ORIGINAL RESEARCH PAPER

Dermatology

EPIDERMOLYSIS BULLOSA DYTROPHICA (EBD)

KEY WORDS: Epidermolysis bullosa, blisters, lesions, inflammation.

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ABSTRACT

Introduction: Epidermolysis bullosa is a group of rare genetic conditions that cause the skin to become very fragile, delicate and vulnerable to develop blisters easily. Blisters, lesions, and skin erosions form in response to minor injury or friction, such as rubbing or scratching. The signs and symptoms can vary widely among affected people.The definitive diagnosis of inherited EB is made with transmission electron microscopy (TEM), immunofluorescence antigen mapping (IF), and EB related monoclonal antibody testing as well as mutational analysis.

Discussion: A 20 years old female with a history of erythema and fluid filled blisters on fingers since birth, developed spontaneous bullae that gradually became itchier. She was admitted to dermatology ward in tertiary care hospital. It was observed that she developed multiple blisters along with few tender blisters on the extremities of her body. These fluid filled lesions began to smell from the past 15 days as they developed all over both legs and arms associated with itching. She also developed excoriated lesions, filled with pus. These pus filled lesions ruptured after a couple of days. Her nails were observed to be ridging and her teeth were also found to be discolored. During the hospital administration, patient was managed symptomatically for itching, inflammation, and allergy.

Conclusion: EBD is a rare inherited disease that affects the skin and other organs. epidermolysis bullosa dystrophica is seen in people with fragile skin and people who are highly susceptible to blisters.The basic care for all EB patients are avoidance of blistering and prevention of secondary infection.

INTRODUCTION

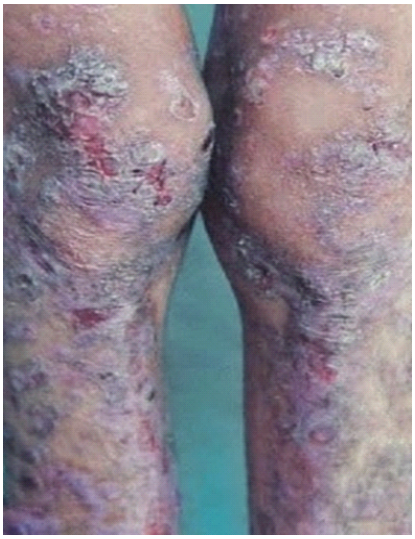
Epidermolysis bullosa is a group of rare genetic conditions that cause the skin to become very fragile, delicate, and vulnerable to develop blisters easily. Blisters, lesions and skin erosions are formed in response to minor injury or friction, such as rubbing or scratching [1]. Epidermolysis bullosa is categorized in to 4 types, namely, EB simplex (EBS), junctional EB (JEB), dystrophic EB (DEB), and Kindler syndrome, based on the distinguishing ultrastructural site of skin cleavage. Dystrophic epidermolysis bullosa (DEB) is one of the major forms of epidermolysis bullosa [2]. According to the National EB registry project from USA, the incidence and prevalence rate of epidermolysis bullosa are estimated to be 8.22 per million population. The incidence and prevalence rates of EB simplex are 10.75 and 4.65, of junctional EB are 2.04 and 0.44, and dystrophic EB dominant type 2.86 and 0.99 and recessive dystrophic EB 2.04 and 0.92, respectively [3]. Epidermolysis bullosa dystrophica is a rare inherited genetic blistering disorder caused by mutations in the COL7A1 gene encoding type VII collagen. The absence of type VII collagen leads to sub-epidermal blistering below the lamina densa, resulting in mucocutaneous fragility and complications such as intractable ulcers, extensive scarring, malnutrition, and malignancy [4]. The signs and symptoms can vary widely among different population. In mild cases, blistering primarily affects the hands, feet, knees, and elbows. Severe cases involve widespread of blisters that can lead to vision loss, disfigurement, and other serious medical problems [5]. The disease may be associated with autosomal recessive or dominant inheritance, in which, recessive type is more severe compared to dominant. In the dominant subtype, clinical manifestations usually occur at birth or during childhood, with generalized blistering. With increasing age, blisters tend to be more localized and there is also involvement of the oral mucosa and teeth [6]. The standard diagnosis of inherited epidermolysis bullosa is done with transmission electron microscopy (TEM), immunofluorescence antigen mapping (IF), and epidermolysis bullosa related monoclonal antibody testing as well as mutational analysis. For accurate diagnosis, skin biopsy should be performed properly. The best areas to take skin biopsies in epidermolysis bullosa patients are fresh blisters (less than 1-hour old) or an unaffected area of the skin preferably adjacent to the site where the patient usually gets blisters [7].

