ECRONICON OPEN ACCESS

EC OPHTHALMOLOGY
Case Report

Bilateral Nasal Ectopia Lentis and Major Depressive Disorder in Marfan Syndrome: A Case Report

Rajnish Raj[1], Anuradha Raj[2]* and Vineeta Kumari[3]

[1]*Professor and HOD, Department of Psychiatry, Government Medical College and Rajindra Hospital, Patiala, Punjab, India*
[2]*Additional Professor and HOD, Department of Ophthalmology, All India Institute of Medical Sciences, Bathinda, Punjab, India*
[3]*Junior Resident, Department of Ophthalmology, All India Institute of Medical Sciences, Bathinda, Punjab, India*

***Corresponding Author:** Rajnish Raj, Professor and HOD, Department of Psychiatry, Government Medical College and Rajindra Hospital, Patiala, Punjab, India.

Received: October 06, 2023; **Published:** November 17, 2023

Abstract

Marfan syndrome is characterized by skeletal, cardiac, and ocular abnormalities leading to various presentations in the respective system. Depression can also be seen in this syndrome due to various factors such as unemployment, chronic pain, and cardiac problems. The most characteristic ocular feature is bitemporal ectopia lentis, high myopia, and retinal detachment. This case reports a patient with Marfan syndrome having bilateral nasal ectopia lentis, skeletal abnormalities, and mild depression.

Keywords: *Depression; Marfan Syndrome; Nasal Ectopia Lentis*

Introduction

Marfan syndrome (MFS) is one of the most common inherited connective tissue disorders with a reported incidence of 1 in 3000 to 5000 individuals [1]. It shows classic ocular presentations such as bilateral supero-temporal subluxation of the lens, cataract, myopia, and retinal detachment. Other cardiovascular abnormalities include aortic regurgitation, dilatation, aneurysms, and musculoskeletal abnormalities comprising dolichostenomelia, arachnodactyly, thoracolumbar scoliosis, and pectus deformities. The involvement of the lungs, skin, and central nervous system may also occur due to the defect in the *FBN1* gene of chromosome 15, which produces a connective tissue protein termed fibrillin [2]. We report a case of MFS with depression having an atypical presentation of bilateral nasal subluxation of crystalline lenses, which is usually a homocystinuria feature.

Case Presentation

A 38-year-old male presented with sadness of mood, loss of appetite, decreased sleep, lassitude, and anhedonia for the last two months. There was no past psychiatric history or medical disorders such as diabetes mellitus, hypertension, hypothyroidism, epilepsy, or substance use disorder. The patient was tall and had a slender build with disproportionately long arms, legs, and fingers. Further assessment exhibited painless diminution of vision in both eyes, which was insidious in onset and progressive in nature. He complained of breathlessness on exertion. On Ophthalmological examination, the best corrected visual acuity was 20/60 and 20/80 in the right and left eye respectively with -8.00 Dioptre (D) sphere and -12.00 D sphere. The keratometry for both eyes was 42.75 D/43.25 D @90° and 42.50 D/44.25D @90° respectively. The axial length was 25.8mm and 26.6 mm respectively.

A slit-lamp examination showed symmetrical bilateral nasal ectopia lentis and phacodonesis with iridodonesis in both eyes. On retro-illumination, nasal subluxation of the clear crystalline lens was noticed (Figure 1a and 1b). The anterior chamber was irregular in both eyes with increased depth at the areas of subluxation. Pupils were normal in shape, size, and reaction. Fundus examination showed choroidal sclerosis with normal peripheral retina in both eyes.

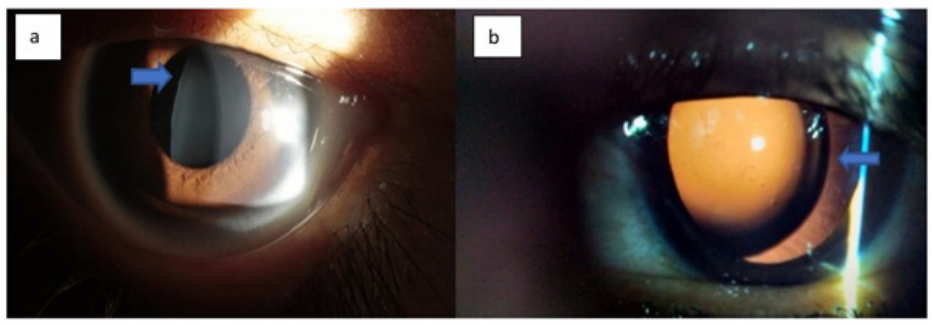

Figure 1: *a. Temporal edge of the lens. b. Nasal subluxation on retro illumination.*

