Epidermolysis Bullosa Simplex

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Abstract: Epidermolysis bullosa simplex (EBS) is a rare blistering hereditary disease. It generally occurs in infants and children. Fine (2010) stated the prevalence of EBS is 19.6 / 1 million live births, and 8.22 / 1 million populations. This case report is aimed to establish the early diagnosis for prognosis assessment and parents' education. A 1-month-old babygirl presented with blisters which became erosion on elbow and foot, and nail dystrophy since birth. Skin biopsy result was in accordance to EBS. Patient was treated with normal saline compress, topical antibiotic, and topical placenta extract. Treatment resulted in improvement of skin lesion. The blisters of EBS is found intraepidermally on trauma-prone sites. The patient was followed up for 8 months. No secondary infection was found. The parent was satisfied with the result of treatment. EBS is a lifelong condition which requires meticulate attention from the parents. Trauma avoidance is pivotal to prevent the blisters. Genetic counselling might be needed.

1 INTRODUCTION

Epidermolysis Bullosa Simplex (EBS), also known as mechanobullous disease[1] is a genetic disorder occurs in infants and children that cause the skin to be very fragile and to blister easily without leaving scars. Blister occurs in response to minor injury or friction, such as rubbing or scratching and located above the dermal-epidermal junctional layer. The current name was "hereditary epidermolysis bullosa" stated by Koebner in 1886 (Boediardja, 2002). As reported by Fine (2010), the prevalence of EBS is estimated around 19.6 per million live births and 8.22 per million general populations10. EBS covers 70% of all Epidermolysis Bullosa cases and EBS is the mildest type (Fine et al, 2010; Lin et al, 1992; Jennifer, 2017).

The four most common subtypes of EBS are EBS localized (EBS-loc; previously known as Weber-Cockayne type), EBS generalized intermediate (EBS-gene intermed; previously known as Koebner type), EBS with mottled pigmentation (EBS-MP severe (EBS-gen sev: previously known as Weber), EBS generalized severe (EBS-gen sev: previously known as Dowling Meara type) (Paller et al, 2011; Bashir et al, 2010). EBS is inherited in an autosomal dominant pattern and rarely occur in an autosomal recessive pattern. EBS is typically caused by mutations in the KRT5 and KRT14 genes in which related to the formation of keratin 5 and keratin 14, a type of protein that affects the strength

and elasticity of the epidermal layer (Paller et al, 2011; Marinkovich, 2012). Mutations will make the epidermis to be easily damaged and injured. At other cases new genes mutations also occur in people who have no family history (Marinkovich, 2012).Clinical features are characterized by fragility of the skin that results in non-scarring blisters preceded by minor or even no trauma, which usually heal without scar tissue, blister appear on the hands and feet, in annular or arch or group form, progressive brown pigmentation interspersed with hypo-pigmented spots on the trunk and extremities which often disappears in adult life. The lession occurs in the palmar region, hyperkeratosis in plantar, nail dystrophy, and milia (Paller et al, 2011; Boediardja, 2002; Marinkovich, 2012; Ellen, 2016; Fine, 2014).

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EBS Therapy include: 1. Supportive care 2. Prevention of secondary complications: topical and / or systemic antibiotics or dressings or gels. 3. Surveillance: for infection and proper wound healing. 4. Agents / circumstances to avoid: excessive heat, avoid poorly fitting or coarse-textured clothing/footwear that traumatize the skin (Ellen, 2016). Genetic counselling might be needed. Genetic counseling is the process of providing individuals and families with information on the nature, inheritance, and implications of genetic disorders to help them make informed medical and personal decisions ((Ellen, 2016). The following section deals with genetic risk assessment and the use of family history and genetic testing to clarify genetic status for family members[8]. The prognosis of EB is highly dependent on the subtype of disease that is present. Most EB patients, particularly those with EBS , have normal life expectancies, but significant morbidity may complicate some (Lin et al, 1992; Jennifer, 2017).

2 CASE

A 1-month-old babygirl came to the dermatology and venereology clinic of Dr. Kariadi Hospital Semarang at September 2018 with skin peeling on the elbows, fingers and feet, no nails growth on the right and left fingers, and a brownish color on the fingertips. Since birth, bullae appear from the elbows, fingers and toes. Clothes friction can cause ruptured bullae, then erosion occurs. Patients were taken to the general practitioner in Jepara and given antibiotic ointment. Based on the data told by the patient's mother, there were no family history related to this disease and no family relationship between father and mother.

The patient showed good general condition, alert, pulse are 130 beats per minute, respiration rate is 34 breaths per minute, temperature is 37^0C. Physical examination shows the weight is 3100 kg, head circumference 33.5cm, body length 49cm, examination of heart, lung, abdomen within normal limits. Dermatology examination in the form of linear erosion on the right and left elbow folds, right and left foot, buttock and back ; right and left hand nail dystrophy; right and left finger hyperpigmentation (figure 1a).

