



Zona pigment glaucoma and surgical treatment

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Abstract

Zona Pigment Glaucoma (ZPG) commonly caused by uveitis with or without blockage pupil or obstructed trabecular meshwork. Accumulation of macrophages in severe inflammation over a short period of time may acutely obstruct the meshwork and result in transient elevation of intraocular pressure in association with exercise of dilation of pupil. In treating pigmentary glaucoma dapiprazole, an alpha-adrenergic blocking agent, was found to be effective and in preventing pressure spikes after exercise. Dapiprazole causes miosis without affecting accommodation. Laser iridotomy reduced the incidence of ocular hypertension in pigment dispersion syndrome, although the effect was less pronounced in persons older than 40 years of age.

This paper reported two typical cases of ZPG that were treated by surgery. The first was a young man patient with mild IOP and HIV (+), and the second was an elderly patient with high IOP and HIV (+). Both patients with glaucoma were surgical treatment. Surgical treatment associated with medical treatment included: antiviral drug with steroid and acetazolamide that inhibits carbonic anhydrase making lower IOP. These 2 patients have normalized intraocular pressure but did not have restored vision. Their vision post operation is still blind. Some satisfying results were reported here after one-year follow-up. Some considerations on HZO were discussed in this paper for General Practitioners and Eye Doctors.

Keywords: herpes zoster ophthalmicus, zona pigment glaucoma, trabeculectomy

Introduction

Pigmentary glaucoma is a secondary glaucoma. Pigment dispersion syndrome (PDS) is seen in the cases of viral iridocyclitis, uveitis, and bilateral acute iris trans illumination. The most common of viral iridocyclitis are herpes simplex virus and varicella zoster virus can be called herpes zoster ophthalmicus (HZO). The transition from pigment dispersion syndrome to pigmentary glaucoma was found to be 20%. The main risk factors for the transition were ocular hypertension and myopia

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2. Cases report

Case 1: (figure attachment)

A 29- year- old, male, worker. Two months ago he had an eruption in left eye accompanied with intensive pain; he was then diagnosed and treated for ophthalmic zona by eye doctors. His pain has prolonged until three weeks previously, he was treated pulmonary tuberculosis. One week before he had a severe pain in left eye and he was then admitted author's provincial hospital. Up to this time he and his family were not disclosed HIV (+) by any doctors.

+General examination: 1.65-meter-tall; weight: 49kg; pulse 72/minute; blood pressure: 120/70mmHg; temperature: 37.5 Celsius.

+Ocular examination: Visual acuity: 6/12 = OD, 6/60= OS. Intraocular pressure: 17mmHg=OD; 28mmHg=OS. Right eye: normal. Left eye: congestion of conjunctiva, epithelial and stroma of cornea: edema; shallow anterior chamber; pupil: 5mm diameter; direct photomotor reflex to pupil: negative. No observe posterior chamber. Ocular movement: normal.

Paraclinic: RBC=2900, 000cells/mm³ WBC=5,800cells/mm³ (Neutrophile: 80%, Lymphocyte: 20%); Bleeding time=2'; Coagulation time =6'. HIV=Elisa (+).

Chest X-ray: opacity of 2 top of lungs.

Diagnosis: Left eye=Zona Pigment Glaucoma on patient with HIV (+) and pulmonary tuberculosis. Treatment: Diamox

250mmg: 2tablets x 3 times/daily and trabeculectomy. Results: One week after surgery: Visual acuity: 6/12 =OD; 6/18=OS; IOP=16mmHg OU. One year after surgery: Visual acuity: 6/12 =OD; 6/60=OS; IOP=16mmHg OU

▪ Case 2: (figure attachment)

A 66-years-old man, farmer: Five days before he had suddenly headache then located at right frontal region and 2 days follow an eruption appeared on the same position in right eye accompanied with intensive pain and he was admitted author's provincial hospital.

