Medical Treatment for Zona Pigment Glaucoma

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Abstract:

Pigment dispersion syndrome is seen in many conditions, such as, viral iridocyclitis, uveitis, and bilateral acute iris transillumination. The most common of which is herpes simplex virus and varicella zoster virus causes viral iridocyclitis, uveitis. Herpes Zoster Ophthalmicus (HZO) does not a fatal cause but a blind cause as well as prolonged pain leads to disturbance and difficulty in treatment for patients, and may be a marker for AIDS particularly in young persons. 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. 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 the exercise of dilation of the 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 medical treatment and glaucoma surgery were not be done. The first was an elderly woman patient with mild IOP and the second was an older man patient with moderated IOP. Both patients are HIV (-).Medical treatment included: antiviral drugs with steroids and acetazolamide that inhibits carbonic anhydrase making lower IOP. These 2 patients have restored vision and have normalized intraocular pressure, and 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, medical treatment.*

1. Introduction

Pigment dispersion syndrome is seen in many conditions, such as, viral iridocyclitis, uveitis, and bilateral acute iris transillumination. The most common of which is herpes simplex virus and varicella zoster virus causes viral iridocyclitis, uveitis. Herpes Zoster ophthalmicus (HZO) does not a fatal cause but a blind cause as well as prolonged pain leads to disturbance and difficulty in treatment for patients, and may be a marker for AIDS particularly in young persons. 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. 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 the exercise of dilation of the 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. The first was an elderly woman patient with mild IOP and the second was an older man patient with moderated IOP. Both patients are HIV (-) and glaucoma surgery was not be done. Medical treatment included: antiviral drugs with steroids and acetazolamide that inhibits carbonic anhydrase making lower IOP. These 2 patients have restored vision and have normalized intraocular pressure, and 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 included prevention.

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2. Cases Report:

Case 1: (figure attachment)

A 59-year-old white woman, the farmer was referred to us. History: One month before she had suddenly headache located at the right frontal region and 2 days follow an eruption appeared on the same site in the right eye accompanied by intensive pain. She was then treated for zona by a private general practitioner. Her pain has decreased during one week treatment but her vision is poor. So she was admitted author's provincial hospital.

1. General examination: Height: 1.50 meter; Weight: 55kg; Pulse: 78/minute; Blood pressure: 110/70 mmHg; Temperature: 37 Celsius.

+ Ocular examination: Visual acuity: 3/60 = RE, 6/12 = LE.

+ Intraocular pressure (IOP): 22 mmHg = RE; 16 mmHg= LE.

Right eye: difficulty in movement, pain with the press on the globe and V1frontal / nasal positions.

+ Epithelial and stroma of cornea: mild edema; Shallow anterior chamber; pigment and cells in the anterior chamber.

+ Irregular pupil (5 mm RE, 4 mm LE); minimally reactive pupils..

+ Ocular movement: normal.

Left eye: no abnormality detected.

+ Paraclinic: RBC = 4000,000 cells/mm3; WBC = 7,800 cells/mm3 (Neutrophil: 72%, Lymphocyte: 28%); Bleeding time = 3'; Coagulation time = 6'. HIV = Elisa (-). Glycaemia = 5,1 mmol/L.

+ Chest X-ray: nothing abnormal detected.

2. Diagnosis: Right eye =Zona Pigment Glaucoma

3. Treatment:

+Acyclovir 200mg x 4 tablets/daily x 14 days. Or Zovirax (acyclovir, Glaxo Smith Kline) 800mg five times daily for seven to 10 days.

+Acetazolamide 250mg x 4 tablets/day, for 7 days then drop a haft dose till turning normal IOP.

Results:

+ One day follow: Visual acuity: 6/18 = LE; IOP = 18 mmHg = LE.

Discharge (after one week treatment): Visual acuity: 6/12 = LE; 6/9 = RE; IOP = 17 mmHg OU.

+ One year after discharge: Visual acuity: 6/60 = LE; 6/12 = RE; IOP = 18mmHg OU.

Case 2: (Figure 2): A 62 year- old - male, farmer presented with five days before he had suddenly headache then located at right frontal region and 2 days follow an eruption appeared on the same area 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: 6/60 = RE, 6/12 = LE.

+ Intraocular pressure (IOP): 18 mmHg = RE; 28 mmHg = LE.

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

+ Injection of conjunctiva, epithelial and stroma of cornea: edema; Shallow anterior chamber; Irregular pupil (5 mm RE, 3 mm LE); minimally reactive pupils Central opacity of crystalline capsule.

+ Ocular movement: normal. Left eye: Central opacity of crystalline capsule same as RE.

