INTRODUCTION

Harlequin Ichthyosis (HI) is a rare and extremely severe form of congenital ichthyosis with distinctive appearance at birth. HI is also known as “Harlequin fetus”. The affected babies are often born prematurely.1,2 The inheritance is thought to be autosomal recessive, which is supported by consanguinity in some families with affected offspring.1-3 The term Harlequin is derived from the typical facial expression of the newborn and the triangular and diamond-shaped pattern of hyperkeratosis.2 The baby is born with a rigid, taut, yellow, adherent skin, a “coat of armour” that covers the whole body. Deep fissures are formed prenatally. These are more marked on the scalp. The normal facial features are severely affected. There is distortion of the lips (ectabrium), eyelids (ectropion), ears, and nostrils.1-3 Historically, the neonate would not usually survive beyond first few days after birth because of feeding problems, bacterial infections, metabolic abnormalities and/or respiratory distress.1,2 However, a number of babies have survived because of the wider availability of neonatal intensive care and likely benefits from oral retinoids.1,2,4

CASE REPORT

A multiparous lady reported to the Emergency department of Combined Military Hospital, Pano Aqil with labour pains and rupture of fetal membranes at 33 weeks of gestation. Emergency caesarean was performed because of fetal distress and a male premature baby was delivered. His birth weight was 2.8 Kg. The baby was covered with a thick, rigid yellow brown adherent membrane which was split by multiple deep and wide fissures most marked on scalp. (Figure 1-3) The facial features were distorted. Ectropion (eversion of the eyelids) and eclabium (eversion of the lips) were noted (Figure 3). There was conjunctival edema which was obscuring the eyes. The nose was flattened. The external ears were tethered and underdeveloped (Figure 3). The baby was immobile and limbs were held in fixed flexion. The hands and feet of the baby were swollen and covered with a tight mucoid membrane. The digits were well formed. (Figure 1 and 2) The newborn was in apparent respiratory distress and his APGAR score at birth was 3. Baby was diagnosed to be having Harlequin ichthyosis. He was given supportive care in Neonatal Intensive Care Unit and nursed in a humidified incubator. Temperature of 32-33°C was maintained. Topical care by application of white soft paraffin and liquid paraffin was provided. Baby was fed using nasogastric tube and oxygen inhalation was given by head box. Despite adequate supportive care, the general condition of the baby deteriorated and he expired on the 3rd day of life due to respiratory distress. The couple was consanguineous. The parents and relatives on first sight of the baby revealed that a similar baby was born to them at home about 2 years back who died on the 2nd day of life. The parents declined autopsy and genetic examinations.

ABSTRACT

Harlequin ichthyosis is a rare and extremely severe form of congenital ichthyosis. The affected neonates usually do not survive beyond first few days after birth, but several long-term survivals have been noted. The inheritance is thought to be autosomal recessive. It has recently been shown that the vast majority of affected individuals are homozygous for mutations in the ABCA12 gene, which cause a deficiency of the epidermal lipid transporter and result in hyperkeratosis and abnormal barrier function. Prenatal diagnosis is possible. We report a case of a newborn with Harlequin ichthyosis, a product of consanguineous marriage, with a history of similar disease leading to early neonatal death previously in a sibling.

Key words: Harlequin ichthyosis. Harlequin baby. Familial. Neonatal death.
DISCUSSION

Harlequin ichthyosis is a rare and extremely severe type of congenital ichthyosis. Its incidence is about 1 in 300,000 births.1-3,7 The first report is from the diary of Rev. Oliver Hart, of Charleston, South Carolina, who described these features in 1750.1,2 The disorder has been reported in both sexes and in different ethnic groups.1,2 The inheritance is thought to be autosomal recessive, supported by consanguinity in some families with affected offspring.1-3 It has recently been suggested that a dominant mutation may possibly be responsible for the disorder and that parental mosaicism for mutations can lead to recurrence in subsequent pregnancies.2 This case showed a double consanguinity that provides a strong evidence for a recessive inheritance. It was the second of the two siblings with this form of congenital ichthyosis in the same family. Occurrence of Harlequin Ichthyosis has previously been described in siblings,8 however, there has been no such previous report from Pakistan.

Mutations in ABCA12, which codes for an adenosine triphosphate binding cassette transporter involved in lamellar granule secretion and epidermal lipid transport, have been shown to underlie Harlequin ichthyosis.1-3,9 The vast majority of affected individuals are homozygous for mutations in ABCA12.3 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.1-3,9

Management of Harlequin ichthyosis involves intensive care of the skin and eyes. The infants should be nursed in humidified incubator with monitoring of temperature, respiratory rate, heart rate, and oxygen saturation and close monitoring of fluid and electrolyte status. A sterile environment is to be maintained to avoid infection. Growth of pathogenic organisms indicates sepsis which is to be managed with appropriate antibiotics. Treatment with systemic retinoids during the newborn period can facilitate desquamation of the membrane. A well-coordinated multidisciplinary approach can prolong survival.1-4

Detailed genetic counselling for affected families is required. Prenatal diagnosis in future pregnancies is possible. On light microscopy, premature keratinization can be identified by 20th to 22nd week. Electron microscopy may show atypical intraepidermal vesicles at 16th weeks' gestation.2 Amniocentesis at 17th week may show intracellular lipid vesicles in clump shed keratinocytes.1,2 Prenatal ultrasonography, particularly 3-dimensional (3D) ultrasonography, may reveal features suggestive of HI.2 DNA-based prenatal testing by direct sequence analysis and restriction enzyme digestion analysis using fetal genomic DNA from amniotic fluid cells at 16 weeks gestation is now available for HI, and it is the investigation of choice for prenatal diagnosis of this condition.2,10 Extended family members should be advised to avoid intermarriages because of the genetic risk.

REFERENCES


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