

Author:

Please act as a senior ophthalmologist. Based on the information provided above, carefully analyze the auxiliary examination results of this patient, and provide your preliminary diagnosis, diagnostic rationale, differential diagnosis, and treatment plan. Requirements: 1. The diagnosis must be comprehensive, aiming to be as thorough as that of an advanced glaucoma specialist. 2. Provide a detailed interpretation of this patient's auxiliary examination results, and considering their specific characteristics, offer a personalized treatment plan.

GPT 4o:

Preliminary Diagnosis:

Based on Ms. Jia**'s symptoms and auxiliary examination results, the preliminary diagnosis is as follows:

1. Left eye acute angle-closure glaucoma (AACG)
2. Partial lens subluxation in the left eye
3. Bilateral posterior vitreous detachment (PVD)
4. Corneal endothelial disease in the left eye

Diagnostic Basis:

Clinical Presentation:

- Sudden onset of left eye vision loss with eye pain persisting for two months, consistent with symptoms of acute angle-closure glaucoma.
- Intraocular pressure (IOP): Right eye 20 mmHg, left eye 17 mmHg. Although not significantly elevated, this may be due to the use of intraocular pressure-lowering medications.

Auxiliary Examination Results:

1. Visual Field Test (HFA 24-2)

- Significant visual field defects in the left eye, with reduced central visual sensitivity. MD24-2: -4.33 dB, PSD24-2: 2.18 dB, suggesting functional damage.
- The right eye also shows mild defects: MD24-2: -3.81 dB, PSD24-2: 2.15 dB, and GHT borderline, indicating possible early-stage glaucoma or other optic nerve conditions.

2. Ultrasound Biomicroscopy (UBM)

- The anterior chamber in the left eye is shallow, with the peripheral iris bulging, part of the iris root attached to the angle structure, and the ciliary body moved forward. Some

zonules appear irregular, indicating partial lens subluxation and a narrow anterior chamber.

- The right eye has a shallow anterior chamber but no significant abnormalities in the angle.

3. Corneal Endothelial Examination

- A dark area in the central endothelial surface of the left eye suggests corneal endothelial disease.

4. Fundus Examination

- No obvious abnormalities in the optic discs of both eyes. The C/D ratio is normal, and the foveal reflex is present. The retina appears flat in the posterior pole.

5. Ocular Color Doppler Ultrasound

- Slight vitreous opacities in both eyes suggest posterior vitreous detachment.

Differential Diagnosis:

1. Primary Open-Angle Glaucoma (POAG)

- Given the mild visual field defects and borderline GHT in the right eye, the possibility of POAG should be excluded.

2. Optic Neuritis

- Considering the patient's vision loss and visual field defects, optic neuritis must be considered.

3. Corneal Endothelial Dystrophy

- The corneal endothelial disease in the left eye needs to be differentiated from corneal endothelial dystrophy.

Treatment Plan:

Treatment Goals:

1. Control intraocular pressure, relieve symptoms, and prevent further visual function damage.
2. Treat lens subluxation and corneal endothelial disease.

Medication:

1. Intraocular Pressure-Lowering Medication:

- Use β -blockers (e.g., timolol) or carbonic anhydrase inhibitors (e.g., dorzolamide) to control intraocular pressure.

2. Topical Anti-inflammatory Medication:

- Use nonsteroidal anti-inflammatory drugs (e.g., diclofenac sodium eye drops) to reduce inflammation.

Surgical Treatment:

1. Laser Iridotomy:

- For the left eye acute angle-closure glaucoma, consider laser iridotomy to open the angle and reduce intraocular pressure.

2. Lens Surgery:

- For lens subluxation, lens extraction with intraocular lens implantation can be considered.

Regular Follow-Up:

1. Vision and Intraocular Pressure Monitoring:

- Regular check-ups for vision and intraocular pressure to monitor disease progression.

2. Visual Field Testing:

- Regular visual field tests to assess changes in visual function.

3. Corneal Endothelial Examination:

- Monitor the corneal endothelial status to prevent further deterioration.

Personalized Treatment:

- Given the patient's surgical history and current symptoms, detailed communication about the risks and expected outcomes of surgery is essential. A tailored treatment plan should be developed based on the patient's specific situation.

By following the above diagnosis and treatment plan, the goal is to control the condition, alleviate symptoms, and improve the patient's quality of life.

Table S1: Demographic and Professional Characteristics of the Ophthalmologists

Ophthalmologist	Age (years)	Gender	Years of Experience	Education
Ophthalmologist A	37	Female	10	MD, master
Ophthalmologist B	32	Male	2	MD, master
Ophthalmologist C	44	Female	15	MD, PhD