The impact of systemic immunosuppression on endophthalmitis after intravitreal anti-VEGF injections

Samir N. Patel, MD
Wills Eye Hospital / Mid Atlantic Retina
November 5, 2020

WillsEye Physicians
Mid Atlantic Retina

Financial Disclosures

- None

My role in this research:

- ✓Conception and design of the work/project
- ✓Acquisition of data
- ✓Analysis and interpretation of data
- ✓Creation and/or critical review of the presentation

Rationale

- Intravitreal injections are one of the most performed procedures in all of medicine.
- Infectious endophthalmitis remains one of the most devastating complications.
- Multiple studies have evaluated procedure-related risk factors associated with post-injection endophthalmitis.

Current Knowledge

- There is little data on patient-related factors, such as systemic medications, and their impact on post-injection endophthalmitis.
- Systemic immunosuppression is a known risk factor for endogenous endophthalmitis
- Unknown if systemic immunosuppression is a risk factor for post-injection endophthalmitis.

Purpose

- To evaluate the effect of systemic immunosuppression on the rates and outcomes of endophthalmitis after intravitreal anti-VEGF injections

Methods

- Retrospective, single-center, cohort study of all intravitreal anti-VEGF injections (bevacizumab, ranibizumab, and aflibercept) from 2016 to 2019

