PICTORIAL MEDICINE

A neonate with generalised bullae and pyloric atresia

In July 2011, a 1.82-kg full-term male was delivered by caesarean section at a regional hospital. The parents were a consanguineous Pakistani couple and this was their firstborn. At birth, the baby exhibited generalised ruptured bullae (Fig 1), but there was no family history of any bullous disorder. The boy's nails were not dystrophic. New blisters continued to develop spontaneously, without any apparent trauma. The abdomen was soft. Serial abdominal radiographs revealed absence of distal bowel gas (Fig 2).

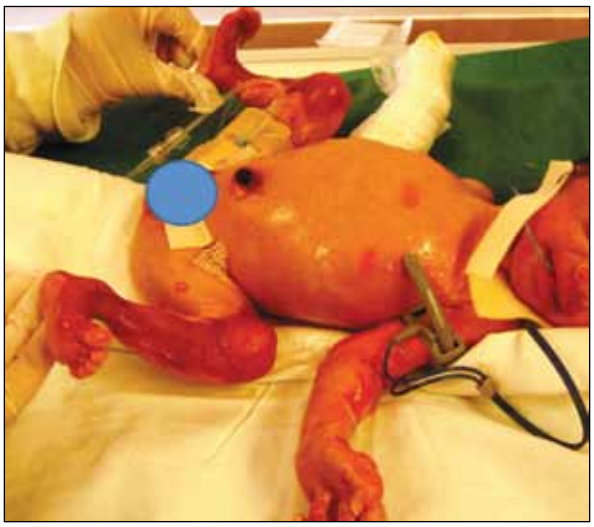

FIG 1. Neonate with generalised ruptured bullae

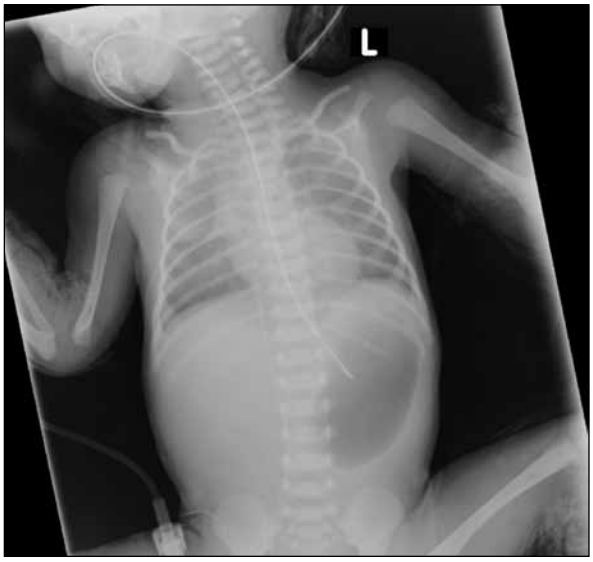

FIG 2. A plain abdominal radiograph showing a single large gastric bubble with absence of distal bowel gas which was subsequently confirmed at surgery to be pyloric atresia

An operation was performed on day 4 of life; the suspected diagnosis of pyloric atresia (PA) was confirmed intra-operatively, and a gastroduodenostomy performed. Feeding was commenced on day 10 of life. Microscopic examination of a punch skin biopsy showed detached epidermis with blistering at the dermoepidermal junction (Fig 3). Collagen VII stain was positive, in keeping with the clinical diagnosis of certain types of epidermolysis bullosa (EB).

Epidermolysis bullosa is a heterogeneous group of rare inherited connective tissue disorders, characterised by blisters in the skin and mucosal membranes after the slightest trauma.[1-3] Based on

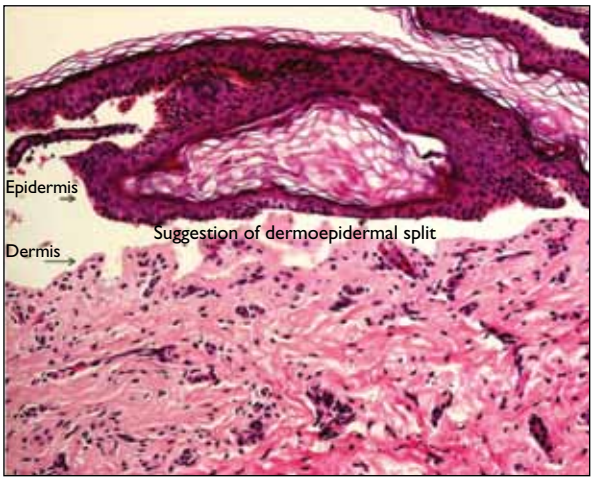

FIG 3. Histopathology showing dermoepidermal splitting (H&E stain, x 200)

