Case Report

Atypical presentation of Charcot-Marie-Tooth disease (CMT 2) with self-mutilation of tongue as an early sign: A Case Report

Sandeep V[1], Madhuri L[2], Ninchenametla R[3], Praveen K[4]

From, [1]Professor [2]Senior Lecturer, Department of Pediatric Dentistry, [3]Professor Department of Peridontology, [4]Professor Department of Orthodontics, G Pulla Reddy Dental College & Hospital, Kurnool, Andhra Pradesh, India

Correspondence to: Dr. Valasingam Sandeep, Department of Pediatric Dentistry, G Pulla Reddy Dental College & Hospital, Kurnool - 518002, Andhra Pradesh, India. E-mail ID: valasimunna@gmail.com

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ABSTRACT

Charcot-Marie-Tooth disease Axonal type (CMT 2) in children is usually diagnosed in the first decade of life with distal muscular atrophy and loss of sensitivity in the extremities. The present case report describes the early sensory involvement of a 9-months-old infant presented with frequent mutilation of the tongue and its conservative management. This report highlights the importance of considering progressive neuropathies as a differential when a dentist encounters self-inflicting mutilation of the oral structures other than congenital insensitivity to pain.

Keywords: Mutilation, Tongue, Child, Charcot-Marie-Tooth disease

Charcot-Marie-Tooth disease (CMTD), a neuromuscular disorder affecting both sensory and motor nerves is seen with a clinical presentation of progressive muscle weakness and sensory impairment [1]. The prevalence of CMTD was evaluated as early as 1974 by Skre reporting 1 in 2500[2]. Recently, another study showed that 62 % of genetically diagnosed CMTD as CMT1A type and CMT1D is the least with 0.1% rate [1]. CMTD has a prevalence of 37% out of which CMT 2 has a rate of 3-12% [3].

Children with CMTD are mostly axonal type diagnosed in the first decade of life with a chief complaint of motor abnormalities but sensory involvement seems to be a rare occurrence below 1 year of life. However, in some cases like ours, the sensory impairment may be the first clinical sign which can trigger the clinician to evaluate the analogies. The present case report describes the sensory impairment in a 7-month-old infant presenting as traumatic biting of the tongue with fibrosis.

CASE REPORT

A 9-months-old infant presented to the department of pediatric dentistry with the chief complaint of bleeding tongue and frequent traumatization of the tongue for three months. Parents gave a history of delayed milestones like no eye contact and muscle wasting which was overlooked by a general practitioner three months back.

On further evaluation, the following signs were noticed. The patient has global developmental delay (motor and cognitive), microcephaly, cortical visual impairment, horizontal jerk nystagmus, dysmorphism (depressed nasal bridge, hypertelorism, upturned nose, bilateral 2nd toe overhanging the 3rd toe), central hypotonia, poor sensation, poor motor responses to stimuli (Figure 1a). The patient was referred to a pediatrician who confirmed head lag on pull to sit, increased sweating, non-healing tongue (Figure 1b), and toe and hand ulcers due to mutilation. The patient was suspected of a syndromic case with congenital insensitivity to pain as a provisional diagnosis and investigated further.

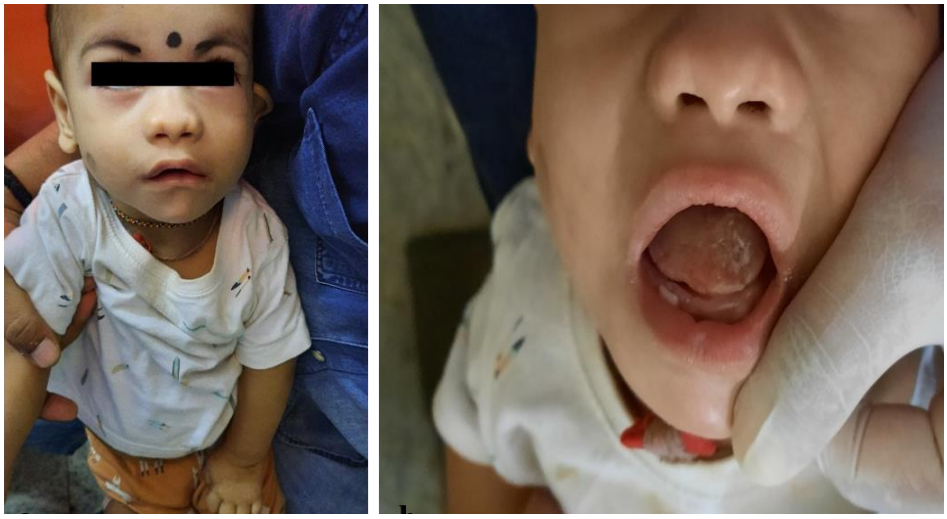

Figure 1: (a) Extraoral features depicting CMT -2; (b) Intraorally showing mutilation of the tongue

