

Herpetic Eye Disease and Glaucoma Related Diagnosis

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Abstract

This is a medical record review that was performed at Lahey Hospital Medical Center. Medical records in the period between 12/2003 and 12/2013 were reviewed; 1098 medical records were reviewed, those who were carrying diagnosis of Herpetic Eye Disease (HED) were divided into 2 groups according to the etiological agent: Herpes Simplex virus (HSV) (n=473) , Varicella Zoster Virus (VZV) (n=625).

The groups were evaluated for the age at diagnosis and the etiologies of elevated Intra ocular Pressure (IOP), whether it was HED related (trabeculitis, steroid response), or non HED Glaucoma Related Diagnosis.

Although many of the features between HSV and VZV subgroups are similar, the VZV group was older and appeared to have more prolonged hypertensive course than the HSV group.

4.3% of patients with HED have significant elevated IOP directly related to disease or treatment.

Secondary glaucoma is a consequence of Herpetic Eye disease, but fortunately surgical intervention is rarely required to control IOP.

Key words: Herpetic Eye Disease, Glaucoma related diagnosis, Ocular Hypertension, steroid responder.

Objectives

Present the overall incidence of glaucoma related diagnosis (GRD) in a population of patients with herpetic eye disease.

Describe the incidence of glaucoma (GI) or ocular hypertension (OHT) directly attributed to HED or treatment [e.g. steroid response (SR)].

Identify differentiating characteristics of GL, OHT or SR within the HED population (VZV vs HSV).

Introduction

Herpetic eye disease is the most common cause of infectious anterior uveitis seen at tertiary referral centers.(1)

Elevated intraocular pressure may be seen as a presenting or complicating feature of herpetic eye diseases (HED) due to both Varicella Zoster Virus (VZV) and Herpes Simplex Virus (HSV).

Potential mechanisms include decreased outflow due to inflammation of the trabecular meshwork (trabeculitis), outflow blockage due to inflammatory and pigmentary debris, as well as a hypertensive response to topical corticosteroids.

Most patients with acute iritis have low IOP. High IOP in a patient with uveitis should raise a high index of suspicion of a herpetic etiology, especially with the presence of other signs such as large greasy KP's, iris transillumination defects and segmental iris atrophy(1).

There are other possible causes for elevated IOP associated with HSV and VZV keratouveitis, Although secondary angle closure may occur due to pupillary block by posterior synechiae, most patients who developed glaucoma had open angles.(2) This is likely attributed to increase in aqueous debris from elevated aqueous proteins, fibrin, and inflammatory cells.(3,4) Consecutive damage to the trabecular meshwork by HSV and VZV infection has also been noticed (12).

Steroid response glaucoma could be another mechanism of IOP elevation associated with herpetic keratouveitis, Treatment with topical steroids will reduce the risk of persistent or progressive stromal keratouveitis, but should be adjusted according to the IOP values after starting steroid treatment.(6,7,8)

The purpose of our study is to present the overall incidence of glaucoma related diagnosis (GRD) in a population of patients with herpetic eye disease; describe the incidence of glaucoma (GI) or ocular hypertension (OHT) directly attributed to HED or treatment [e.g. steroid response (SR)] and to identify differentiating characteristics of GL, OHT or SR within the HED population (VZV vs HSV).

Materials and Methods

This is a retrospective medical records review that was conducted in patients evaluated at the Lahey Hospital and Medical Center Department of Ophthalmology between 12/2003 and 12/2013.

All the records were screened for ICD-9 codes of Herpetic Eye Disease (053.2... and 054.4...).

All medical records of patients with both HED and concurrent GRD codes were reviewed to identify GRD directly attributable to HED or treatment.

Elevated IOP was considered significant if ≥ 25 on two consecutive measurements.

Conclusion

This study specifically separated causes of IOP in Herpetic Eye Disease.

Although many of the features between HSV and VZV subgroups are similar, the VZV group was older and appeared to have a more prolonged hypertensive course than the HSV group.

Surgical intervention was rare, consistent with literature.

Results

1,098 patients were included in our medical review; 57% carried the diagnosis of VZV and 43% had HSV. 32% had Glaucoma related diagnosis (GRD) and Herpetic Eye Disease (HED).

The average age of presentation was 67 years for VZV diagnosis and 58 years for HSV diagnosis.

In the majority of patients, the GRD was not directly related to HED (87% had unrelated glaucoma related diagnosis).

Approximately 4% of all patients with HED had elevated IOP directly related to HED or treatment. (Table 1 - next page).

In only 13% of patients identified with both HED and GRD was the elevated IOP directly related to HED or treatment.

HZV patients appeared older than HSV patients and approached statistical significance.

Chronic elevated IOP (requiring treatment ≥ 3 months) due to inflammation was more often noted with VZV (Figure 1 - next page).