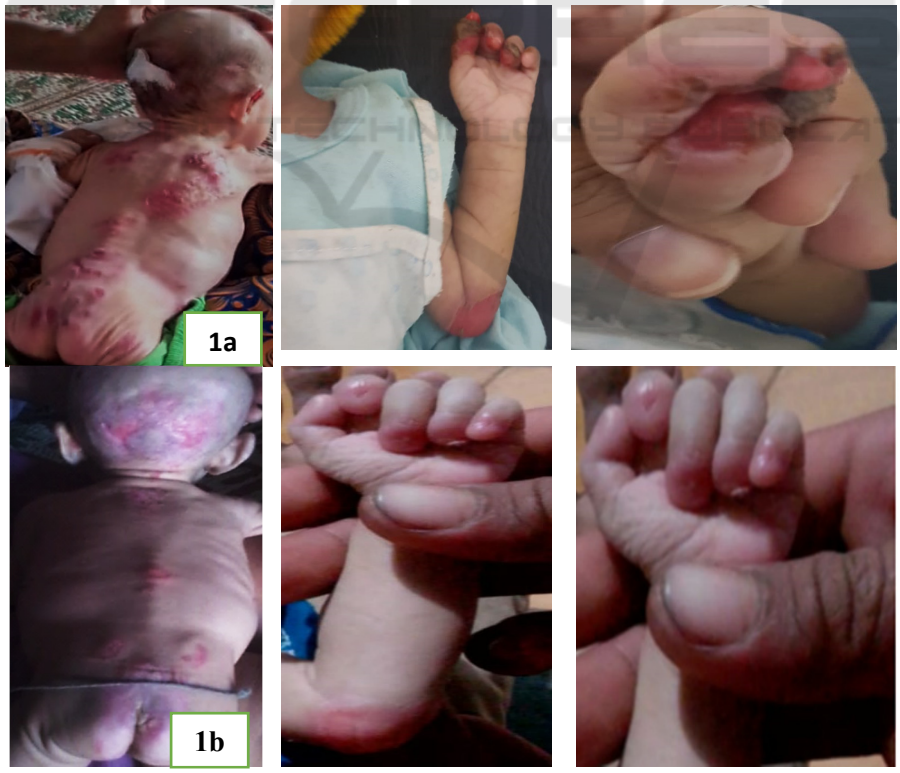

Figure 1.a first observation on buttock and back erosion, elbows and fingers erosion, toes nail hyperpigmentation, nail dystrophy, **1.b.** Second observation (after 8 months). Healing in elbows erosion and nail hyperpigmentation but persistent nail dystrophy

The result of consultation with pediatrics unit is stunting. Laboratory results showed that haemoglobin value: 8.4 g/dl, leukocytes: 13,000 / uL, platelets: 980,000/uL, hematocrit: 27,7%, albumin: 2,6 gr%, AST/ALT : 26/13 U/I, ureum/ creatinin: 14,5 mg% / 0,5 mg/dL

Histopathological section in elbow erosion shows old lession, the feature are those of a cell free sub-epidermal blister and are not specific (the roof in this blister is not seen on this section) with the base of fibrous stroma scatered with lymphocytes, histiocytes, and macrophages, containing hemosiderin pigments. No evidence of malignancy, and histopathological consisten with the diagnosis of epidermolysis bullosa simplex.(figure 2a,2b)

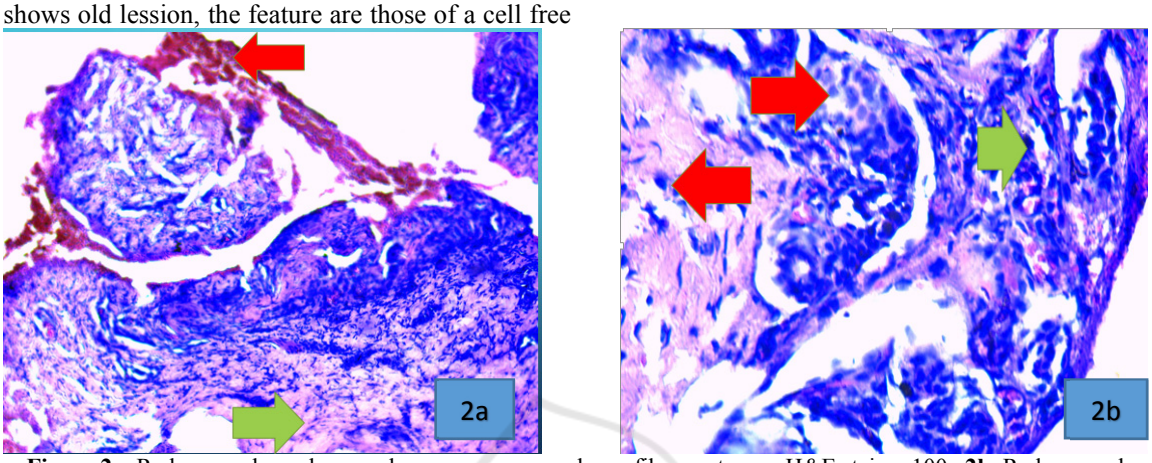

Figure 2a. Red arrow shows hemmorhage, green arrow shows fibrous stroma. H&E stain x 100, .**2b.** Red arrow shows lymphocytes and histiocytes, green arrow shows hemosiderin pigments H&E stain x 400

