Amelogenesis Imperfecta in Permanent Dentition: A Case Report

Inne Suherna Sasmita
Department of Pediatric Dentistry Faculty of Dentistry, University of Padjadjaran, Indonesia
Corresponding author email: innesuhernasasmita@yahoo.co.id

Abstract
Amelogenesis imperfecta is a heterogeneous group of inherited disorders of enamel formation, affecting both deciduous and permanent teeth. The purpose of this article is to present a case of a 11 years girl who present with a chipping of teeth, tooth decay and sensitivity to hot and cold drinks. Physical examination and clinical diagnosis leads to amelogenesis imperfecta. From this case study, dental officer must be able to provide evaluation and treatment planning for patients with amelogenesis imperfecta right.

Keywords
Amelogenesis imperfect; Enamel; Tooth decay

Introduction
Amelogenesis imperfecta is a heterogeneous group of inherited disorders of enamel formation, affecting both deciduous and permanent teeth. This disease involves ectodermal dental components (i.e. enamel) while mesodermal tooth structure (i.e. cementum, dentin and pulp) remains normal (Purkait, 2013). Witkop and Soup amelogenesis imperfecta have been classified into four types; hypoplasia type, hypomaturation types, types hypocalcification and hypomutation / hypoplasia type (Ibsen and Phelan, 2014). The prevalence varies from 1: 700-1: 14,000, according to the population studied (Crawford et al., 2007). Here, we present a case where a patient is diagnosed with amelogenesis imperfecta.

Case Report
This 11-year-old female patient accompanied by her grandmother came to the Hospital with a chief complaint that her teeth chipping off. He also complained of some painful decayed tooth. Grandma said that she began to complain since one month ago.

Patients also mentioned sensitivity to hot and cold stimuli. On examination, the teeth look yellow-brown (Figure 1). In addition, there are also some tooth decay (caries depth) on the posterior teeth and anterior teeth chipping (Figure 2). Teeth also appeared small with open contacts (Figure 3). The patient also had a mild open bite. Based on the physical examination, the diagnosis is established amelogenesis imperfecta. Patients have permanent teeth.
Case Management

Case management includes early treatment is charging on rotting teeth and chipped to prevent excessive tooth loss. Charging is done by using the Composite Class 1, Class 1 and Class V amalgam GIC. Follow-up treatment will also include a fluoride treatment to minimize the loss of teeth. In addition, patients were given oral instructions also hygiene to maintain better oral hygiene. The patient is still under observation and evaluation for further treatment.

Discussion

Tooth structure abnormalities result from disturbances during histodifferentiation, apposition and mineralization stages of tooth development. Manifested as hypoplastic enamel defects or hypocalcification. According to Jorgenson and Yost, they may be broadly classified as an inherited defect or defects caused by the environment (Casamassimo et al., 2013).

Amelogenesis imperfect (AI) is a classic example of inherited enamel defects. Estimates of the incidence of this condition include 1 in 14,000, 1 in 8000 and 1 in 4000 is important to remember that the only feature that distinguishes other forms of enamel defects AI is confinement for different patterns of inheritance and the exclusive occurrence of each syndrome, metabolic or systemic conditions (Purkait, 2013).

Tooth enamel is a highly mineralized tissue by more than 95% of the volume occupied by unusually large, highly organized, crystalline hydroxyapatite. The formation of this structure is very organized and unusual supposedly strictly controlled in ameloblasts through the interaction of a number of organic matrix molecules that include enamelin), amelogenin, ameloblastin, tuftelin, amelotin, dentin sialophosphoprotein, and a variety of enzymes such as kallikrein and matrix metalloproteinases (Crawford et al., 2007).

Witkop and Sauk listed the varieties of AI, were divided according to whether the abnormality lies in reducing the amount of enamel (hypoplasia), calcification deficiency (hypocalcification), or the perfect maturation of the enamel (hypomaturation), and also recognizes the combined disability (Table 1) (Chaudhary et al., 2009). The clinical presentation depends on the type of amelogenesis imperfecta; varies from mild hypomaturation 'snow-covered' enamel hypoplasia to more severe descent with a thin, hard enamel, which has the appearance of a yellow brown. In type hypoplasia, enamel mineralization good but the amount is reduced. Gigi looks usually difficult, although the enamel in the deeper parts of possibly worse mineralization (Gundannavar et al., 2013).

| Table 1 Classification of amelogenesis imperfecta according Witkop and Sauk (1976) |
|-----------------------------------------------|
| Type I hypoplastic                          |
| IA  hypoplastic, pitted autosomal dominant  |
| IB  hypoplastic, local autosomal dominant   |
| IC  hypoplastic, local autosomal recessive  |
| ID  hypoplastic, smooth autosomal dominant  |
| IE  hypoplastic, smooth X-linked dominant   |
| IF  hypoplastic, rough autosomal dominant   |
| IG  enamel agenesis, autosomal recessive    |
| Type II hypomaturation                      |
| IIA  hypomaturation, pigmented autosomal    |
| IIIB  hypomaturation                        |
| III C  snow capped teeth, X-linked          |
| IID  autosomal dominant                     |
| Type III hypocalcification                   |
| IIA  autosomal dominant                     |
| IIB  autosomal recessive                    |
| Type IV hypomaturation — hypoplastic with   |
| IVA  hypomaturation — hypoplastic with      |
| IVB  hypomaturation with taurodontism,       |
| autosomal dominant                          |
| autosomal dominant                          |

Diagnosis is by eliminating the environmental factors such as fluorosis, trauma, exanthematous fever, hypocalcemia, or hypoplasia due to calcium
deficiency as the cause, admitted in inheritance pattern, and phenotype. Treatment plans for patients with amelogenesis imperfecta related to age, socioeconomic factors, types, and severity of the disorder and intraoral structures. Interdisciplinary approach may be needed to evaluate, diagnose, and resolve esthetic problems (Gundannavar et al., 2013).

**Conclusion**

This case report aims to create awareness among dental personnel on the importance of evaluation and treatment planning of the patient's right of amelogenesis imperfecta.

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