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Case Report

A newborn presenting with epidermolysis bullosa with duodenal atresia: A very rare case report and review of the literature

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ABSTRACT

***Background*:** Epidermolysis bullosa (EB) comprises a group of genetically determined skin fragility disorders, which are characterized by blistering of the skin and mucosa, in response to little or no apparent trauma. These disorders represent heterogeneous phenotypes and are associated with various complications ranging from localized skin fragility to neonatal death. Nevertheless, the term "Epidermolysis" is a misnomer as epidermal disruption is not the principal alteration in two of the primary types of EB. In clinical, laboratory and epidemiological studies, this complex and heterogeneous group of disorders is classified, on the basis of the mode of inheritance, into three major types: EB simplex (EBS), junctional EB (JEB) and dystrophic EB (DEB). EB is a rare disease with an incidence rate of approximately 50 in 1 million live births, and 9 in 1 million people in the world population. Of these cases, about 92% are EBS, 5% are DEB, 1% is JEB and 2% are unclassified (1).

***Case presentation*:** In this study, we presented the case of a male newborn with EB and concomitant pyloric stenosis. To the best of our knowledge, only one case of this rare combination of EB with duodenal atresia has been retrieved in PubMed.

Keywords: Double bubble, Duodenal atresia, Epidermolysis bullosa, Septicaemia

Introduction

Epidermolysis bullosa (EB) comprises a group of genetically determined skin fragility disorders, which are characterized by blistering of the skin and mucosa, in response to little or no apparent trauma. These disorders represent heterogeneous phenotypes and are associated with various complications ranging from localized skin fragility to neonatal death (1). Nevertheless, the term "Epidermolysis" is a misnomer, since epidermal disruption is not the principal alteration in two types of primary EB (2, 3).

In clinical, laboratory and epidemiological studies, this complex and heterogeneous group of disorders is classified, on the basis of the mode of inheritance, into three major types: EB simplex (EBS), junctional EB (JEB) and dystrophic EB (DEB). EB is a rare disease with an incidence rate of approximately 50 in 1 million live births, and 9 in 1 million cases in the general population.

Of these cases, about 92% are EBS, 5% are DEB, 1% is JEB and 2% are unclassified (1). In this study, we presented the case of a preterm male newborn with EB and Pyloric stenosis (4, 5). To the best of our knowledge, only one case of this rare combination of EB and duodenal atresia has been retrieved in PubMed (6).

Case Report

A preterm male newborn with birth weight of 1500 grams and Apgar scores of 8, 9 and 9 (at 1, 5 and 10 minutes, respectively) were born through spontaneous vaginal delivery. The mother was primigravida with no previous history of fever, rash or drug consumption during pregnancy and had attended antenatal check-ups regularly. TORCH screen, HIV and hepatitis B surface antigen (HBs Ag) test results were negative. Enteral feeding was started by nasogastric tube.

The neonate was well on the first day. On detailed physical examination, we observed well-defined erythematous erosions of irregular shape on periumbilical area and right foot, measuring approximately 1×0.5 cm and 4×5 cm, respectively (Figures 1, 2). On the second day,

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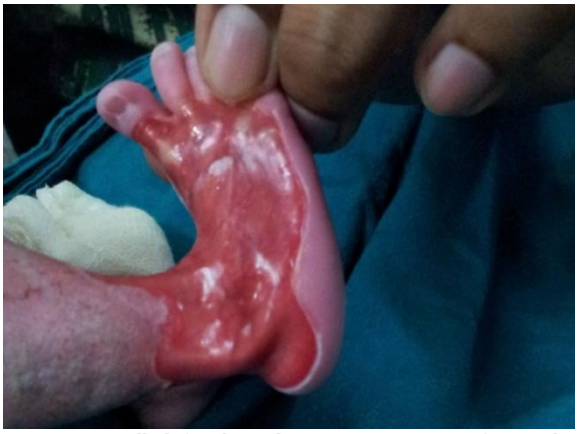

