

# Lujan Fryns Syndrome - A Case Report

Amit Soni<sup>1,\*</sup>, Ajita Meenawat<sup>2</sup>, Khyati Soni<sup>1</sup>, Vivek Srivastava<sup>3</sup>

<sup>1</sup>Dental surgeon, Brampton Ontario, Canada

<sup>2</sup>Assistant Professor, Department of Periodontics, BBD College of Dental Sciences, Lucknow, India

<sup>3</sup>Assistant Professor, Department of periodontics, Chandra Dental College & Hospital, Lucknow, India

**Abstract** Lujan Fryns syndrome is a condition characterized by intellectual disability, behavioral problems and certain physical features. It is an uncommon condition with unknown prevalence caused by atleast one mutation in the MED12 gene. We report a case which has been diagnosed with Lujan Fryns syndrome.

**Keywords** Lujan Fryns syndrome, Marfanoid habitus, Mental retardation

## 1. Introduction

Lujan Fryns Syndrome (LFS) or X-linked mental retardation with Marfanoid habitus and Lujan Syndrome is an X-linked genetic disorder that causes mild to moderate intellectual disability and features described as marfanoid habitus referring to a group of physical characteristics similar to Marfan syndrome. It includes a tall, thin stature, long and slender limbs with psychopathology and behavioral abnormalities exhibiting a number of malformations affecting the brain and heart. It is inherited as an X-linked dominant character attributing to a missense mutation of MED12 gene. There is currently no treatment for LFS or MED12 malfunction as the exact etiology remains unclear<sup>1</sup>. We report as case of LFS in a 12 year old female patient.

## 2. Case Report

A 12 year old female patient reported to department of Oral Medicine & Radiology with the chief complaint of pain in the upper left back tooth region since one week. Pain was mild, intermittent and accompanied with swelling in the same region since 2 days. The swelling subsided gradually but the pain persisted. On general examination it was found that the patient was hypoasthenic with body weight of 25 kg, height was 137 cm, gray hairs, long extremities and clinodactyly of fifth finger of both hands (Fig 1 & 2). On consultation with the parents it was found that there was partial impairment of sensory and motor functions of patient since birth. They consulted a local medical practitioner 7-8 years back who diagnosed mental retardation in the child and gave medication but there was no improvement. Further the

patient is studying in 2<sup>nd</sup> standard since 3 years and was unable to clear the school examinations.

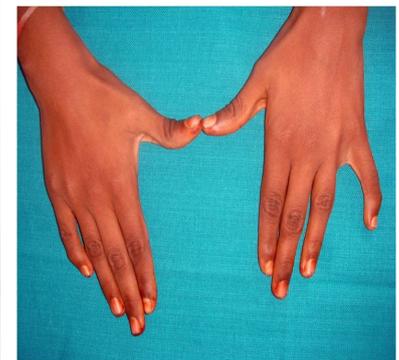


Fig 1

Fig 2

**Figure 1 & 2.** Showing the general body features related to Lujan Fryns syndrome



**Figure 3.** Showing the convex profile

\* Corresponding author:

dramit\_soni@yahoo.com (Amit Soni)

Published online at <http://journal.sapub.org/cp>

Copyright © 2014 Scientific & Academic Publishing. All Rights Reserved



**Figure 4.** Showing the dental abnormalities



**Figure 5.** OPG showing impacted & mixed dentition

On extraoral examination there was presence of dolicocephalic head, long and narrow face, high hair line, broad forehead and nose, incompetent lips, open anterior bite, prognathic maxilla, retrognathic mandible and convex profile (Fig 3). On palpation single, tender submandibular lymph nodes were palpable bilaterally which were mobile, round and approximately 0.5 cm in diameter. On intraoral examination there was presence of high arch palate, crowding and drifting of teeth with anterior open bite, narrow U-shaped maxillary arch and square shaped mandibular arch, mixed dentition, rampant caries, pain on percussion in relation to 26 and habit of tongue thrusting (Fig 4). An IOPA and OPG were taken which showed the presence of impacted teeth in the arch and deciduous teeth which are unable to shed physiologically (Fig 5). Patient was referred to pediatrician who revealed the similar findings except for webbed neck and normal heart sounds for which he suggested the diagnosis of Lujan-Fryns Syndrome. The patient was referred to department of pedodontics for the treatment of tooth 26 and extraction of root stump in relation to 65 under the thorough guidance of pediatrician.

### 3. Discussion

Lujan syndrome are among the XLMR (X-Linked Mental Retardation) syndromes that present itself with great diagnostic challenge for medical/dental practitioners. Individual with this syndrome shows signs of tall stature with asthenic build, macricephaly, tall narrow face, maxillary hypoplasia, high narrow palate with dental crowding, a smaller receding chin, long hands with hyperextensible digits, hypernasal speech, hypotonia, mild

to moderate mental retardation, behavioral abnormalities and agenesis/dysgenesis of corpus callosum [1]. The case presented here also had the same signs and symptoms. It has been suggested that muscle hypotrophy, hypotonia, developmental delay and shyness were more notable before puberty while marfanoid habitus, more specifically the excess of span overheight became obvious only after puberty [1,2].

