Case Report

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Fragile X Syndrome: Not So Fragile

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ABSTRACT

Background: Fragile X Syndrome also known as Martin–Bell syndrome, or Escalante's syndrome, is one of the most common inherited genetic disorders causing mental retardation. This disorder results from an abnormal expansion in (CGG)n repeat found in the coding sequence of the FMRI gene, located at Xq 27.3, especially among boys. It results in a spectrum of intellectual disabilities ranging from mild to severe physical characteristics along with dental manifestations. Here we present a diagnosed case of Fragile X Syndrome with dental manifestations.

Keywords: Fragile X syndrome, genetic disorder, mental retardation.

INTRODUCTION

Fragile X syndrome, one of the most common inherited cause of intellectual disability is associated with a range of social, behavioural, and cognitive impairments[1,2,3]. This disorder is caused by expansion of the CGG repeat (>200 repeats) in the 5 prime untranslated region of FMR1(Fragile X mental retardation1), resulting in a deficit or absence of FMRP (Fragile X mental retardation protein). FMRP is an RNA-binding protein that regulates the translation of several genes that are important in synaptic plasticity and dendritic maturation.

It is believed that CGG repeat expansions in the premutation range (55 to 200 repeats) elicit an increase in mRNA levels of FMR1, which may cause neuronal toxicity. These changes manifest clinically as developmental problems such as autism and learning disabilities as well as neurodegenerative diseases including fragile X-associated tremor/ataxia syndrome (FXTAS)[4,5,6].

CASE REPORT

A 18 year old male patient reported to the clinics with a chief complaint of missing teeth which have not erupted since the primary teeth were shredded. Medical history revealed the patient has been diagnosed with Fragile X syndrome at the age of four with PCR test with a history of delayed mile stones with slight mental retardation and autism like behaviours. Dental and family history were non-contributory. On general physical examination patient was moderately built, moderately nourished with below average intelligent quotient (IQ). Extra orally, the patient had mild hypertelorism and large ears (Fig. 1). However, the other facial features of fragile syndrome were not observed prominently. Upon intraoral examination, the patient presented with a high arched palate (Fig. 2), midline diastema along with missing right and left maxillary lateral incisors (Fig. 3) microdontic maxillary canines (Fig. 2), conical mandiblular anterior teeth and over retained right mandibular deciduous canine (Fig. 4). The clinical findings were confirmed with a

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radiograph (Fig. 5). We have planned for redistribution of the space by orthodontic

Fig 1: Extra orally, the patient showed mild hypertelorism and large ears.

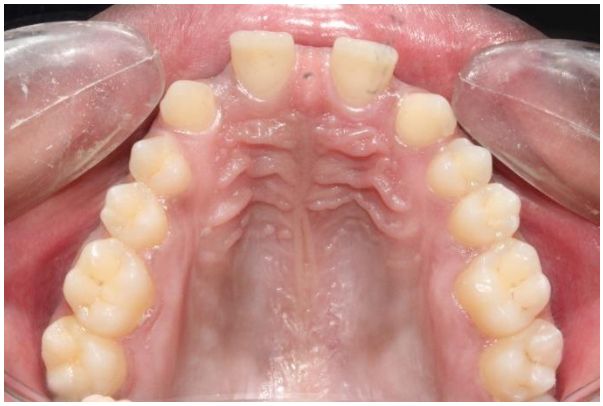

Fig 2: Intraoral photograph showing high arched palate.

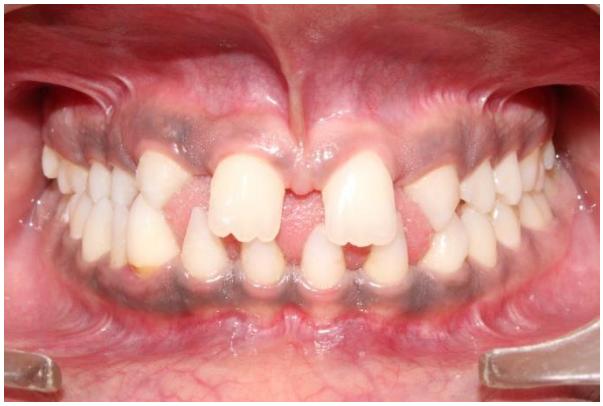

Fig 3: Photograph shows midline diastema along with missing right and left maxillary lateral incisors.