Figure 1. Well defined erythematous erosions of irregular shape on right leg

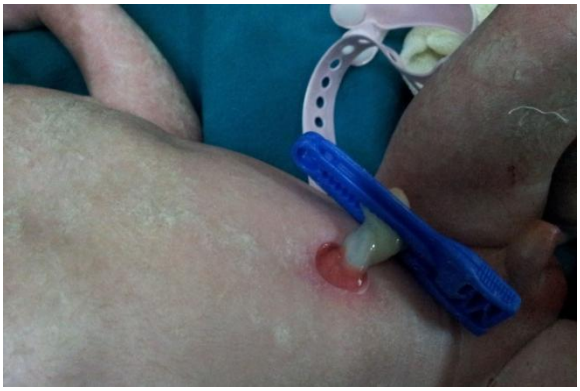

Figure 2. Well defined erythematous erosions of irregular shape on periumbilical area

Figure 3. Bullae over right upper limb of the neonate

The newborn developed well-defined vesicles and bullae on the trunk, as well as both feet, arms and hands, which were of varying shapes and sizes (Figures 3-5). Few of the vesicles and bullae ruptured spontaneously leaving erythematous erosions. Most of the lesions were confined to friction sites.

On the same day, vomiting, upper-abdominal distention and bilious aspirate were reported. The neonate was kept nil per os (NPO), and X-ray of

Figure 4. Desquamation of both upper limbs

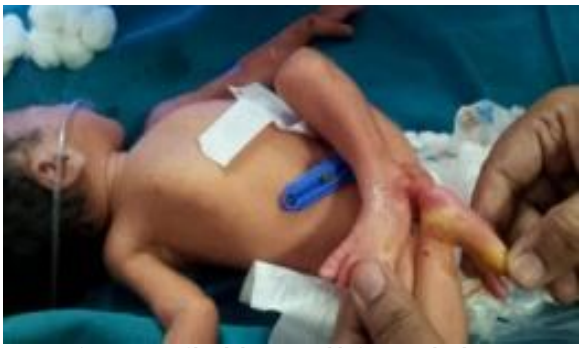

Figure 5. Erosion of both lower and left upper limbs

Abdomen was performed which showed "double bubble" sign (Figure 6). Kidney, ureter and bladder ultrasonography was done, showing normal study. Echocardiographic stress test did not show any cardiovascular anomalies.

The newborn was operated for duodenal atresia on day three. Intra-operative findings were consistent with duodenal atresia and the neonate underwent duodenoduodenostomy. The neonate had a turbulent postoperative course and expired on day seven due to septicemia, as the neonate had extensive skin erosions all over his body. Skin biopsy was performed, and electron microscopy confirmed the diagnosis of EB.

Discussion

EB is a rare epidermal genetic disorder, in which bullae appear secondary to minor trauma. EB is believed to be caused by mutations of proteins in the dermo-epidermal junction and the upper papillary dermis. EB is usually associated with anomalies of other organs including oral cavity and nasopharynx, as well as ocular, genitourinary, gastrointestinal and respiratory systems. The association between EB and pyloric stenosis has been described in many case reports (4, 5); however, only one case of concomitant duodenal atresia has been described in the literature (6).

