Dental Treatment Way of Congenital Hypothyroidism: Case Report

Buket AYNA[1], Demet SUER TUMEN[2], Sema CELENK[3], Behiye BOLGUL[1]*

[1]DDS, PhD, Assistant Professor, Department of Pedodontics, Faculty of Dentistry, Dicle University, Diyarbakir, Turkey.
[2]DDS, MsC Researcher Assistant, Department of Orthodontics, Faculty of Dentistry, Dicle University, Diyarbakir, Turkey.
[3]DDS, PhD, Associate Professor, Department of Pedodontics, Faculty of Dentistry, Dicle University, Diyarbakir, Turkey.

Abstract

Due to increased awareness of early clinical signs and introduction of neonatal screening for congenital hypothyroidism, long-term untreated hypothyroidism has become rare. Nevertheless, neonatal screening for congenital hypothyroidism is not performed in all countries, and not every affected patient might be determined by neonatal screening alone.

In this case, it was described a case of congenital hypothyroidism that was not diagnosed in the fifth month and resulted in severe dental anomalies, growth and mental retardation.

(*International Dental and Medical Disorders December 2008; 1: 34-36)*

Keywords: Congenital hypothyroidism, dental anomalies, neonatal screening.

Received date: October 2008 **Accept date:** December 2008

Introduction

Babies who are born with underactive thyroid function have a disorder known as congenital hypothyroidism. The usual cause of this condition is the failure of the thyroid gland to develop during pregnancy[1,2]. At birth the infants look normal and then slowly over a period of weeks the clinical features of hypothyroidism appear. Because there are no conspicuous signs or symptoms, the diagnosis of congenital hypothyroidism is seldom made at birth by the examining physician[3].

Congenital hypothyroidism occurs with an incidence of 1:3000-4000 in Central Europe[4,5]. But in our country the incidence is stil higher[6]. The introduction of neonatal screening has led to an early diagnosis, and severe mental disablement or physical problems are usually avoided.4 The most common reason for a delayed diagnosis of congenital hypothyroidism is the fact that in many countries neonatal screening is not established, yet[2,4]. However, in our country it started to be practiced in 25 December 2006 throughout Turkey[2].

Congenital hypothyroidism is characterized by dwarfism; overweight; a broad, flat nose; wide-set eyes; thick lips; a large, protruding tongue; poor muscle tone; pale skin; stubby hands; retarded bone age; delayed eruption of teeth; malocclusions; a hoarse cry; an umbilical hernia; and mental retardation[1,7,8].

The case report presented in the present study outlines the dental treatment of a 8-year-old boy with congenital hypothyroidism.

**Corresponding author:*
Assist.Prof.DR. Buket AYNA
Dicle University
Faculty of Dentistry
Department of Pedodontics
21280 Diyarbakir / TURKEY

Fax: 0090.412.2488100
E-mail: buketayna@hotmail.com

Case

The patient was referred to the Department of Pediatric Dentistry at the Faculty of Dentistry, Dicle University, for treatment of severe pain in the area of tooth 51. The boy was the fourth child of non-consanguineous healthy parents. The diagnosis of congenital hypothyroidism had made in the fifth month. The patient has been treated with thyroxine. It was learnt that the patient is under control by pediatric endocrinologist.

Clinical examinations revealed that the patient had a short stature; a broad, flat nose; dry skin; a large, protruding tongue; poor muscle tone; stubby hands; delayed shedding of deciduous teeth, eruption of permanent teeth; malocclusions and mental retardation. In addiation, clinical and radiographic examinations showed that he had profound caries and periapical lesions (Figs. 1-2). The patient was prescribed analgesics and antibiotics for severe pain in the area of tooth 51. We decided that teeth 51, 52, 53, 54, 61, 73, 74 and 75 should be extracted because of the severity of the bone lesion and excessive structural loss. Following a thorough oral and periodontal

examination, a treatment plan was developed that included oral hygiene instructions, mechanical debridement, and periodontal reevaluation. The gingival health of the patient was improved with periodontal therapy. However, teeth 63, 64, 83 and 85 were restored with compomer (Dyract Extra; Dentsply, De Trey, Germany). Tooth 84 was restored, with stainless stell primary molar crown (Stainless Stell Primary Molar Crown; 3M ESPE, Seefeld, Germany) due to excessive structural loss. Fissure sealant (Fuji VII; GC Corporation, Tokyo, Japan) was applied for teeth 16, 55, 65, 26, 36 and 46. In order to prevent orthodontic anomalies connection with tooth absence and delayed of eruption teeth, the patient was treated with removable space maintainer (Figs. 3-4).

