

SHORT COMMUNICATION



Chlorodontia in a child with neonatal jaundice

Swetha Paulose, Vishwanath Rangdhol, S. Yoga

Department of Oral Medicine and Radiology, Indira Gandhi Institute of Dental Sciences, Mahatma Gandhi Medical College & Research Institute Campus, Piliyarkuppam, Puducherry, India

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Correspondence

Dr. Swetha Paulose, Department of Oral Medicine and Radiology, Indira Gandhi Institute of Dental Sciences, Sri Balaji Vidyapeeth University, Puducherry - 607 402, India. E-mail: swethathomas@outlook.com

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Abstract

Background: The eruption of the first tooth is a much anticipated milestone in the developing child. Green dental pigmentation (chlorodontia) is relatively uncommon. Its occurrence causes anxiety to both child and family.

Aim: To present a case involving a 2-year-old boy with green pigmentation of primary teeth with a medical history of neonatal jaundice.

Conclusion: The reported case confirms the relevance of medical history in establishing the diagnosis and management of green teeth. It also emphasizes the role of dental surgeons in providing anticipatory guidance to families of children with chlorodontia.

Introduction

Several systemic disorders in pediatric patients can produce oral manifestations. Hyperbilirubinemia is a clinical condition characterized by an abnormal increase of bilirubin in the blood, which is a final product of catabolism of heme. Hyperbilirubinemia associated with neonatal jaundice can cause a change in the normal color of teeth known as green teeth. The correct diagnosis for a dental discoloration is important as, invariably, it has a profound effect on treatment outcomes. The aim of this article is to report a case of green teeth affecting all deciduous teeth in a 2-year-old boy with a history of neonatal jaundice.

Case Report

A 2-year-old boy presented to the Department of Oral Medicine and Radiology, for evaluation of his teeth. The boy was referred by a pediatrician, who noticed greenish discoloration of teeth while examining the patient for his complaint of abdominal pain.

Birth history was taken. The child was born at full term, with adequate height and weight. The mother gave a history of neonatal jaundice within 2 days after his birth, and he was kept under observation in a neonatal intensive care unit, for a week till it resolved. Previous records of hospitalization were

not available. The mother reported that her son's jaundice had resolved, but when his primary teeth erupted, they had a greenish discoloration.

On physical examination, the child was active, well built, and well nourished. He had no pallor, icterus, clubbing, cyanosis, or lymphadenopathy. Abdomen was protuberant, and on palpation abdomen was soft, nontender with mild splenomegaly and normal bowel sounds.

Intraoral examination revealed, primary dentition with chronology and eruption typical for his age. In the maxillary arch, all the teeth except maxillary left lateral incisor showed regular surface of enamel but with greenish discoloration [Figure 1]. Maxillary anterior teeth exhibited maximum discoloration with varying shades of green color predominantly over the cervical and middle thirds of maxillary central incisors which corresponded with amelogenesis (enamel formation) during the period of jaundice as per the history. Right lateral incisor showed greenish discoloration of three-fourth of the crown structure except the incisal tip. There was enamel hypoplasia on the left maxillary lateral incisor with discoloration involving the entire crown structure.

Maxillary teeth were more discolored compared to mandibular teeth. The surfaces of all the teeth were scratched carefully using a dental explorer; but pigmentation could not be removed. No pigmentation was observed on the oral mucosa and other soft tissues. All the teeth were caries free.



Figure 1: Maxillary and mandibular anterior teeth showing green colored pigmentation

The investigation reports showed total bilirubin level 0.4 mg/dL and direct bilirubin 0.2 mg/dL. No cosmetic treatment was performed in affected tooth. As the green pigmentation affected the deciduous dentition and there was a possibility it could also occur in the permanent dentition, the child's mother was advised to report with the patient to the outpatient clinic for regular follow-up.

Discussion

Neonatal hyperbilirubinemia is a frequently encountered problem with about 60% of newborns affected during the 1st week of life.^[1] Features of pathologic jaundice include the appearance of jaundice within 24 h after birth, a rapidly rising total serum bilirubin concentration (increase of more than 5 mg/dL/day), and a total serum bilirubin level higher than 17 mg/dL in a full-term newborn. Common risk factors for hyperbilirubinemia include fetal-maternal blood group incompatibility, prematurity, a previously affected sibling, and trauma from instrumented delivery.^[2] As the number of risk factors increases, the potential to develop markedly elevated bilirubin levels also increases.^[3-5]

Hyperbilirubinemia causes deposition of bilirubin pigment in the soft tissues and mucous membrane. The effects of bilirubin toxicity are often devastating and irreversible. Permanent green pigmentation of primary dentition can result from neonatal hyperbilirubinemia that is classically seen in biliary atresia. From the soft tissues, the pigment is removed over time. However, in the hard dental tissues, the pigment becomes trapped because of the lack of metabolic activity resulting in permanent discoloration.^[6,7]

The green pigment, bilirubin gets incorporated into enamel and dentin during matrix formation. The time period of bilirubin deposition correlates to the level of tooth development. In this case, the discoloration of primary teeth predominantly over the cervical and middle thirds of the crowns corresponds with amelogenesis (enamel formation) during the period of jaundice. Hence, the most probable reason for discoloration, in this case,

could be due to neonatal jaundice as per the medical history of the patient.

Although it was initially thought that bilirubin levels should exceed 500 mmol/l to induce green staining,^[8] subsequently patients were reported who had peak bilirubin levels, 200 mmol/l. Other factors which influence the staining are density of the matrix, individual disturbances in the absorption of calcium, phosphate, and fat-soluble vitamins in patients with cholestasis.^[6] The primary teeth appear to be most affected, although staining of permanent dentition has been reported. The extent and intensity of discoloration are related directly to the duration and severity of the pathology.

The clinical characteristics of teeth may help dentists to diagnose current or past systemic diseases. The differential diagnosis of green teeth includes extrinsic discolorations caused by chromogenic bacteria as well as intrinsic discolorations caused by dentinogenesis imperfecta, amelogenesis imperfecta, tetracycline, and congenital erythropoietic porphyria. In this case, the diagnosis of intrinsic pigmentation by bilirubin was based on a medical history of jaundice combined with green tooth discoloration.

Stained primary dentition will eventually be replaced with normal permanent teeth. Most experts do not recommend treatment of primary teeth. However, the options of treatment for children must be discussed openly with the family. Treatment options for green-stained teeth include composite veneers for primary dentition or combined veneers and bleaching for secondary dentition. Advanced treatment modalities include transillumination with ultraviolet light to accelerate the breakdown and dissipation of bilirubin products.

Patients should also be followed up until the permanent dentition erupts completely so as to assess the involvement of permanent teeth. If chlorodontia is evident in subsequent permanent dentition also, then esthetic treatment should be delayed till occlusion is established. In this case, no treatment was undertaken since the parents were not willing.

Conclusion

Very few cases of chlorodontia have been reported in literature. This case report highlights the importance of taking a detailed patient's medical history to determine the etiology of dental staining. All dentists, as well as physicians, should be aware that greenish discoloration of teeth can be due to neonatal hyperbilirubinemia. Esthetics being an important part of modern pediatric dentistry, all dental practitioners should be aware of the various causes and treatment modalities available for these cases.

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