Outcomes in Pediatric Glaucoma

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Introduction

- Pediatric Glaucoma is a heterogeneous group of disorders with unique management challenges, namely an uncommon occurrence, with restricted evaluation techniques, and young patients.
- Challenges faced in treatment plans:
  - Young eyes are more sensitive so elevated IOP can cause structural changes to the eye (e.g. buphthalmos)
  - Etiology of vision impairment is multifactorial
- Previously studied risk factors for visual impairment are unilateral disease, multiple surgeries, poor vision at diagnosis, and other ocular comorbidities.
- Chang et. al (2018) conducted a pilot study of 15 pediatric patients and examined the impact of certain predictive factors on long-term visual acuity and IOP-control outcomes and creating a severity scale.

Objectives

- Determine visual outcomes and risk factors for vision loss for patients with childhood onset glaucoma
- Externally validate the severity scale being developed by the Childhood Glaucoma Research Network
- Explore potential additional risk factors that may impact long term visual outcomes: insurance type, patient adherence to prescribed follow-up (number of no-show appointments)

Methods

- Retrospective study of UC Davis patients from 2000-2019
- Inclusion criteria: Pediatric patient with a diagnosis of pediatric glaucoma or Adult patient with history of pediatric glaucoma, previously diagnosed and/or treated
- Exclusion criteria: Patients with less than 5 years of follow-up
- 169 of 177 childhood glaucoma patients, with 93 patients meeting 5 year follow-up requirement
- Main outcome: final best-corrected visual acuity, based on WHO classification
- Univariate analysis

Patient Characteristics

| Age at presentation	(months)	(years)
Mean ± SD	55.69 ± 74.74	4.69 ± 6.23
Range	0 – 444	0 – 37
Gender (n, %)		
Male		46 (49%)
Female		47 (47%)
Race (n, %)		
White		47 (51%)
Black		5 (5%)
Asian		4 (4%)
Multiracial		5 (5%)
Unknown / not reported		32 (34%)
Ethnicity (n, %)		
Not Hispanic or Latino		60 (65%)
Hispanic or Latino		24 (26%)
Unknown / not reported		9 (9%)
Insurance type (n, %)		
Private		52 (56%)
Medicaid		33 (35%)
Unknown		8 (9%)
Number of no-show appts		
Mean ± SD		3.98 ± 5.44
Median		2
Range		0 – 27
Duration of follow-up (years)		
Mean ± SD		9.64 ± 3.60
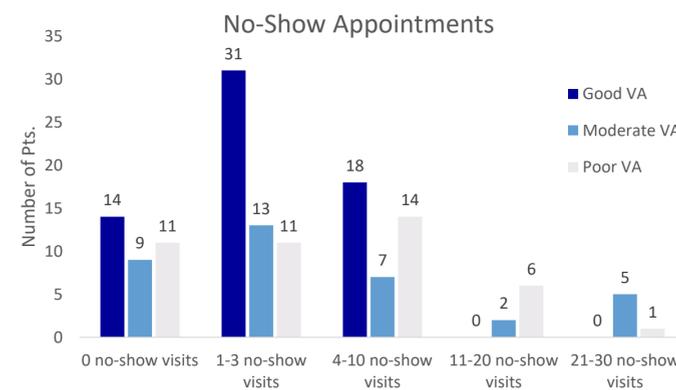
Figure 1. Risk Model and Number of No-Show Appointments: Correlation between good visual acuity (VA) and Fewer No-show appointments.
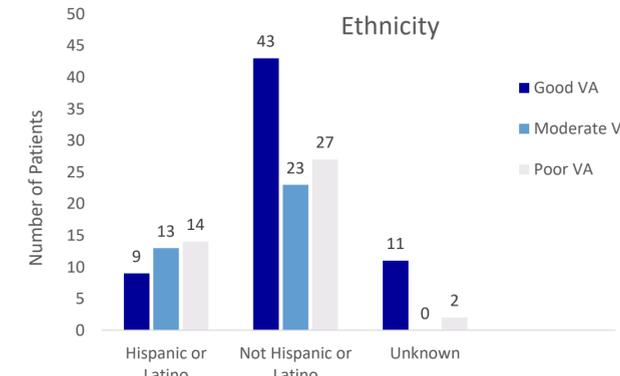

Figure 2. Risk Model and Ethnicity: Correlation between good visual acuity (VA) and not Hispanic or Latino ethnicity.
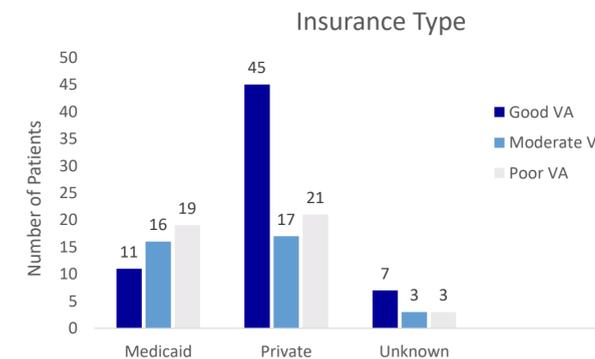

Figure 3. Risk Model and Insurance Type: Correlation between good visual acuity (VA) and Private Insurance.

Significant Correlations

Demographics	p-value
Gender	0.201
Race	0.515
Ethnicity	**0.005**
Insurance type	**0.021**
# of no-show appts	**0.024**
Disease characteristics	
Laterality	0.163
Glaucoma subtype	**0.005**
# of surgeries	0.164
Clinical outcomes	
Presence of media opacity	**<0.001**
Failed amblyopia therapy	**<0.000**
Failed angle surgery	0.342

Results

- Ethnicity (non-Hispanic and Hispanic or Latino) was associated with poor visual outcomes (p = 0.005).
- Of our 93 patients, 52 (56%) had private insurance, 33 (35%) had Medicaid, and 8 (9%) had unknown insurance type.
- Private insurance was associated with a better outcome (p = 0.021).
- Many patients missed appointments (3.98 ± 5.44 average no-show rate) but increased no-shows were associated with poor visual acuity (p = 0.024).

Conclusion

- Our study confirms previously-studied risk factors for visual impairment: Ethnicity, Glaucoma subtype.
- Moreover, our study confirms long-suspected and highly significant risk factors for visual impairment: Insurance type and Number of no-show appointments.
- Help develop targeted interventions for glaucoma care.
- Largest long-term cohort for childhood glaucoma in the EMR era
- Long-term granular data allows exploration of risk factors for vision loss not previously identified
- Future aims are to expand study to other pediatric glaucoma centers around the United States to further develop risk models for visual loss in childhood glaucoma

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