CASE PRESENTATION

A 20 years old female with a history of erythema and fluid filled blisters on fingers since birth, developed spontaneous bullae that gradually became itchier. She was admitted to dermatology ward in tertiary care hospital. It was observed that she developed multiple blisters along with few tender blisters on the extremities of her body. These fluid filled lesions developed all over both legs and arms and began to smell from the past 15 days associated with itching. She also developed excoriated lesions, filled with pus and they ruptured after a couple of days. Her nails were observed to be ridging and her teeth were also found to be discolored. She has a family history of parents with fragile skin and birth history reveals easy bruisability and peeling of skin even with a minor trauma. Laboratory investigations revealed that the patient has decreased hemoglobin level and MCV, MCH. The patient also has elevated levels of total WBC count due to the development of pus in the lesions. It also indicates a sign of inflammatory response. The patient's leukocytes count is slightly less than the normal range. The final impression of the complete blood picture of the patient includes anisocytosis with hypochromia followed by eosinophilia and leukocytosis. The decrease in the leukocytes indicates destruction of the white blood cells due to autoimmune disorder. The patient was found to have decreased levels of serum creatinine than normal and this may be due to dystrophia. The patient's teeth were also examined in the dental outpatient department of the tertiary care hospital. On examination, the patient's teeth had presence of calculus (which is a form of hardened dental plaque), along with retained deciduous teeth. During the hospital

administration, patient was managed symptomatically for itching, inflammation, and allergy. Liquid paraffin oil is an emollient that was applied to protect the skin from drying out. Soframycin ointment was applied to prevent from bacterial infections. Atarax (hydroxyzine) is an antihistamine given to reduce the itching of the skin. Mometasone and bepotastine besitate were administered to reduce the inflammation of the skin along with prednisolone (corticosteroid). Permethrin was prescribed to be applied all over the body to treat the bullae present over the extremities of the body.

Finally, the patient was relieved from the blisters, itching, and inflammation after 14 days from the day of admission and discharged with special warnings to hypersensitive drugs and also advised some discharged medications such as Liquid paraffin oil, chlorpheniramine tablets, soframycin ointment and prednisolone corticosteroid.



DISCUSSION

Epidermolysis bullosa is a group of rare genetic disorders characterised by the development of blisters due to minor trauma to the skin or mucosal surfaces[8]. Blisters can develop anywhere on the surface of the body, in the oral cavity and in severe cases, they may also develop on the external surface of the eye, the respiratory, gastrointestinal and genitourinary tracts [9]. Based on the severity criteria, dystrophic epidermolysis bullosa is further divided into 3 types: Hallopeau-Siemens which is the most severe type, non-Hallopeau-Siemens type and autosomal dominant type. Although the types differ in severity, they are caused by mutations in the same gene. Oral presentations and dental involvement vary in frequency, severity and according to subtype. Manifestations of malformed teeth due to enamel hypoplasia, presence of calculus (which is a form of hardened dental plaque), early caries development and gingival inflammation due to plaque accumulation may be seen in epidermolysis bullosa dystrophica cases [10], [11].The treatment for patients is incorporative but no specific therapeutic regimen has been identified that can cure the disease[12]. Hence, proper skin care should be maintained as well as cleansing and dressing the blisters from time to time. Infections must be treated with topical antibiotics like short term application of gentamycin that can led to the production of functional type VII collagen protein and anchoring fibrils. Inflammation must be treated with high potency topical or oral corticosteroids like momentasone, prednisolone, betamethasone, etc. KeragelIT, which is a keratin-based low viscosity gel, is approved and available for epidermolysis bullosa patients to use on skin blisters or lesions [13]. Nutritional management including protein-rich diet, iron and zinc must be provided [14]. Treatment for decreasing patient's anxiety is advisable as they provide safe treatment and help reduce the effects following trauma to the soft tissues from dental treatment. Choices of clothing and activities should be considered to reduce friction and protect vulnerable areas of skin. This will decrease the frequency in onset of the number of new blisters. In severe dystrophica cases, physiotherapy can help prevent restriction of movements. Hand wrapping and special dressings in the spaces between fingers may also help to prevent wounds that result from adjacent fingers fusing together and also protect from trauma[15].

Several new experimental approaches are being explored for possible therapeutic use. These include ex vivo gene replacement for autosomal recessive types of EB, transplantation of allogeneic fibroblasts, transplantation of bone marrow-derived stem cells , and infusion of recombinant protein i.e., type VII collagen[16],[17]. For autosomal dominantly transmitted EB, a variety of studies are being explored that may either suppress the dominant negative gene or compensate for its presence by the boosting other genes whose products might provide enhanced structural stability to the skin to some extent, thereby outweighing the effect of the underlying mutation[18].

Patients with severe condition of epidermolysis bullosa dystrophica also have a high chance of developing squamous cell carcinoma. Hence regular monitoring and biopsy needs to be done for the patient who are most susceptible. [19]

The patient was treated with topical corticosteroids like mometasone, oral corticosteroids like prednisolone, oral antihistamines like bepotastine besilate and hydroxyzine to reduce the inflammation and itching. Topical antibiotics like soframycin ointment and oral antibiotics with a combination of amoxicillin and clavulanic acid was administered to the patient to prevent/treat the bacterial infections. Topical application of glycerin lotion and liquid paraffin improved the dryness and itching of the skin by deep moisturization. By the end of treatment, the patient had symptomatic relief from itching and inflammation as well as the onset of blisters also decreased.

CONCLUSION

EBD is a rare inherited disease that affects the skin and other organs. In conclusion, our study showed that epidermolysis bullosa dystrophica is seen in people with fragile skin and people who are highly susceptible to blisters. Our findings suggest that reporting of such rare cases by health care professional should be encouraged. The basic care for all EB patients are avoidance of blistering and prevention of secondary infection by careful wound care, facilitated by the use of sterile synthetic non-adhesive hydrocolloid dressings.

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