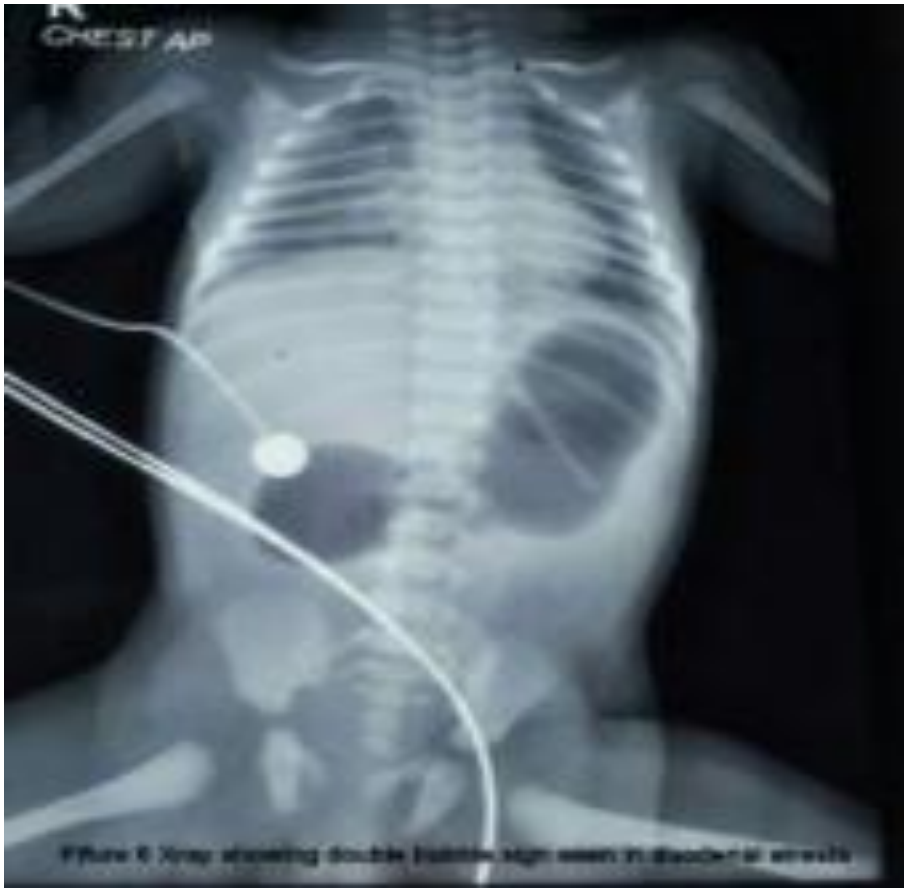

Figure 6. Double bubble sign suggestive of duodenal atresia

Duodenal atresia is a rare congenital disease inducing partial or complete obliteration of the duodenum with an incidence of 1 in 10,000 live births (7). EB with concomitant pyloric atresia is an autosomal recessive trait, in which there is a structural defect of hemi-desmosome due to altered expression of α6β4 integrin. This disorder allows the epidermis to adhere to the underlying tissues at the dermo-epidermal junction. The altered expression of α6β4 integrin is derived from homozygous or compound heterozygous mutations of genes ITGA6 and ITGB4 (8). These blemishes can cause several degrees of bullous lesions over the body of newborns.

Vomiting and abdominal distension in our case occurred due to intestinal blockage at the duodenum floor. Intestinal obstruction may be secondary to scar formation following recurrent damage of the pyloric mucosa. Recurrent mucosal damage triggers mechanical and/or chemical irritations which lead to the adhesion of pyloric mucosal tissue (9). EB with pyloric atresia may result in various urologic abnormalities, usually detected after the neonatal period (10).

In the present case, there were multiple variably-sized bullae characterized by progressive extension from the first day of birth. Intestinal obstruction was also found after the development of gastrointestinal symptoms, including vomiting and abdominal distention. Duodenal atresia was diagnosed by clinical presentation and radiological imaging. Nonetheless, there was no ureter vesical junction obstruction in this case. In these cases, regular follow-ups are required to monitor urinary symptoms since ureter vesical junction obstruction usually occurs after the neonatal period.

Electron microscope examination is required for confirmation of EB diagnosis as the exact level of tissue separation cannot be confirmed by light microscopy alone. EB with concomitant pyloric atresia can be diagnosed by the electron microscopic presence of blisters in the lamina lucida. There are no definite treatment modalities for EB with duodenal atresia. The currently available treatments including conservative managements (e.g., appropriate dressing, infection control and nutritional supplementations), are mainly symptomatic. Topical steroids can be

applied for local inflammation management. A genetic analysis may also be helpful for the diagnosis of EB, and studies on prenatal diagnosis, genetic counseling and treatment approaches are now underway (11).

Despite surgical treatment of concomitant pyloric or duodenal atresia, the prognosis of this disease is poor due to nutritional and absorption disturbance and progression of sepsis in many cases (12). Therefore, active surgical treatment tends to be withheld in patients with EB and concomitant pyloric atresia. Moreover, dermatologists should take into account the rare possibility of coexistence of duodenal atresia and dermal vesicular lesions.

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