+ Paraclinic: RBC = 4.500,000 cells/mm3; WBC = 7,700 cells/mm3 (Neutrophil: 71%, Lymphocyte: 29%); Bleeding time=3'; Coagulation time = 5'. HIV = Elisa (-). Glycaemia = 5,6 mmol/L. Chest X-ray: nothing abnormal detected.

2. Diagnosis: Right eye = ZPG Zona Pigment Glaucoma

3. Treatment: Acyclovir 200mg x 4 tablets/daily x 14 days.

Continuing 6 months with 400mg/daily for prevention recurrences.

+Acetazolamide 250mg x 4 tablets/day. for 7 days then drop a haft dose till turning normal IOP.

Results:

+ One day follow: Visual acuity: 6/12 = RE; IOP = 20 mmHg = RE.

Discharge (after one week treatment): Visual acuity: 6/9 = RE; 6/9 = LE; IOP = 17 mmHg OU.

+ One year after discharge: Visual acuity: 6/9 = RE; 6/9 = LE; IOP = 17mmHg OU.

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3. Discussion:

3.1. Zona Pigment Glaucoma (ZPG)

ZPG commonly caused by uveitis with or without blockage pupil or obstructed of the 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 the exercise of dilation of the pupil. Uveitis may occur after some day post herpetic zona, 40% of patients may have a long period of 2 years with no symptom [1,2].

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

Transition to PG from PDG according to Mastropasqua: [2]

Stage 0: Iris chafing/ angle pigmentation

Stage 1: Iris chafing/ angle hyperpigmentation

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

Stage 3: Visual Field and diagnosis of PG

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

Case 2: 10 days after zona with a severe condition. In uveitis 25% of patients may be a change of pigment of iris [1]. Posterior uveitis, papillitis, retinitis were rarely seen after zona [2]. Treatment case 1with antiviral drug and inhibition of carbonic anhydrase drug associated with steroids may be helpful in restore vision. According to the Mayo Clinic, evidence from clinical trials shows that treatment with steroids tends to be more successful than treatment with antivirals. 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 ZG, two problems were faced: treatment of zona and of glaucoma which consisted of medical treatment and surgical treatment when IOP did not restore by drugs. Antiviral drugs were prohibitively expensive but were taken in both cases. The local and general steroid has to use for the treatment of herpetic uveitis but the risk

for open-angle glaucoma (OAG) which should be warned. Some studies showed using local steroids from 4-6 weeks increasing IOP from 6-15 mmHg. Now OAG can be caused by gene TIGR (Trabecular meshwork inducible-gluco-corticosteroid response gene) [3]. 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 it be done or not? [4]

3.2. Others problems with ophthalmic zona:

3.2.1 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 the typical zone is usually easy with the eruption of vesicles distributed along the 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 the zona, as well as particularly in the phrase of pre-eruption of vesicles because of transmission both zona and HIV.

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

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

3.2.4 Cornea: The decreasing of corneal sensibility post herpetic zoster may be reversible or irreversible because of corneal epithelial damages. Surgeries in these patients as glaucoma, cataract has to be a warning.

3.2.5 Iris: The paralysis of the constricted sphincter of iris may

lead to dilation of pupil so-called atypical Argyl Robertson syndrome1. Case 1: pupil constricted 3 months later; case 2: pupil did not constrict well after 1 year follow-up.

3.2.6 Treatment of herpetic neuralgia: [9, 10]

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

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 [11].Receiving 400 mg of acyclovir orally twice daily for one year would prevent ocular recurrences in immunocompetent persons who had had an episode of ocular HSV within the preceding year [12].

4. Conclusion:

The 2 cases of ZPG with medical treatment have restored vision and have normalized IOP after one year follow-up. 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. Adults 60- year-old and over should have a single dose of the zoster vaccine to decrease the incidence of zoster.

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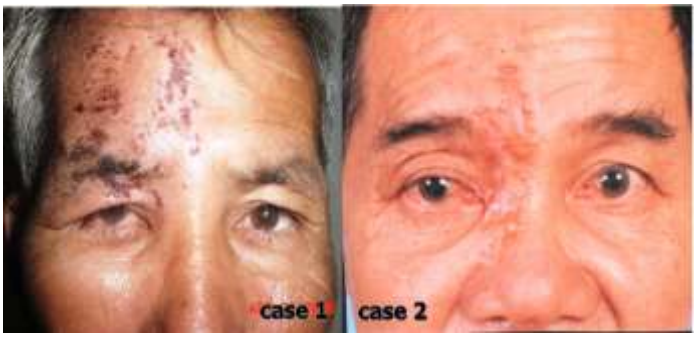

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Duong Dieu received the MD (1978) and PhD (2003). He was chief of the Ophthalmology Department for over 30 years with a clinician/surgeon. From 2010 to now he is a senior lecturer of Faculty of Medicine of Nguyen Tat Thanh University in HCM city- Vietnam