Table 1: shows patient distribution of the total number of medical records reviewed, the number of cases with glaucoma related and unrelated to HED diagnosis, average age of presentation and average age to IOP elevation

	TOTAL (%)	VZV (%)	HSV (%)
Total HED	1098	625 (57%)	473 (43%)
GRD+HED	349 (32%†)	218 (35%†)	131 (28%†)
GRD unrelated to HED (preexisting or post-herpes)	302 (27%)	189 (30%)	113 (24%)
OHT/GL/SR directly related to HED	47 (4.3%*) (13%**)	29 (4.6%*) (13%**)	18 (3.8%*) (14%**)
Ave age (years)	63	67	58
Ave days to inc IOP	143	118	181

HED=Herpetic Eye Disease

GRD-Glaucoma Related Diagnosis

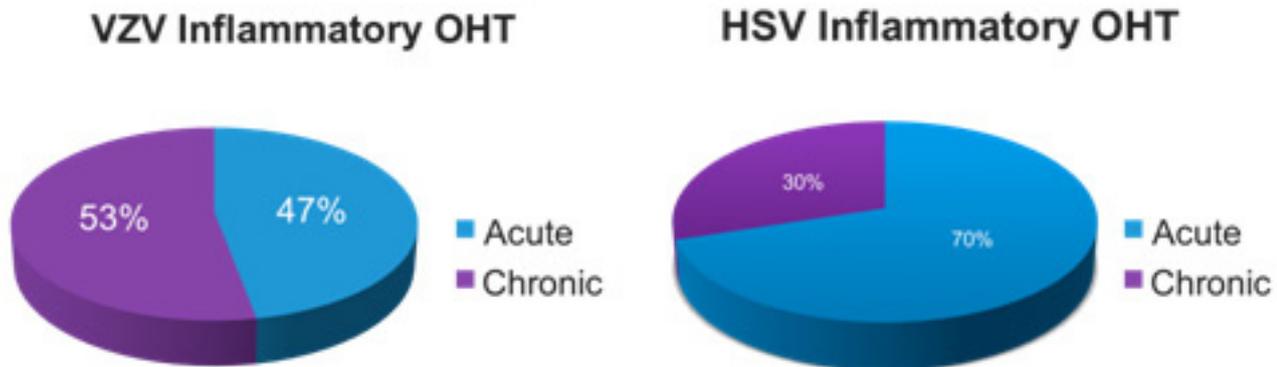
OHT/GL/SR- Ocular Hypertension/ Glaucoma/ Steroid Responder

† % out of Total HED (HSV +VZV)

* % out of Total HED population

** % out of GRD + HED

Figure 1: Rates of Inflammatory OHT (Ocular Hypertension)



Peak IOPs and number of glaucoma medications used were similar between HSV and VZV groups (Data not presented).

We were able to classify the etiologies of increased IOP among this group (Table 2). We found that 2.5% had an inflammatory etiology, 1.4% was due to steroid response and 0.5% was combined effect of inflammatory and steroid response.

Table 2: Etiology of Increased IOP

	TOTAL	VZV	HSV	P value
INFLAMMATORY	27 (2.5%) 14M/13F	17 (2.7%) 10M/7F	10 (2.1%) 4M/6F	NS
Age at HED	64	71	56	p=.07
Days Until OHT	120	67	210	NS
SR	15 (1.4%) 9M/6 F	7 (1.1%), 5M/2F	8, (1.7%) 4M/4F	NS
Age at HED	61	60	62	NS
Days Until OHT	212	263	168	NS
INFLAMMATORY + SR	5 (0.5%) 3M/2F	4 (0.6%) 2M/2F	1* (0.2%) 1M	NS
Age at HED	67	70	57	NS
Days Until OHT	65	80	5*	NS

* 1 Patient

HED=Herpetic Eye Disease

GRD-Glaucoma Related Diagnosis

OHT/GL/SR- Ocular Hypertension/ Glaucoma/ Steroid Responder

† % out of Total HED (HSV +VZV)

* % out of Total HED population

** % out of GRD + HED

Surgical intervention was rare, consistent with the literature.(8)

Table 3: Patients requiring surgical intervention

	HED	VZV	HSV
Inflammatory	3	2	1
Steroid Responders	2	1	1

Discussion

This study specifically separated causes of IOP in HED (Inflammation vs Steroid Response vs Mixed diagnosis).

4.3% of patients with HED have significant elevated IOP directly related to disease or treatment.

Although many of the features between HSV and VZV subgroups are similar, the VZV group was older and appeared to have more prolonged hypertensive course than the HSV group.

Surgical intervention was rare, consistent with literature.

Study limited by retrospective study design.

Some differences between HSV and VZV sub groups approached statistical significance but small study population limited critical statistical evaluation.

Future study of larger population of patients may help better define potential differences between HSV and VZV.

Although by ICD 9 searching 32% of patients with HED had associated GRD, the vast majority were unrelated to herpes.

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