+General examination: Height: 1.65 meter; Weight: 60kg; Pulse: 80/minute; Blood pressure: 120/70 mmHg; Temperature: 37 Celsius.

+ Ocular examination: Visual acuity: 6/12 = OD. 1/60 = OS, Intraocular pressure (IOP): 18 mmHg = OD; 38 mmHg = OS.

+ Left eye: Redness and edema of upper eye lid, difficulty in movement.

+Injection of conjunctiva, epithelial and stroma of cornea: edema; Shallow anterior chamber; pigment and cells in the anterior chamber- Pupil: 6mm diameter; no reactive pupils. Central mild opacity of crystalline capsule was seen by ophthalmoscope.

+ Ocular movement: normal. Left eye: Central opacity of lens capsules same as OD.

+ Para clinic: RBC = 4,500,000 cells/mm³; WBC = 7,700 cells/mm³ (Neutrophil: 71%, Lymphocyte: 29%); Bleeding time=3'; Coagulation time = 5'. HIV = Elisa (+). PCR Herpes (+). Glycaemia = 5, 6 mmol/L. Chest X-ray: nothing abnormal detected.

Diagnosis: Left eye = Zona Pigment Dispersion Glaucoma / HIV (+).

Treatment: Diamox 250mmg: 2tablets x 4 times/daily and trabeculectomy was done on the day after admission. + Acyclovir 200mg x 4 tablets/daily for 14 days.

+Steroid (dectanyl suspension 1ml) periocular injection and measurement of IOP/ morning and afternoon /daily.

Results: + One day follow: Visual acuity: 2/60 = OS; IOP = 20 mmHg = OS.

Discharge (after one-week treatment: Visual acuity: 6/60= OS; 6/12 = OD; IOP = 17 mmHg OU. + One year after discharge: Visual acuity: 6/60 = OD; 6/12 = OS; IOP = 17mmHg OU.

3. Discussion

3.1. Zona Pigment Glaucoma (ZPG)

ZPG is a secondary glaucoma and commonly caused by uveitis with or without blockage pupil or obstructed of trabecular meshwork. Accumulation of macrophages in this severe inflammation over a short period of time may acutely obstruct the meshwork and result in transient elevation of IOP in association with exercise of dilation of pupil^[1,2]. Uveitis may be occurs after someday post herpetic zona, 40% of patients may have a long period 2 years with no symptom^[2]. The diagnosis of ZPG depended on an elevation of IOP (22 & 28 mmHg) on hospital admission associated with the eruption of vesicles distributed along trigeminal nerve PCR herpes (+). Transition to PG from PDG according to Mastropasqua^[3]:

Stage 0: Iris chafing/ angle pigmentation

Stage 1: Iris chafing/ angle hyperpigmentation

Stage 2: Iris chafing/ angle hyperpigmentation/on the corneal endothelium, IOP>21mmHg, Visual Field: Normal

Stage 3: Visual Field and diagnosis PG

Our diagnosis of ZPG depended on an elevation of IOP (22 & 28 mmHg) on hospital admission associated with the eruption of vesicles distributed along trigeminal nerve PCR herpes (+).

Case 1: glaucoma occurred 1 month after zona with moderate condition treatment with antiviral drug and inhibition of carbonic anhydrase drug.

Case 2: 10 days after zona with severe condition. In uveitis 25% of patients may be change of pigment of iris. Posterior uveitis, papillitis, retinitis were rarely seen after zona. Treatment case 1 with antiviral drug and inhibition of carbonic anhydrase drug associated with steroid may be helpful in restore vision. Steroids have been reported to cause biochemical and morphological changes in the trabecular meshwork, decreasing aqueous outflow facility. In case 2, it was hardly to differentiate with trabeculitis. For treatment ZPG two problems were faced: treatment of zona and of glaucoma which consisted medical treatment and surgical treatment when IOP did not restore by drugs. Antiviral drugs were prohibitively expensive but were taken in both cases. Local and general steroid has to use for treatment of herpetic uveitis but the risk for open-angle glaucoma (OAG) which should be warned. According to the Mayo Clinic, evidence from clinical trials shows that treatment with steroids tends to be more successful than treatment with antivirals. Some studies showed using local steroid from 4-6 weeks increasing IOP from 6-15 mmHg. Now OAG can be caused by gene TIGR (Trabecular meshwork inducible-glucocorticosteroid response gene)^[4].

