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ABSTRACT:

Epidermolysis bullosa is an inherited disorder which is characteristically presented as skin blisters developing in response to minor injury. Junctional variety of Epidermolysis bullosa is associated with enamel hypoplasia. Amelogenesis imperfecta presents with abnormal formation of the enamel both in deciduous and permanent dentition. This is a case report of amelogenesis imperfecta with complete loss of enamel in a young female patient with epidermolysis bullosa.

Keyword: Epidermolysis Bullosa, Amelogenesis Imperfecta, Vesicles and Bullae.
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INTRODUCTION:

Epidermolysis Bullosa (EB) is a group of genetically determined rare disorder, where mutations coding for targeted proteins involved with keratin filament assembly promote architectural alterations in the epithelial basement membrane complex [1, 2]. Epidermolysis bullosa occurs at the time of birth or in early infancy [3]. This is commonly observed in children; it can be minor or severe and is very different from case to case. It has an incidence rate of approximately 400,000-500,000 peoples who are affected worldwide and no definitive treatment have yet been developed [1].

It can affect both sexes equally and in any racial or ethnic group [3]. The development of blisters following minor or insignificant trauma

to skin or mucosal surfaces leading to formation of large non healing ulcer is the characteristic of this disorder [4]. Disruptions to cellular adhesion will facilitate increased fragility of the skin and mucosal surfaces. Lesions may arise spontaneously, often with compromised wound healing with scarring in various EB subpopulations. Oral features seen with EB include mucosal vesicles and bullae that are frequently painful, exuberant granulation, tissue proliferation, and abnormal teeth usually affecting enamel complete or partial [5]. The dentition may be affected severely by enamel hypoplasia and/or dental caries depending on the EB type. Gedde-Dahl indicated that all patients with junctional EB suffered from enamel hypoplasia [6]. It has since been confirmed in a large prospective study that generalized enamel hypoplasia is limited to junctional EB types [6]. Amelogenesis Imperfecta (AI) may present as hypoplastic, hypomineralised or both and the teeth affected may be discoloured, sensitive or prone to disintegration. AI is due to the malfunction of the proteins in the enamel, ameloblastin, enamelin, tuftelin and amelogenin [7]. The exact incidence of AI is still uncertain but the prevalence can vary from 1:700 to 1:14,000 [8]. A rare case of a female patient suffering from junctional epidermolysis bullosa with Amelogenesis imperfecta is reported. The ethical clearance for the publication of the case report was obtained from the Yenepoya University Ethics Committee.

A CASE REPORT:

An 18 year old female patient reported to department of Oral Medicine and Radiology, with a complaint of discolored teeth since childhood. Her past dental history revealed similar type with early loss of tooth structure in deciduous dentition. Her medical history revealed presence of multiple dermal lesions which started appearing immediately after birth which was later diagnosed as Epidermolysis bullosa. She is the second child from a consangious marriage and her sister is also affected with similar dermal lesions since childhood. Her gait was abnormal due to nonhealing ulcer in both right and left feet. Blisters were seen on the lower part of both right and left feet With irregular borders and yellowish slough present at the base of the lesions. Scarring of healed lesions on knees was also noticed.

On examination diffuse reddish pseudo membranous area was seen extending from external occipital protuberance and spreading bilaterally till ear and extends till scapula. Loss of hair was seen with respect to that area. There was presence of itching and burning sensation in the affected area. The surface was erythematous with yellowish slough (Fig 1). On intra oral soft tissue examination a vesicle was

seen on the right rugae area on the hard palate (Fig 2). However there was no abnormal eruption pattern noticed. From a functional point of view, she had been avoiding hard food substances and carious lesion was noticed affecting enamel and dentin on few teeths.

On detailed hard tissue examination, it was found that she had a normal complement of teeth. Height of teeth was reduced because of complete chipping of enamel and exposing dentin. Underlying dentin appears to be normal. The surfaces of the teeth were rough. The teeth, in general, exhibited a yellowish brown discoloration, with diffuse pitting present on the exposed tooth surfaces, more prominent on the labial and buccal aspects. The emergence pattern and timing of teeth seemed to be within the normal range. No occlusal disharmony was present (Fig 3).

Panoramic radiograph revealed a normal pulp chamber and root canal spaces. The enamel was completely lost, radiopaque dentin is clearly appreciated. Based on history, clinical and radiographic features the diagnosis of hypoplastic; rough, autosomal recessive AI was made. The patient was referred for dermatological treatment and restorative rehabilitation.