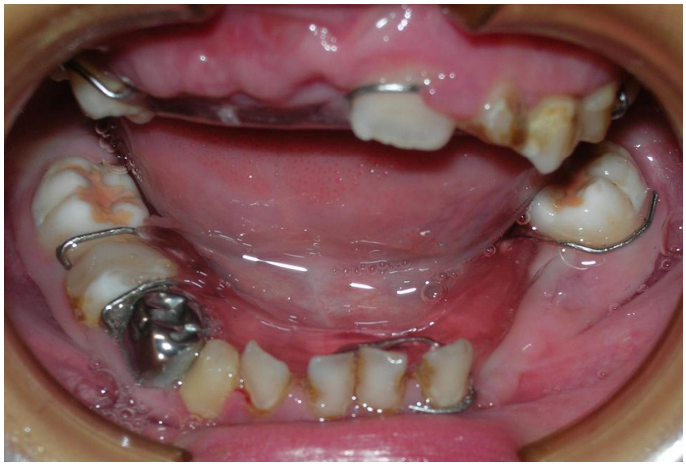
Fig. 3 Postoperative intraoral view of mandibula.

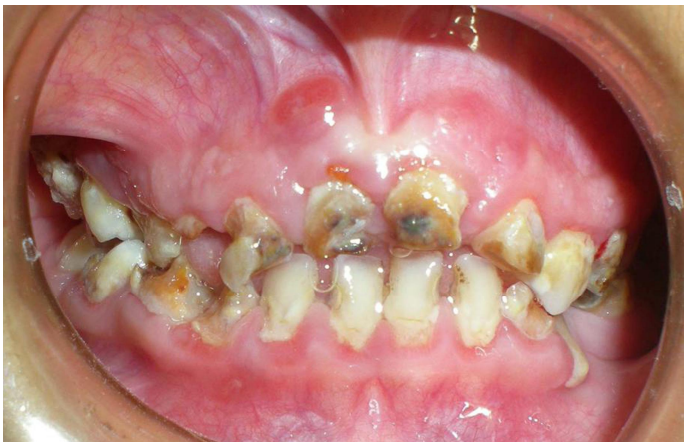
Fig.1 Preoperative intraoral view of teeth.

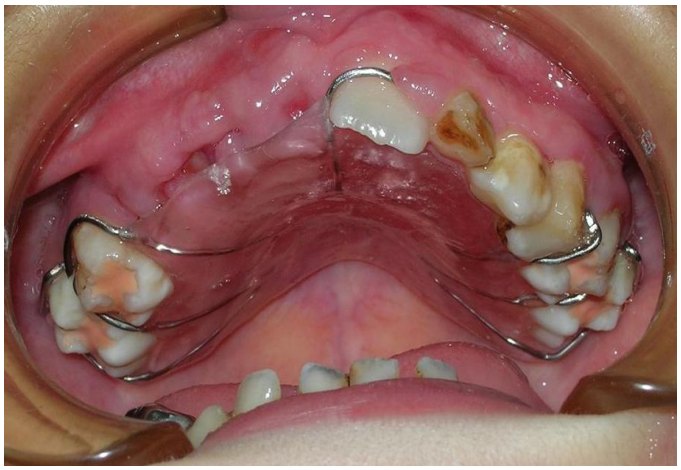
Fig. 4 Postoperative intraoral view of maxilla.

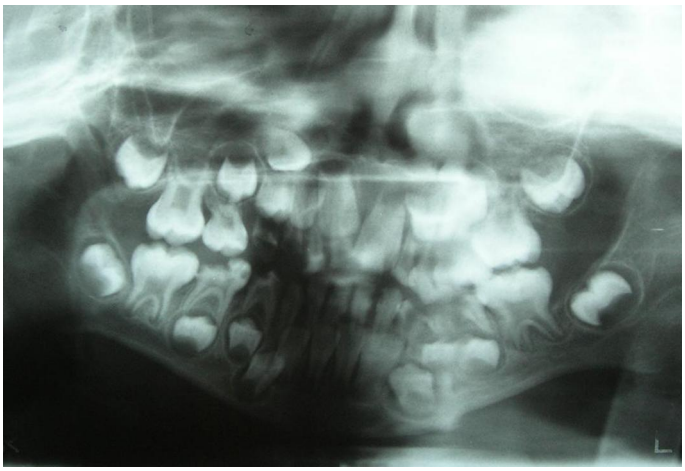
Fig. 2 Preoperative radiograph showing teeth.

Discussion

Many inherited disorders have oral manifestations which can be detected on dental radiographs as alterations in the morphology or chemical composition of teeth. Thus, the dentist may be the first to detect disorders of development and metabolism of importance to the general health of the patient and his family[9].

While the metabolic and genetic disorders are usually established by endocrinologists and medical geneticists, oral symptoms have to be taken into consideration by dental professions. With simple dental treatments, patient comfort can be considerably increased.