The differential diagnosis in these patients is Epidermolysis bullosa dystrophica, epidermolysis bullosa acquisita. The diagnosis in this patient is epidermolysis bullosa simplex. Treatment for these patients was Normal saline compresses for 15 minutes before topical cream therapy, topical antibiotics, topically extracted placenta.

3 DISCUSSION

EBS diagnosis is based on history, physical and histopathological examination. In this case, erosion preceeded with bullae was found . Based on several studies it was mentioned that there were points of keratin K5 and K14 gene mutations on chromosomes 12 and 17, also missense mutations in the amino acid sequence in keratin K5 and K14. Changes in these amino acids can cause changes in the structure of the keratin. In result, disruption of the formation of intercellular intermedia filament tissue that extends from the nucleus to the plasma membrane that connects the structure of hemi-desmosomes and desmosomes with basal keratinocytes occur(Lin et al., 1992;Pfender et al,2007;Taboli,2009,Arnold,2009;Fine,2014).So that intradermal bullae easily formed due to the trauma.

Supportive examination is needed to diagnose and monitor possible complications that can occur. Laboratory examination of blood in EBS is generally normal and if anemia present, it is usually associated with a growth disorder and mal-absorption. In this case, the patient's Hb is low and the patient is stunted. The lack of protein, iron and blood through the open skin causes iron deficiency hypo-albumin and lack of minerals (Taboli,2009). Consultation with a nutritionistis expected to be able to maximise calorie and protein intake and the provision of special nutrients and vitamins such as iron, zinc, and vitamin D3 (Taboli,2009). Nutritional support is important to promote wound healing[14.] Histopathological examination with a light microscope is not recommended. It is suggested to use electron microscope. Both Hematoxolin Eosin (HE) and Periodic Acid Schiff (PAS) staining can be used to see the basal membrane, Examination of a skin biopsy using immunofluorescence microscopy and transmission electron microscopy may be considered but can have limitations in the diagnosis of EBS(Ellen,2016).

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of epidermolysis bullosa simplex (Calonie et al,2012).

EBS therapy is supportive and palliative, by protecting itself from excessive friction or heat, preventing abrasion and constriction, handling secondary infections, supplementation and handling of pain (Paller et al,2011;Marinkovich,2012) For skin care, an explanation and education is given to the patient's family. Erosion is applied with antibiotic cream or;ointment (Paller et al,2011;Boediardja,2002;Pfender,2007;Fine,2008;Ellen,2016). Administration of 0.9% normal saline fluids compresses to wounds contribute to its effectiveness as moist wound dressing promoting granulation and epithelialization because normal saline fluids can attract fluid from the wound through osmosis and anti-inflammatory processes (Bashir et al, 2010). Topical placenta extract used in these patients contains fibroblasts, growth factors, amino acids, nucleotides and vitamins that stimulate biosynthesis of collagen (Tiwary,2015). Observation after 8 months showed healing in elbows erosion and nail hyperpigmentation, but persistent nail dystrophy, In general, the result of therapy was good (figure 1b).Genetic counseling is the process of providing individuals and families with information on the nature, inheritance, and implications of genetic disorders to help them make informed medical and personal decisions. Therefor, genetic conseling might be needed for this patient (Ellen,2016).

In the neonatal period it often causes death due to the wide area of erosion that can cause sepsis, but with the increasing age, the general condition will get better with a quickly healed lesions without leaving scar tissue and milia (Taboli,2009; Marinkovich,2012;Fine,2014). Most EB patients, particularly those with EBS, have normal life expectancies, but significant morbidity may be complicated (Lin et al,1992;Jennifer,2017). Those indicate the prognosis of “dubia at bonam” due to the better condition of the patient and significant increase in activity.

4 CONCLUSION

An Epidermolysis bullous simplex case in a 1 month-old baby girl was reported. Diagnosis is based on history of the disease, tracking family history, physical examination and laboratory support examinations and histopathology. Patient and family are given genetic counseling and explanation of the disease and skin care, prevention of the blister, treatment and prevention of infections, nutritional counseling to increase the quality of life of the patients. And genetic counceling might be needed . Prognosis in this case is dubia ad bonam.

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