* Surgery: According to Henry Saraux surgical glaucoma should be done in the case of ocular hypertension. Both cases: IOP and visual acuity restored with medical treatment, and then surgical glaucoma should not be done. If the IOP does not elevate and visual acuity does not restore surgical glaucoma should be done or not?

3.2. Others problems with ophthalmic zona

* **Ophthalmic Zona and HIV:** Ophthalmic zona may be a marker for AIDS [5, 6]. In Kenya a study of Haroon Awan, Henry Alada showed 98% of AIDS patients having ocular manifestations and 23 % of ophthalmic zona with HIV (+) in the age, range 8 to 47 years old. Our cases are out of this age group. Diagnosis of typical zona is usually easy with the eruption of vesicles distributed along trigeminal nerve but in the atypical case is difficult and now with polymerase chain reaction (PCR) is a gold standard in diagnosis DNA of zona virus. The general practitioners, eye doctors should be cautious in *atypical cases of zona*, as well as particularly in the phrase of *pre-eruption of vesicles* because of transmission both zona and HIV.

* Lagophthalmia: may be caused by contracted scar of frontal skin plus upper eye lid with or without paralysis of elevator muscle. Tarsography should be done first in order to decrease the evaporating of eye watering contributed the regulation of pressure of eye liquefilm; the second is the upper lid reconstruction^[7].

* Strabismus: may be caused by the paralysis of ocular muscles need to be surgical correction^[8].

* Cornea: The decreasing of corneal sensibility post herpetic zoster may reversible or irreversible because of corneal epithelial

damages. Surgeries in these patients as glaucoma, cataract has to be warning.

* Iris: The paralysis of constricted sphincter of iris may lead to dilation of pupil so-called atypical Argyl Robertson syndrome [1]. Case 1: pupil constricted 3 months later; case 2: pupil did not constrict well after 1-year follow-up.

Classification and treatment of herpetic neuralgia: [9, 10, 11, 12]

Classification and treatment of herpetic neuralgia:	
Acute herpetic neuralgia (AHN)	Post herpetic zoster neuralgia (PHN)
* AHN < 3 months	* PHN: > 3 months
* prodrome → vesicles	* during: > 3 months to years
* phrase of recovery	* Intermittent → stop
Treatment: AHN	PHN
1. Antiviral drugs: Acyclovir...7days	1. Antidepressive drug: Imipramine
2. Prednisolone 40mg/daily/2 weeks	2. Aspirine, Capsaine
3. Analgesics: narcotic & non-narcotic	3. Physiotherapy
4. Block sympathetic drugs	4. Anticonvulsive drugs: Carbamazepine

Fig 1



Fig 2

3.3. Prevention: Adults 60- year-old and over should have a single dose of zoster vaccine whether they have had herpes zoster or not. This vaccine has been shown to decrease the incidence of zoster [13]

4. Conclusion

Both patients with glaucoma were surgical treatment. Surgical treatment associated with medical treatment included: antiviral drug with steroid and acetazolamide. These 2 patients have normalized intraocular pressure but did not have restored vision one-year follow-up. Their vision post operation is still blind. With ZPG surgery may not have as high a success rate as because the eye is prone to inflammation, the opening created has a higher risk of closing. So ZPG should be actively treated by medical treatment and prognosis for visions patients. Some satisfying results were reported here and some considerations on HZO were discussed in this paper for General Practitioners and Eye Doctors.

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