Figure 2: *a: High-arched palate. b: Upper segment ≥ Lower segment.*

On systemic evaluation, various skeletal anomalies were noted which were as disproportionate overgrowth of the long bones, arachnodactyly, a high-arched palate, tooth crowding, retrognathia (recessed lower mandible), joint laxity, and pectus deformities (Figure 2a and 2b). The Steinberg or thumb sign was also present. X-ray posteroanterior view showed right side pleural effusion (Figure 3). On echocardiography, the mitral valve prolapse was identified which showed > 2.5 mm displacement of mitral leaflets into the left atrium during systole. Plasma homocysteine levels were within normal limits which were 12 umol/l. Similar ocular and skeletal history was present in his younger brother and son.

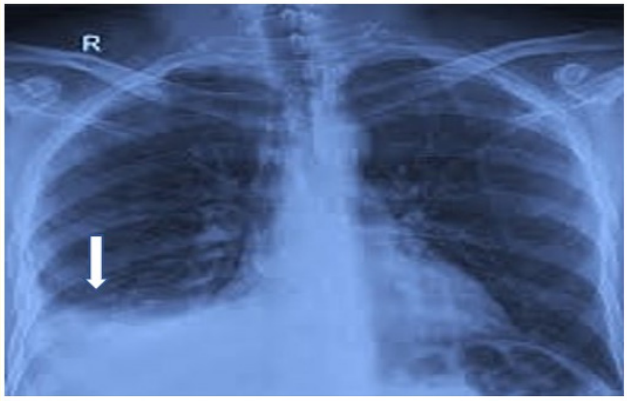

Figure 3: *X-ray chest posteroanterior view shows a right-sided pleural effusion.*

He was diagnosed with a case of MFS with major depressive disorder, single episode, mild (Q87.4 and F32.0 as per ICD-10). On Montgomery and Asberg Depression Rating Scale (MADRS) [3], his score was 14 and his Clinical Global Impression- severity (CGI-S) score was 3. He was given treatment for depression with selective serotonin reuptake inhibitor (SSRI escitalopram 5 mg per day for 2 weeks and then gradually, increased to 10 mg per day. After 4 weeks, the MADRS scale score was 6, and the CGI-I (Clinical Global Impression-improvement) score was 1, indicating very much improvement after therapeutic intervention. The same drug was advised to be continued for another 5 months with a further plan of gradually tapering down and stopping as per the Good Clinical Practice guidelines and declaration of Helsinki, Geneva.

Discussion

Ectopia lentis may occur as an isolated disorder or associated with systemic syndromes [4]. To diagnose MFS consistently and with prognostic value, they are codified as per the Ghent nosology, 1996 [5]. In the Ghent nosology, clinical features are assessed within seven body 'systems' (skeletal, ocular, cardiovascular, pulmonary, skin/integument, genetic) to determine whether the system provides major criterion or only system involvement (Table 1). The cardiovascular, ocular, and skeletal systems and family/genetic history provide major criteria [6]. Other features associated with MFS include Dural ectasia, spontaneous pneumothorax, recurrent hernia, and striae atrophicae, and all of them are considered minor findings.

Family history of MFS	No family history of MFS
Presence of any of the following	Aortic root dilatation or dissection AND any of the following
Aortic root dilatation	Ectopia lentis
Ectopia lentis	FBN1 pathogenic variant
Systemic score ≥ 7	Systemic score ≥ 7

Table 1: *Diagnosis of MFS based on revised Ghent nosology, 2010.*

Lens subluxation, the most common ocular abnormality, may occur in 50% to 80% of MFS patients. It tends to be bilateral and symmetric and is reported to be the most specific finding (78%) in Marfan syndrome [6]. In this patient, bilateral nasal ectopia lentis was noticed.

Other manifestations of the ocular system include early and severe myopia, flat cornea, the increased axial length of the globe, hypoplastic iris, and ciliary muscle hypoplasia, causing decreased miosis.

