Intravitreal Injections as a Leading Cause of Acute Postoperative Endophthalmitis – a Regional Survey in England

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Introduction

Controversies in endophthalmitis management persist, and substantial heterogeneity of practice patterns and treatment protocols continue to exist worldwide. [1-3]

The external validity of studies on acute postoperative endophthalmitis is affected by the heterogeneity of diagnostic criteria, microbiological results, and treatment protocols, which may affect the generalisability of the results to our daily clinical practice.

We aimed to characterize and evaluate the contemporary practice patterns and outcomes of all causes of acute postoperative endophthalmitis in a relatively homogenous real world NHS setting, across a region in England.

Methods

We conducted a multicentre retrospective cohort study under the auspices of the Oxford Trainee Research Network, which included 7 hospitals across 4 trusts. The study was registered as an audit at all sites.

Patients presenting with acute postoperative endophthalmitis throughout the Thames Valley region from 1 January 2017 to 31 December 2019 were identified via multiple case ascertainment methods.

Their clinical records were reviewed for visual acuity (VA) at various timepoints, causative procedure, microbiological results, treatments, and complications. Strict diagnostic criteria were applied.

References

1) Kim, C. H., Chen, M. F. and Coleman, A. L. (2017) 'Adjunctive steroid therapy versus antibiotics alone for acute endophthalmitis after intraocular procedure', *The Cochrane Database of Systematic Reviews*, 2017(2).

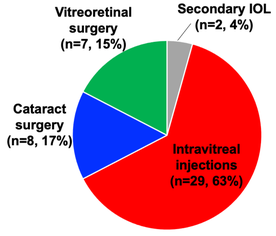
2) Manning, S. *et al.* (2018) 'A prospective multicentre randomized placebo-controlled superiority trial in patients with suspected bacterial endophthalmitis after cataract surgery on the adjuvant use of intravitreal dexamethasone to intravitreal antibiotics', *Acta Ophthalmologica*, 96(4), pp. 348–355..

3) Soliman, M. K. *et al.* (2019) 'International Practice Patterns for the Management of Acute Postsurgical and Postintravitreal Injection Endophthalmitis: European Vitreo-Retinal Society Endophthalmitis Study Report 1', *Ophthalmology. Retina*, 3(6), pp. 461–467.

Key Findings

46 eyes of 46 patients were included, after careful case definition.

1. Intravitreal injections were the leading cause of acute postoperative endophthalmitis, by virtue of the volume of injections administered



Median 77 years (IQR 70 – 87)

54% female

Procedure to Presentation:
- Median 4 days (IQR 3-8)
- Similar across causative procedures (p=0.97)

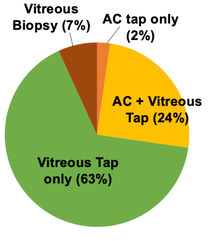
Symptom Onset to Presentation:
- Median 2 days (IQR 1-3)
- Similar across causative procedures (p=0.53)

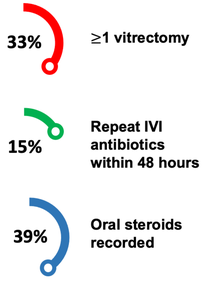
2. Incidence was generally low across all causative procedures, but slightly higher in patients who had vitreoretinal surgery

	Total Procedures	Cases of Endophthalmitis		Absolute Risks (Incidence)	
		Total	per 10,000		
Cataract surgery	42,671	7	1.64	0.016%	1 : 6,096
Intravitreal injections	115,682	28	2.42	0.024%	1 : 4,132
Vitreoretinal surgery	6,926	5	7.22	0.072%	1 : 1,385

Note: 2 cases after secondary IOL implantation and 4 cases resulting from procedures performed at external hospitals are not included in this table.

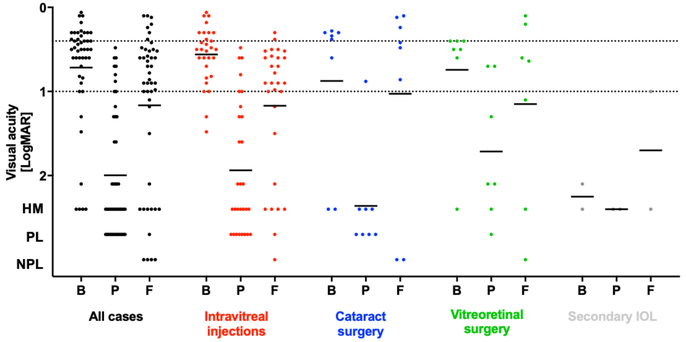
3. Some variability in management existed in terms of decision for therapeutic vitrectomy, repeat intravitreal antibiotics, and choice of intraocular fluid sampling method





4. There was no difference in visual outcomes according to the primary causative procedure.

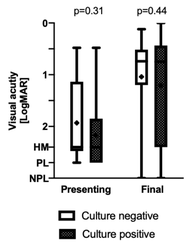
Legend:
B = Visual acuity at Baseline
P = Visual acuity at Presentation
F = Visual acuity at Final Follow-up



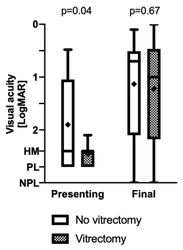
5A. Culture yield did not appear to affect the final visual outcome

5B. Patients undergoing therapeutic vitrectomy had poorer VA at baseline, but by the final follow-up, their VA was comparable to those who did not undergo vitrectomy

No difference in VA according to culture yield in this cohort



Patients undergoing vitrectomy had poorer VA at outset; similar at final visit



Conclusion

This represents the largest regional survey of acute postoperative endophthalmitis due to all causes in the UK, and provides insights into the case mix and outcomes seen in clinical practice.

We found that intravitreal injections are now the most common cause of endophthalmitis in this region due to their increased ubiquity compared to other intraocular procedures.

In this cohort, the primary causative procedure had no effect on presentation, management or visual outcomes.

Regional trainee research networks can provide a useful framework for conducting multicentre studies, and are a feasible model for evaluating rare conditions over multiple sites