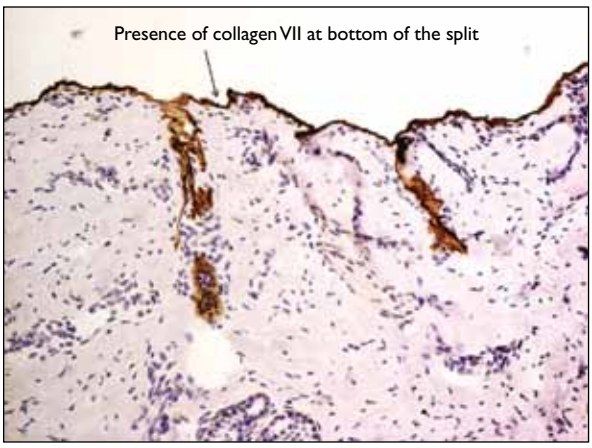

FIG 4. A low-power histological slide showing the presence of collagen VII fibres at the bottom of the split, therefore ruling out dystropic epidermolysis bullosa (collagen VII stain, x 100)

the precise location at which separation or blistering occurs, congenital EB is classified into three major categories. They are: epidermolysis bullosa simplex (intraepidermal skin separation), junctional epidermolysis bullosa (JEB; skin separation in the lamina lucida or central basement membrane zone [BMZ]), and dystrophic epidermolysis bullosa (DEB; sublamina densa BMZ separation; Fig 4). The fundamental pathology of EB entails an increase in collagenase activity, leading to collagen degeneration and hence splitting of various epidermal layers or at the transition between epidermis and dermis. Mutations in the *COL7A1* gene, which encodes collagen VII and assembles into anchoring fibrils, is responsible for DEB. Thus, presence of collagen VII (as in the skin biopsy in our patient) excludes DEB.

Pyloric atresia usually presents with repeated non-bilious vomiting soon after birth without abdominal distension. Abdominal radiographs typically show a single gas bubble representing a distended stomach with no distal bowel gas. Our patient was never fed before the single gastric bubble was noticed after serial radiography.

Traditionally, the co-existence of PA and EB had been classified as a form of JEB. However, current evidence-based molecular evaluation suggests that the EB-PA association is a hemidesmosomal variant, which is a distinct entity.[4,5] Genetic associations have been linked to ITGB4 (beta 4 Integrin), ITGA6 (alpha 6 Integrin), or PLEC1 (plectin) mutations.[6] The association of these two conditions is well-documented, so a plain abdominal radiograph should be performed to exclude PA in all babies with EB.

Early diagnosis and prompt treatment of PA is associated with very low morbidity and mortality, of which the main causes are septicaemia and electrolyte disturbance.[1,2] Skin care and nutritional supports must be meticulous in babies with EB.[7] Ongoing counselling and a multidisciplinary team approach can minimise the misery and suffering endured by affected children and their families.

Antony CC Fu, MB, ChB, MRCPCH
KL Hon, FCCM, MD
Email: ehon@cuhk.edu.hk
Department of Paediatrics
Paul CL Choi, FRCPA
Department of Anatomical and Cellular Pathology
The Chinese University of Hong Kong
Prince of Wales Hospital
Shatin
Hong Kong

References

1. Hon KL, Choi PC, Burd A, Luk NM. Epidermolysis bullosa dystrophica in a Chinese neonate. Hong Kong J Paediatr 2007;12:137-43.
2. Hon KL, Burd A, Choi PC, Luk NM. Epidermolysis bullosa in three Chinese neonates. J Dermatolog Treat 2007;18:306-11.
3. Fine JD, Eady RA, Bauer EA, et al. The classification of inherited epidermolysis bullosa (EB): Report of the Third International Consensus Meeting on Diagnosis and Classification of EB. J Am Acad Dermatol 2008;58:931-50.
4. Ergun GA, Lin AN, Dannenberg AJ, Carter DM. Gastrointestinal manifestations of epidermolysis bullosa. A study of 101 patients. Medicine (Baltimore) 1992;71:121-7.
5. Pulkkinen L, Uitto J. Mutation analysis and molecular genetics of epidermolysis bullosa. Matrix Biol 1999;18:29-42.
6. Dang N, Klingberg S, Rubin AI, et al. Differential expression of pyloric atresia in junctional epidermolysis bullosa with ITGB4 mutations suggests that pyloric atresia is due to factors other than the mutations and not predictive of a poor outcome: three novel mutations and a review of the literature. Acta Derm Venereol 2008;88:438-48.
7. Allman S, Haynes L, MacKinnon P, Atherton DJ. Nutrition in dystrophic epidermolysis bullosa. Pediatr Dermatol 1992;9:231-8.