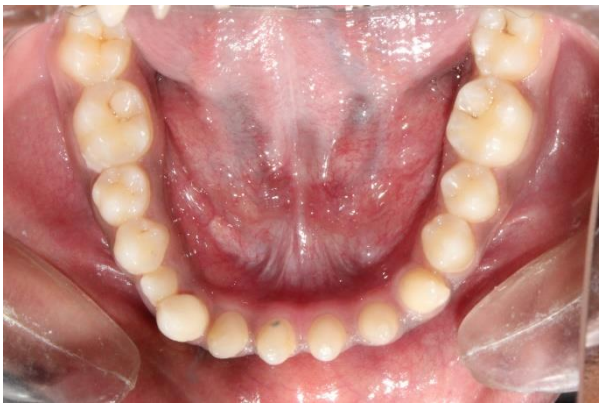

Fig 4: Photograph shows conical mandiblular anterior teeth and over retained right mandibular deciduous canine.

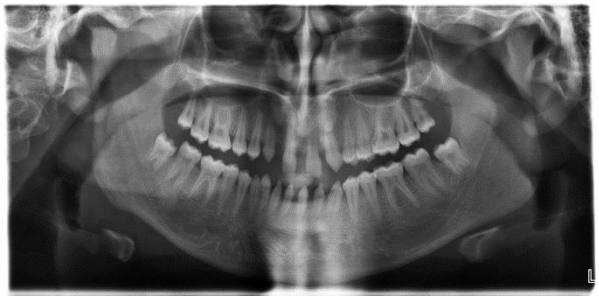

Fig 5: Radiograph confirmed all the clinical findings

intervention and consider prosthetic replacement of missing teeth.

DISCUSSION

Fragile X syndrome the mutation is located on the X chromosome. Males are typically affected to a greater degree with a prevalence of approximately 1 in 4000 as compared to 1 in 8000 in females[7]. Aside from intellectual disability, prominent characteristics of the syndrome may include an elongated face, large or protruding ears which were evident in our case, flat feet, larger testes (macroorchidism), and low muscle tone. Recurrent otitis media (middle ear infection) and sinusitis is common during early childhood. Speech may be cluttered or nervous[8]. The most frequent intraoral anomalies are an high arched palate which was in correlation to our patient, cleft palate, the presence of mesiodens, dental hypomineralization and abrasion of the occlusal surfaces and incisal edges, as well as an increase in the dimensions of the dental crowns in the mesiodistal and vestibulolingual orientation, which produces severe bone-dental discrepancies[9,10].

Individuals with FXS may present anywhere on a continuum from learning disabilities in the context of a normal intelligence quotient (IQ) to severe intellectual disability[10]. Children with fragile X have very short attention spans, are hyperactive and show hypersensitivity to visual, auditory, tactile and olfactorystimuli[14]. Ophthalmologic problems include strabismus. This requires early identification to avoid amblyopia. Refractive errors in patients with FXS are also common[8]. Individuals with FXS are at a higher risk of developing seizures. Due to the fact that there are no current treatments or cures for the underlying defects of FXS, it is even more critical for medical science to innovate new and efficacious pharmacological treatments as well as targeted behavioural interventions. Current trends in treating the disorder include medications for symptom-based treatments that aim to minimize the secondary characteristics associated with the disorder[10].

CONCLUSION

Fragile X-syndrome is of interest in dental practice because of its high incidence and the presence of orofacial alterations that are key elements for diagnosing the disease.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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