

Clinical Note

Autosomal dominant Weill-Marchesani syndrome and glaucoma management

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Weill-Marchesani syndrome (WMS) is a rare connective tissue disorder characterized by short stature, restricted movements of the fingers and brachydactyly. Most of these patients are referred to the ophthalmologist with features such as microspherophakia, lens dislocation, severe myopia, acute or chronic glaucoma, and cataract.^{1,2} Although either autosomal dominant or autosomal recessive inheritance has been reported, most cases of WMS were believed to show autosomal recessive inheritance.^{2,3,4} Here, we report the management of glaucoma in 2 brothers with WMS in a family consistent with dominant inheritance.

A 17-year-old male patient was admitted to our hospital with the complaints of strabismus and visual loss. There was a history of gradual increase of myopia in both eyes. Best-corrected vision was 1/10 in each eye with -9.0 -1.0 (180°). He had 40 prism diopters exotropia in his left eye. Both corneas were normal with horizontal corneal diameters of 12 mm. Biomicroscopic evaluation disclosed bilateral iridophacodonesis, microspherophakia, and vitreous liquefaction. Both lenses were centralized. Intraocular pressures (IOP) were 34 mm Hg in the right eye and 35 mm Hg in the left eye with Goldmann applanation. There was positional and synechial angle closure glaucoma in both eyes on gonioscopy. Fundi showed deep excavated and atrophic papillae. His weight was 48 kg, and height was 148 cm (<3rd percentile). His hands and feet were stubby and short. There was a manifest limitation of flexion and extension of the fingers and elbows at 20°. With the diagnosis of WMS, topical anti-glaucomatous medication (Cosopt 2x1 and Alphagan 2x1) was initiated immediately for the control of glaucoma, but at the end of one month follow-up, it appeared that IOPs were decreased to only 24-25 mm Hg, despite maximal anti glaucomatous medication. Failure of controlling glaucoma with topical medications, anterior chamber angle findings, optic nerve damage and his younger age lead us to consider surgical management. Bilateral trabeculectomy with mitomycin-C (MMC) was performed under general anesthesia. There were diffuse and avascular blebs in both eyes in the postoperative period (Figure 1). Both lenses were centralized and although there was some degree of ocular hypotonia in the early postoperative period (5-6 mm Hg bilaterally), IOPs normalized on the fourth postoperative day and were stable for one year. The IOPs were 12 mm Hg

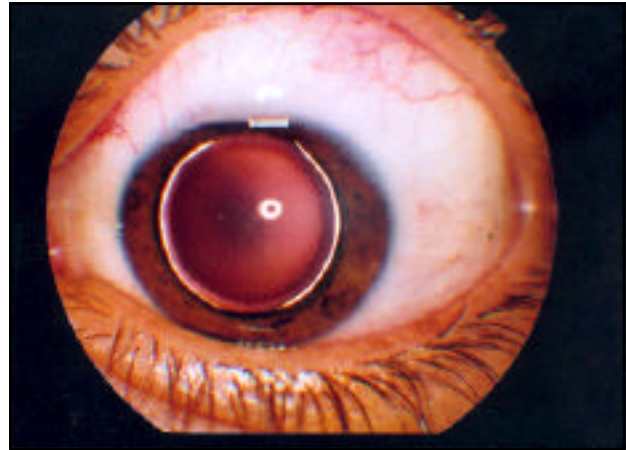


Figure 1 - Microspherophakia and avascular bleb in trabeculectomy with mitomycin-C.

and best-corrected visual acuities were 2/10 in both eyes at the end of one year.

The second patient was the brother of our index patient. He was 15-years-old, and he also had low vision complaints. On examination, his height was 138 cm and weight was 45 kg (<3rd percentile). His fingers were short and stubby. There was a limitation on flexion and extension of fingers and elbows. His best-corrected vision was 7/10 in the right eye and 8/10 in the left eye with -6 diopters of spectacles. Both corneas were normal with horizontal corneal diameters of 11.8 mm. There was iridophacodonesis in both eyes on biomicroscopy and IOPs were 27 mm Hg in the right eye and 26 mm Hg in the left eye. Anterior chamber angles appeared to be narrow and pigmented in both eyes on gonioscopy. Lenses were microspherophakic and centralized in both eyes. Optic discs were highly excavated, and cup to disc ratios were 6/10 in the right eye and 5/10 in the left eye. This patient was also diagnosed as WMS, and regarding the positional anterior chamber narrowness, yttrium-aluminum-garnet laser iridotomy was performed in the upper nasal quadrants in both eyes. The follow-up period lasted for one year and during this period, IOPs were stabilized at 12-14 mm Hg without medication, cup/disc ratio remained stabilized and visual acuities remained at the same level.

The father was 45-years-old and had -5.0 degrees of myopia in both eyes. His biomicroscopic and funduscopy examination revealed normal findings, both lenses were normal and centralized. His height was 163 cm, and weight was 65 kg. He had a rough face appearance, and his fingers and toes were short and stout. Flexion and extension of the wrists were restricted (30° at flexion and 20° at extension). His mother had died years ago in her middle ages due to

heart failure and was a possible case of WMS. Although we could not source the medical records of this patient, we learned from her son that she also had short stature, short and stubby fingers and early blindness due to glaucoma.

Our 2 cases presented the typical features of WMS. However, their father had only high myopia as ocular manifestation of the disease. Another possible case was the grandmother with a history of short stature and blindness due to glaucoma who was reported to have died years ago. The mother and other family individuals were normal.

Parental consanguinity was not present, and regarding the type of penetrance, dominant inheritance is likely in this family. Severely reduced penetrance and a wide range of expressivity may be the possible explanation of incomplete clinical findings observed in the father.^{1,4,5} Although autosomal-recessive inheritance seems to be the most possible mode of transmission for WMS, dominant pedigrees have also been reported in the literature.¹⁻³ The dominant form of the disease has been described as GEMSS syndrome² (Glaucoma-lens-ectopia-microspherophakia-stiffness-shortness) but Faivre et al⁶ failed to distinguish the autosomal dominant form from autosomal recessive form by clinical findings and stressed the clinical homogeneity and the genetic heterogeneity of the syndrome.

Lens subluxation has been reported to appear between 12-20 years in WMS.¹ Although our 2 patients had bilateral microspherophakia, lens ectopia was not noted. Both patients were closely monitored for the risk of lens subluxation. Acute or chronic glaucoma appears to be the most important vision threatening condition in WMS. There was bilateral chronic angle closure glaucoma due to peripheral anterior synechiae and bilateral trabeculectomy with MMC operation was performed in the first case. The YAG laser iridotomy was performed in the second case to prevent pupillary block formation and angle closure glaucoma due to PAS. The IOPs were normalized and controlled by these procedures in both cases.

Axial lengths of the eyes were related to the existence of glaucoma previously,⁵ but although there were some differences between axial lengths of the eyes, glaucoma was present in both eyes of our cases. Therefore, we believe that, glaucoma in these cases was related to the structural and positional abnormalities of the lens and angle closure due to PAS.

In conclusion, different mechanisms may play a role in glaucoma development in WMS, and both eyes must be closely monitored for early diagnosis and treatment.

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