene mutation, autosomal recessive, skin abnormalities*

I. Introduction

Ichthyosis is a heterogeneous family of skin disorders, harlequin ichthyosis being the most severe genetic form. The word ichthyosis comes from the Ancient Greek ward *ichthys*, meaning "fish". At birth, the skin is very hard and thick, forming a dense "armor"-like scale that covers almost all parts of the body. The skin forms large diamond- or triangular-shaped plates separated by deep fissures. The protective skin barrier is compromised and the infant is very susceptible to infections. These skin abnormalities also affect the shape of the eyelids, nose, mouth, and ears. A restriction of movement of the arms and legs is present. Breathing difficulties and respiratory failure may also occur, probably due to pulmonary surfactant deficiency, caused by mutations in the ABCA12 gene. The vast majority of individuals with harlequin ichthyosis have been found to be homozygous for mutations in the ABCA12 gene. The ABCA12 (adenosine triphosphate [ATP]-binding cassette transporter, subfamily A, member 12) gene was mapped to chromosome 2q33-q35. The consequence of the mutation is represented by a deficiency of the epidermal lipid transporter. These changes prevent the formation of lipid bilayers in the stratum corneum and result in hyperkeratosis and abnormal barrier function.

II. Case Report

A 34-year-old pregnant woman was admitted to the Obstetrics and gynaecology ward of RIMS hospital, Imphal for her third pregnancy due to obstetric pain. Gestational age was approximately 38 weeks and 1 day based on both the first day of the last menstrual period and ultrasound. A female baby with harlequin ichthyosis phenotypic features was born via normal spontaneous vaginal delivery. Her birth weight, length, and head circumference was 2.7 kg, 46 cm, and 31 cm, respectively . Parents had two other normal healthy children. The baby was admitted in the paediatrics ward, RIMS 4 hours after delivery with chief complaints of cyanosis along with poor sucking of mother breast.



Picture 1

Picture2

Picture 3

In the physical examination notable features were thick skin with deep fissures [picture 1 and picture 2], general hyperkeratinization, flat fontanels, absent b/l auricular orifice [picture 3], cyanosis, bradycardia , bradypnea. In investigations sepsis screening was negative, no abnormality detected in USG cranium, skin biopsy shows hyperkeratosis. Intravenous antibiotic therapy, intravenous fluid as per requirement and other conservative treatments were started after admission to the paediatrics ward. Oral retinoid therapy was not used, because of the lack of experience with these drug. However, the baby expired on 6th days of life.

III. Discussion

Harlequin fetus is a rare hereditary disorder with an incidence of 1 in 300,000 births. The first report was made by Reverend Oliver Hart, of Charleston, South Carolina, who described same features of the disorder in 1750. Until now, at least 100 cases were reported with this condition. The disorder was reported in different ethnic groups and in both sexes. The inheritance is thought to be autosomal recessive. Affected infants usually do not survive for very long because of undernourishment caused by the rigidity of the lips, underventilation and infections, but longer survival was also reported.

Treatment of congenital ichthyosis uses oral vitamin A, topical antiseptics, liquid paraffin. Oral retinoid therapy is recommended for cases with severe skin involvement. Potential adverse effects, such as impairment of liver function, growth retardation or remaining erythroderma must be taken into consideration and discussed with the parents. Prevention of secondary complications is also important. Several measures, such as the prevention of infection and dehydration together with maintenance of body temperature are appropriate. Lubrication of the cornea in cases with ectropion prevents corneal drying. Weight gain and fluid intake must be carefully monitored. A multidisciplinary approach is vital in the management of the disease as it could prolong survival beyond the neonatal period.

Prognosis depends on possible complications. The survival rate of children born with this condition has improved over the years, but still the most common cause of death remains sepsis. After discharging from the hospital, the primary care physician should closely monitor the infants for growth, skin surveillance and development.

Our patient had the typical phenotypic features of a harlequin fetus. Harlequin ichthyosis is the most severe form of congenital ichthyosis. This condition is inherited in an autosomal recessive pattern. The vast majority of affected individuals have been found to be homozygous for mutations in the ABCA12 gene that was mapped to chromosome 2q33-q35. Infants usually do not survive for long, our case expired on day six of life.

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