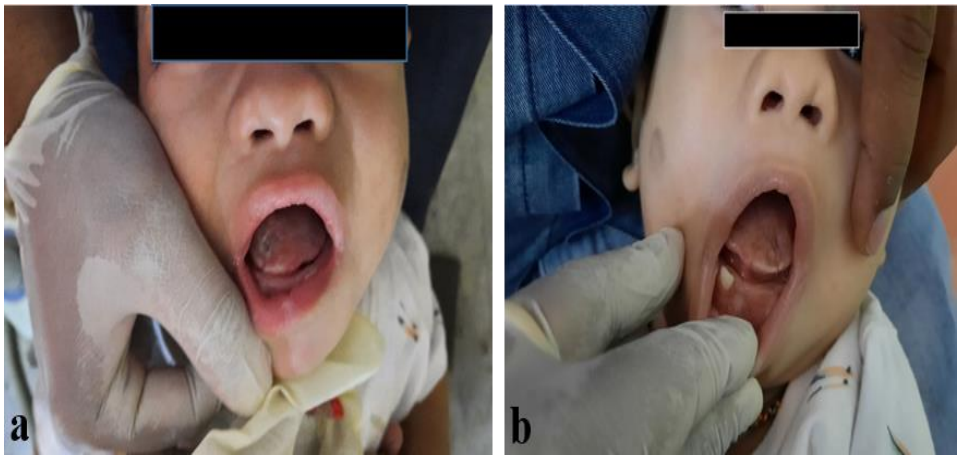

Figure 2: (a) Preoperative and (b) postoperative images showing healing lesion on tongue

His laboratory tests revealed elevated Creatine phosphokinase (CPK), bilirubin, C-reactive protein (CRP), T3, thyroid-stimulating hormone (TSH), thrombocytopenia due to probable sepsis, asymptomatic hypoglycemia, polycythemia, and moderate respiratory distress. His Magnetic resonance imaging (MRI) brain, 2D echocardiogram (ECHO), and ultrasound of the abdomen and hips were normal and his karyotype was 46, XY.

Further genetic testing confirmed that the patient has axonal Charcot-Marie-Tooth disease, type 2Z. A heterozygous missense variation in exon 23 of the MORC2 gene (chr22:g.30932758C>T; Depth:163x) that results in the amino acid substitution of aspartic acid for Glycine at codon 845 (p.Gly845Asp;ENST00000397641.8) was detected. The parents were counselled regarding the clinical condition and referred to further centers for follow-up.

The patient was managed by grinding the sharp incisal edges of primary teeth to prevent untoward trauma. After one week, healing was evident but the tongue was already fibrotic due to repeated trauma (Figure 2). We informed the parents that if further traumatization is noticed, extraction of the offending teeth will be done.

DISCUSSION

Charcot-Marie-Tooth disease 2 is caused by heterozygous mutations in the MORC2 gene which is manifested as developmental delay, impaired growth, dysmorphic facies, and axonal neuropathy [4]. Similarly in our case, the infant was diagnosed with a missense variation in exon 23 of the MORC2 gene. As the disorder is hereditary in occurrence, it is also called as hereditary motor and sensory neuropathies (HMSN) with clinical variants like hereditary motor neuropathies (HMN), hereditary sensory

neuropathies (HSN), and hereditary sensory and autonomic neuropathies (HSAN) [4]. It was first described by Charcot, Marie, and Tooth in 1886 [5].

The clinical phenotypic presentation of CMTD depends on the gene involved. Mutations in PMP22, GJB1, MPZ, and MFN2 are considered as the etiological basis for this disease [6]. Based on clinical phenotypes, CMTD is classified as Charcot-Marie-Tooth Disease, hereditary neuropathy with liability to pressure palsies, Dejerine–-Sottasneuropathy, congenital hypomyelinating neuropathy, and Roussy-Levy syndrome. Based on nerve conduction studies, CMTD is traditionally classified as demyelinating (CMT1) defined as nerve conduction velocity (NCV <35 m/s), axonal (non-demyelinating) (CMT2) NCV>45m/s, and dominant intermediate CMT (DI-CMT) NCV 35-45 m/s [2].

Phenotypic variation exists between CMT 1 and CMT 2. CMT 1 is presented as an abnormality in the myelin sheet that insulates and covers the nerve fiber and hence affecting the conduction velocity of the nerve. While CMT 2 which is termed as an axonal variant involves direct damage to the axons affecting the overall functioning of the nerve [6]. Others classifications were also described in the literature based on genetic and electrophysiological studies but beyond the scope of this article to describe [6].

Usually, CMT 2 is characterized by onset in the first decade with distal lower limb muscle weakness but sensory impairment is generally a late feature. In a case series published by Thongsing A et al, 30 patients were diagnosed with hereditary neuropathies and there were only 2 children diagnosed under the age of 1, out of which, one child demonstrated early sensory loss [7].

The main features commonly seen in both types of CMTD are muscular atrophy and sensory loss. Distal neuromuscular atrophy leads to pes cavus and high-arched feet. Sensory symptoms are less seen and depend on the gene involved. They include loss of vibration, joint position loss, decreased sensitivity to pain, and temperature variations [8]. Our patient demonstrated early sensory loss as the initial feature not commonly seen in many CMT 2 cases [2].

Other common oral features of the axonal variant are trigeminal neuralgia and self-reported mastication [9]. A study done to evaluate the oral health status of CMT 2 patients did not report any early sensory loss and traumatic ulceration of the tongue as seen in our case [2]. Other oral features like the involvement of hypoglossal and glossopharyngeal nerves are possible in CMT 1 but not in CMT 2 [10]. This disorder is progressive and muscle involvement in an asymmetric pattern, resulting in severe disability late in adulthood.

CONCLUSION

The present case report is a rare case entity where sensory impairment was noticed early presenting with the traumatic ulceration of the tongue. This highlights the importance of considering progressive neuropathies in the differential diagnosis other than congenital insensitivity to pain when a dentist observes self-mutilation of oral structures. Early diagnosis of CMT is important for patient education and counselling as also for initiating appropriate rehabilitation measures and consideration for therapeutic trials.

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