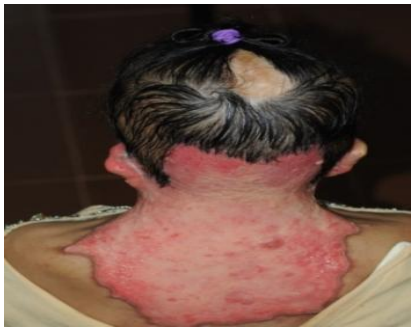

Figure 1: Dermal lesion in occipital region

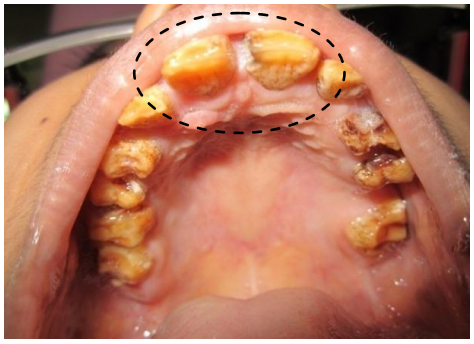

Figure 2- Vesicle in the anterior palate

Figure 3: Clinical appearance of teeth

DISCUSSION:

Epidermolysis bullosa is a diverse, heterogeneous group of conditions characterised by fragility of the skin that results in blisters caused by little or no trauma. Epidermolysis bullosa is of 3 major categories which includes- EB simplex (EBS; intraepidermal skin separation); junctional EB (JEB; skin separation in lamina lucida); and dystrophic EB (DEB; sublamina densa separation) [9]. Ten genes are known to harbor mutations in the major types of EB, and the level of expression of these genes within the cutaneous basement membrane zone and in extracutaneous tissues, as well as the types and combinations of the mutations, explain in general terms the phenotypic variability [3].

Molecular genetic studies revealed that Junctional form of Epidermolysis Bullosa is caused by mutations in the genes encoding COL17 or laminin 332 [3]. Enamel hypoplasia has also been reported in junctional form of epidermolysis bullosa. This is because deficiency of epithelial-mesenchymal junction molecules, such as COL17 can lead to the pathological mechanisms that can result in enamel hypoplasia [3]. Disruption of the COL17 gene leads to abnormal interaction between enamel epithelium and the underlying mesenchyme via the epithelial-mesenchyme junction, resulting in defective ameloblast differentiation. Epithelial-mesenchymal interactions via the epithelial-mesenchymal junction are important for tooth morphogenesis, and hemidesmosome components are thought to regulate the proliferation and differentiation of tooth forming cells including ameloblast [10]. Since there is presence of enamel hypoplasia which occurs only in association with junctional epidermolysis bullosa this case goes in favor of junctional enamel hypoplasia.

Enamel hypoplasia in the form of Amelogenesis imperfecta is seen in this present case. Amelogenesis imperfecta can have different inheritance patterns depending on the gene that is altered. Based on phenotype, Amelogenesis imperfecta is divided into four major categories- hypoplastic, hypomaturation, hypocalcified and hypoplastic with taurodontism. Hypoplastic with taurodontism which are again subdivided into 15 subtypes by phenotype and secondarily by mode of inheritance [8]. Clinically, a skeletal anterior open bite is seen in approximately 50% of patients with Amelogenesis Imperfecta of either X-linked or autosomal inheritance however in the present case it was not evident. Such an association might be regarded as a syndrome but this does not appear as such in any classification. The significance of this common association has yet to be elucidated. Diagnosis involves exclusion of extrinsic

environmental or other factors, establishment of a likely inheritance pattern, and recognition of phenotype and correlation with the dates of tooth formation to exclude a chronological developmental disturbance [10]. Radiographically the enamel may appear totally absent. When present may appear as a thin layer, chiefly over the tips of the cusps & on the interproximal surfaces. In some cases calcification is so much affected that enamel & dentin seem to have the same radio density, making differentiation between the two difficult [11]. In the present case, complete absence of enamel was seen in radiograph.

The management of EB is primarily preventive and supportive, consisting of prevention of trauma, careful wound care, nutritional support and infection control. Surgical procedures are indicated when deformities are caused by the blistering and scarring. Steroid therapy is controversial for EB. Since EB are genetic disorders, no drug is capable of correcting the molecular defect. Gene therapy is potentially, a future therapy. Recently, researchers have reported sustainable genetic correction of Junctional Epidermolysis Bullosa, patient skin tissue with laminin gene delivery. Clinical physicians should provide genetic counseling for families at risk for EB. The prognosis of EB depends on the severity of the illness. [10]

There is also a need for diet supplements, such as vitamins, proteins and iron in order to avoid anemia. The use of vitamin E and immunosuppressive drugs have also been suggested for the treatment of EB. [12]. Dental treatment is aimed at avoiding the formation of new bullae during perioperative management, and the choice of anesthetic method is one of the main issues for dentists and anesthesiologists. Special dental concerns involve the use of soft toothbrushes and irrigation techniques.

CONCLUSION:

To the best of our knowledge the present case is the first case report of Epidermolysis bullosa along with amelogenesis imperfecta. Dermal lesion and its association with dental anomalies have made management difficult. Palliative care was given for dermal lesions and aesthetic rehabilitation as part of dental management.

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