There is no specific diagnostic test available for confirmation but to rule out, examination should include cardiac examination and ultrasound, ophthalmic examination, chromosomal analysis with special attention for chromosome 5pter & 22q11 and biochemical analysis of aminoacids in plasma and urine [2]. Cardiovascular defects like ventricular septal defect and aortic root dilatation have been reported in few cases [3], but this finding was not present in our case. Regarding chromosomal analysis it has been suggested that there is mutation in MED12 gene [4, 5]. The highly conserved MED12 protein also known as HOPA & TRAP230, is the largest component of the mediator complex which has an essential role in regulating RNA polymerase II activity. The mediator complex contains a large number of subunits, some core elements and others like MED12 that serve as transcriptional facilitators for specific pathways. The importance of MED12 gene is that it is essential for normal development of specific developmental pathways [6-8]. In our case also the pediatrician specified for the genetic analysis but the patient's parents were not ready for further analytical support.

There is no specific treatment for this condition. Patients should be monitored periodically to prevent severity of the condition. Cardiac problems or epileptic seizures should be monitored regularly with special attention on education and psychological follow up [9, 10]. The current management is palliative therapy and may involve special needs education, behavioral therapy and speech therapy. Research is currently focusing on gene therapy, protein replacement, transcriptional regulation, nutritional intervention, regulation of neurotransmission and mRNA based therapy [11-13].

Folate therapy has been tried in the past in the hope that it would help to control inattention and aggressiveness in prepubertal males, but folate deficiency has never been demonstrated and the evidence base is equivocal. Atypical antipsychotics, serotonin reuptake inhibitors and anticonvulsants have all been found to be helpful in treating various aspects of abnormal behavior. The genetic counseling and support of the parents and other family members should not be forgotten [14].

No specific treatment exists for the genetic causes of LFS. However, some measures can be taken to make the life of the person more comfortable. Attention to the heart defects and seizures or other life threatening conditions is essential. A variety of corrective, preventive and intervention therapies may be prescribed [15].

## REFERENCES

- [1] Schwartz C E, Tarpey P S, Lubs H A, Verloes A, May MM, Risheg H, Friez M J, Futreal P A, Edkins S, Teague J, Briault S, Skinner C, Carlin A B, Simensen K J, Joseph S M, Jones J R, Gez J, Stratton M R, Raymond F L and Stevenson R E. The original Lujan syndrome family has a novel missense mutation (p.N1007S) in the MED12 gene. *J Med Genet* 2007; 44: 472-477.
- [2] Buggenhout G V and Fryns J P. Lujan Fryns Syndrome (mental retardation, X-linked, marfanoid habitus). *Orphanet Journal of Rare Diseases* 2006; 1:26.
- [3] Khemka P, Basu M, Ray S, Mukhopadhyay S and Ghosh A. Lujan Fryns syndrome. *Sri Lanka journal of child health* 2012; 41(4):201-202.
- [4] Dieckmann P M, Lucena L C, Dutra L A, Pedroso J L and Borsottini O G P. Marfanoid features and X-linked mental retardation associated with craniofacial abnormalities: lujan fryns syndrome. *Arq Neuropsiquiatr* 2013; 71(1):66-69.
- [5] Basu S, Patil B, Aundhakar C D and Ingale S Y. A rare case of Lujan Fryns syndrome. *International journal of recent trends in science and technology* 2014; 9(3):341-342.
- [6] Schaefer G B and Mendelsohn N J. Clinical genetics evolution in identifying the etiology of autism spectrum disorders: 2013 guidelines revisions. *Genetics in medicine* 2013; 1-9.
- [7] Lauterbach M D, Stanislawski-Zygaj A L and Benjamin S. The differential diagnosis of childhood and young adult onset disorders that include psychosis. *J Neuropsychiatry clin Neurosci* 2008; 20: 409-418.
- [8] Pratap A, Agarwal A, Raja S, Khaniya S, Tiwari A and Kumar A. Fryns syndrome: A lethal mesoectodermal birth defect with variable expression in a pair of monozygotic twins. *Singapore Med J* 2007; 48(4):e107.
- [9] Fareed A. X-linked mental retardation with marfanoid habitus. *Catalogue for transmission genetics in Arabs* 2006; 1-2.
- [10] Geyter C D, Sterthaus O, Miny P, Wenzel F, Lapaire O, Geyter M D and Sartorius G. First successful pregnancy in Switzerland after prospective sex determination of the embryo through the separation of X-chromosome bearing spermatozoa. *Swiss Med Wkly* 2013; 143:w13718.
- [11] Gomes-Periera M and Monckton DG. Chemical modifiers of unstable expanded simple sequence repeats: what goes up, could come down. *Mutat. Res* 2006; 598(1-2):15-34.
- [12] Lin SL and Ying SY. Gene silencing in vitro and in vivo using intronic micro RNAs. *Methods Mol Biol.* 2006; 342: 295-312.
- [13] Berry Kraves E, Krause SE and Black SS. Effect of CX516, an AMPA modulating compound on cognition & behavior in Fragile X syndrome: A controlled trial. *J Child Adolesc Psychopharmacol* 2006; 16(5): 525-40.
- [14] Welch JL and Williams JK. Fragile X syndrome. *Neonatal Ntw* 1999; 18(6): 15-22.
- [15] Berry K, Mahajan S, Sahoo P and Cheeran S. Lujan Fryns Syndrome & Psychosis. *International journal of scientific study* 2014; 2(5): 105-107.