Skeletal anomalies in MFS are exaggerated long bone growth accompanied by scoliosis, pectus deformities, increased joint laxity, long narrow skull (dolichocephaly), a high-arched palate, tooth crowding, retrognathia (recessed lower mandible) or micrognathia (small chin), malar flattening, and downward-slanting palpebral fissures [7]. Pulmonary disease is found in 4 - 15% of patients with MFS [8]. This patient showed various skeletal symptoms including excessive bone growth, arachnodactyly, high arched palate, and increased joint laxity with right-side pleural effusion.

Cardiovascular manifestations of MFS include mitral valve prolapse, aortic root dilatation, and dissecting aortic aneurysm. Thoracic aortic aneurysms leading to aortic dissection, rupture, or both is the most life-threatening complication [9]. This patient had asymptomatic mitral valve prolapse.

Bilateral symmetrical supero-temporal ectopia lentis in MFS is the most common and specific (78%) ocular findings [10]. However, the current case presented with bilateral nasal ectopia lentis which is not the usual presentation of MFS but of Homocystinuria. It affects the metabolism of the amino acid methionine and shows an autosomal recessive inheritance pattern with inferonasal ectopia lentis. As our patient had a strong family history and major criteria in ocular, skeletal, and cardiovascular systems involvement, was diagnosed as having MFS.

Graaumans., *et al*. reported that depression scores were significantly higher in MFS cohort than in the general population [11]. To the best of our knowledge, bilateral nasal ectopia lentis in MFS without any skeletal involvement was reported by Palmer., *et al*. [12] but was different from the current case wherein all the major criteria for MFS were fulfilled except atypical bilateral nasal ectopia lentis.

Conclusion

Bilateral inferonasal ectopia lentis is common in homocystinuria but not in MFS. The Ophthalmologist must be aware of the skeletal and cardiovascular presentations even if, the direction of the ectopia is not typically supero-temporal. Therefore, in patients of atypical ectopia lentis with bilateral inferonasal direction, plasma homocysteine levels should be laboratory investigated to rule out its causality. An integrated approach by an Ophthalmologist, psychiatrist, and cardiologist are required to make a prompt diagnosis with its associations thus, impinging on its prognosis.

Bibliography

1. Milewicz DM., *et al*. "Treatment of aortic disease in patients with Marfan syndrome". *Circulation* 11 (2005): e150-e157.
2. Dietz HC., *et al*. "Marfan syndrome caused by a recurrent de novo missense mutation in the fibrillin gene". *Nature* (1991): 337-339.
3. Montgomery SA., *et al*. "A new depression scale designed to be sensitive to change". *British Journal of Psychiatry* (1979): 382-389.
4. Guo X. "A clinical study and analysis of congenital lenticular dislocation". *Eye Science* (1991): 185-189.
5. De Paepe A., *et al*. "Revised diagnostic criteria for Marfan syndrome". *American Journal of Medical Genetics* (1996): 417-426.
6. Loeys BL., *et al*. "The revised Ghent nosology for the Marfan syndrome". *Journal of Medical Genetics* (2010): 476-485.
7. Hamod A., *et al*. "Presenting signs and clinical diagnosis in individuals referred to rule out Marfan syndrome". *Ophthalmic Genetics* (2003): 35-39.

8. Nistala H., *et al*. "Fibrillin-1 and −2 differentially modulate endogenous TGF-beta and BMP bioavailability during bone formation". *Journal of Cell Biology* (2010): 1107-1121.

9. Wood JR., *et al*. "Pulmonary disease in patients with Marfan syndrome". *Thorax* (1984): 780-784.

10. Murdoch JL., *et al*. "Life expectancy and causes of death in the Marfan syndrome". *The New England Journal of Medicine* (1972): 804-808.

11. Cross HE., *et al*. "Ocular manifestations in the Marfan syndrome and homocystinuria". *American Journal of Ophthalmology* (1973): 405-412.

12. Graaumans K., *et al*. "A cross-sectional study on fatigue, anxiety, and symptoms of depression and their relation with medical status in adult patients with Marfan syndrome. Psychological consequences in Marfan syndrome". *Clinical Genetics* (2022): 404-413.

13. Palamar M., *et al*. "Bilateral Nasal Ectopia Lentis with no Skeletal Abnormality: Is it Marfan Syndrome?" *Turkish Journal of Ophthalmology* (2010): 245-247.

Volume 14 Issue 12 December 2023