If untreated, congenital hypothyroidism can lead to severe mental retardation and growth retardation. The eruption of teeth may be delayed. These problems become more severe as the child ages[1,2,10,11]. Growth failure in terms of body length is noted very early. Very early diagnosis generally results in a good outcome for the infant, in terms of

growth and mental capability. Newborns diagnosed and treated in the first month and a half generally develop normal intelligence[2,12,13]. Thus, this pre-existing network for collecting newborn blood specimens provided the framework upon which the same public health laboratories could not only screen for metabolic diseases but could screen for congenital hypothyroidism as well[2]. It was not long before most industrialized nations had established newborn screening programs to identify infants born with hypothyroidism. Without question, the screening process has revolutionized the diagnosis and early treatment of congenital hypothyroidism and thereby prevented countless number of children from becoming mentally retarded[4].

As neonatal screening was not done routinely in our country when this patient was born, congenital hypothyroidism was diagnosed in the fifth month. This situation occurred severe mental retardation and growth retardation in this patient. In addition, dental anomalies were more than expected, probably because the dental aspects of hypoparathyroid disease have been overlooked. However, patient is under good medical care.

The dentist by history and clinical examination may detect evidence that may be associated with this disorder. Patients with untreated severe symptoms of hypothyroidism may be in danger if dental treatment is rendered[14]. Thus, the major goal of the dentist is to detect these patients and refer them for medical management before any dental treatment is rendered.

Once the hypothyroid patient is under good medical care, no special problems are presented in terms of dental management, except for dealing with the malocclusion and enlarged tongue if present[14]. Replacement therapy with thyroxine is the standard approach to treatment of hypothyroidism[7,8]. Once medication starts, the blood levels of TSH and free T4 are monitored to keep the values within a normal range[12,13].

Finally, patient's masticatory and speech functions are restored with conservative treatment and removable space maintainer. It was observed that, after three-month periods, the patient was adapted to his space maintainer functionally.

In summary, this case report shows that congenital hypothyroidism has to be considered in patients with severe dental anomalies, growth retardation and mental retardation. Although neonatal screening for hypothyroidism was introduced in many countries, it is not performed everywhere. There are few instances in the practice of medicine where the health and welfare of future generations can be positively affected; early treatment of congenital hypothyroidism through newborn screening is one of those instances.

References

1. Little JW, Minneapolis MS. Thyroid disorders. Part II: hypothyroidism and thyroiditis. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2006;102:148-53.
2. Ataş A, Çakmak A, Karazeybek H. Congenital Hypothyroidism. J of Current Pediatr 2007;5:70-6.
3. Vulsma T, Gons MH, de Vijlder JJ. Maternal-fetal transfer of thyroxine in congenital hypothyroidism due to a total organification defect or thyroid agenesis. N Engl J Med 1989;321:13-6.
4. Leger J. Screening for congenital hypothyroidism in France. Misdiagnosed cases: collaborative study of screening centres in France. Eur J Pediatr 1990;149: 605-7.
5. MacGillivray M. Congenital Hypothyroidism. In: Pescovitz OE, EA, editor. Pediatric Endocrinology. Philadelphia: Lipincott Williams and Wilkins; 2004. p. 490-507.
6. Yordam N, Çalıkoğlu AS, Hatun S, Kandemir N, Oguz H, Teziç T, et al. Screening for congenital hypothyroidism in Turkey. Eur J Pediatr 1995;154:614-6.
7. Jameson JL, Weetman AP. Diseases of the thyroid gland. In: Kasper DL, Braunwald E, Fauci AS, Hauser SL, Longo DL, Jameson JL, et al., editors. Harrison's online principles of medicine. 16 ed. New York: McGraw-Hill; 2005. p. 2104-27.
8. Larsen PW, Davies TF. Hypothyroidism and thyroiditis. In: Larsen PR, Kronenberg HM, Melmed D, Polonsky KS, editors. Williams textbook of endocrinology. 10 ed. Philadelphia: W. B. Saunders; 2003. p. 415-65.
9. Witkop CJ. Clinical aspects of dental anomalies. Int Dent J 1976;26: 378-90.
10. Mg'ang'a PM, Chindia ML. Dental and skeletal changes in juvenile hypothyroidism following treatment: case report. Odontostomatol Trop 1990;13:25-7.
11. Shaw L, Foster TD. Size and development of the dentition in endocrine deficiency. J Pedod 1989;13:155-60.
12. Carrascosa A, Ruiz-Cuevas P, Potau N, Almar J, Salcedo S, Clemente M, et al. Thyroid function in seventy-five healthy preterm infants thirty to thirty-five weeks of gestational age: a prospective and longitudinal study during the first year of life. Thyroid 2004;14:435-42.
13. Rapaport R, Rose SR, Freemark M. Hypothyroxinemia in the preterm infant: the benefits and risks of thyroxine treatment. J Pediatr 2001;139:182-8.
14. Little JW. Thyroid disease. In: Little JW, Falace DA, Miller CS, Rhodus NL, editors. Dental management of the medically compromised patient. 6 ed. St. Louis: Mosby; 2002. p. 283-303.