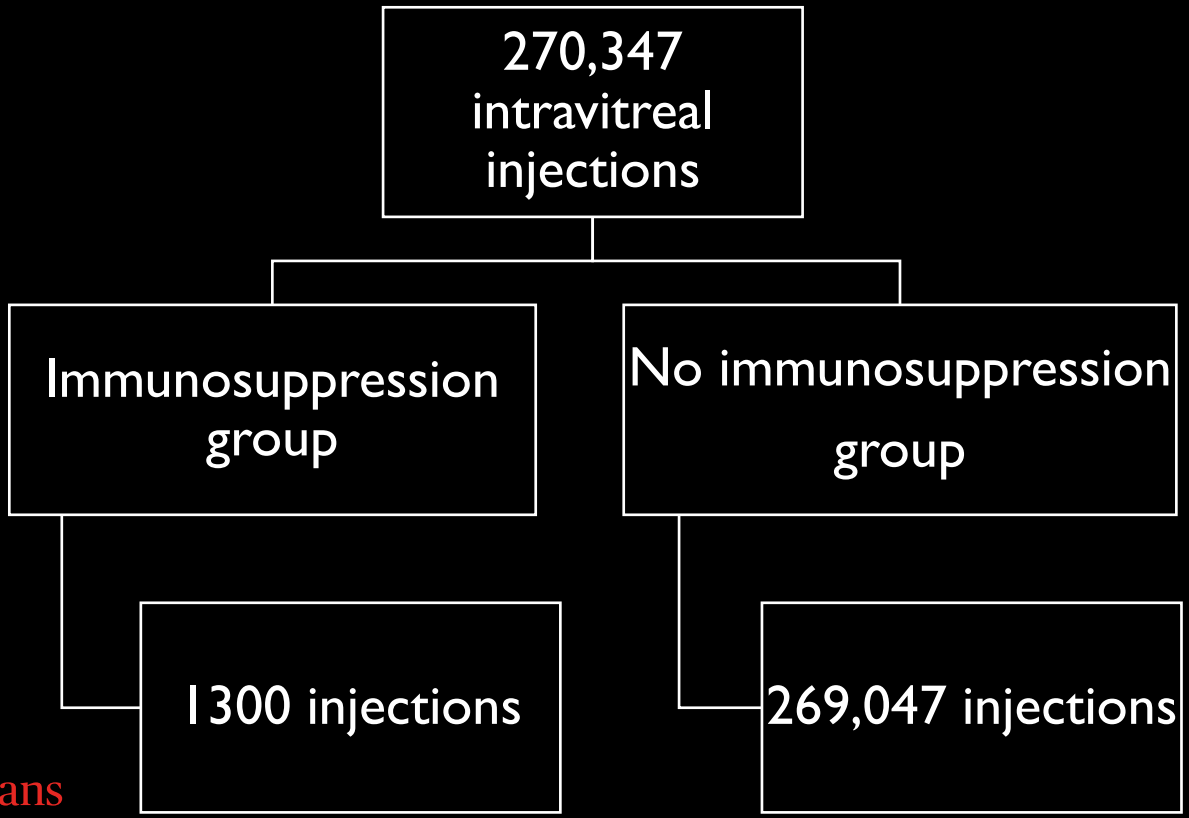
Methods

- Cases were divided into an "immunosuppression" group and a "no immunosuppression" group.
- The "immunosuppression" group = patient taking systemic medication from the following classes at the time of injection: corticosteroids, alkylating agents, antimetabolites, calcineurin inhibitors, mammalian target of rapamycin (mTOR) inhibitors, biologics, monoclonal antibodies, and chemotherapeutic medications.

Methods – Outcome Measures

- Primary outcome: rate of endophthalmitis in the "immunosuppression" group vs "no immunosuppression" group.
- Secondary outcome: visual acuity outcomes & microbiologic flora
- Endophthalmitis definition:
  - Patients who presented with a clinical suspicion that was high enough to warrant either intravitreal antibiotic injection with vitreous/aqueous tap or pars plana vitrectomy with injection of antibiotics.

Results



WillsEye Physicians
Mid Atlantic Retina

SKILL WITH COMPASSION
WH
1832

Results – Incidence of Endophthalmitis

	Immunosuppression group (N = 1300)	"No immunosuppression" group (N = 269,047)	Odds Ratio (95% CI)	*P* value
Suspected endophthalmitis, N (%)	5 (0.38%) 1 in 260 injections	100 (0.037%) 1 in 2,690 injections	9.86 (4.0 - 24.2)	<0.001
Culture-positive endophthalmitis, N (%)	3 (0.23%) 1 in 433 injections	32 (0.012%) 1 in 8,407 injections	19.4 (5.9 – 63.4)	<0.001

Results – Immunosuppressive Medications

Type of Immunosuppression	Count (N = 1300)
Prednisone	721 (55%)
Methotrexate	295 (23%)
Dexamethasone	78 (6%)
Tacrolimus	70 (6%)
Hydrocortisone	57 (4%)
Chemotherapeutics	46 (4%)
Mycophenolate	29 (2%)
Cyclosporine	4 (<1%)

Endophthalmitis Case	Immunosuppressive Medication
1	Prednisone 15mg
2	Prednisone 15mg
3	Prednisone 20mg
4	Prednisone 20mg
5	Mycophenolate mofetil

Results – Visual Outcomes

	Immunosuppression group (N = 1300)	"No immunosuppression" group (N = 269,047)	Adjusted difference (95% CI)	*P* value
Mean (SD) time to presentation, days	2.8 (1.9)	5.3 (5.4)	2.51 (0.15 – 4.87)	0.040
Visual Acuity at Endophthalmitis Presentation logMAR (Snellen Equivalent)	2.11 [20/2500]	1.8 [20/1260]	0.311 (-1.15 – 0.53)	0.465
6-month follow-up logMAR (Snellen Equivalent)	1.22 [20/330]	0.96 [20/180]	0.253 (-0.99 - 0.48)	0.494

Conclusions

- In 270,347 consecutive anti-VEGF injections, patients on systemic immunosuppressive may be at increased risk for post-injection endophthalmitis and may have earlier symptom onset
- Visual outcomes were similar between groups after endophthalmitis treatment

Acknowledgements

- Philip P. Storey, MD, MPH
- Maitri Pancholy, MD
- Anthony Obeid, MD, MPH
- Jason Hsu, MD
- Sunir J. Garg, MD

WillsEye Physicians
Mid Atlantic Retina

SKILL WITH COMPASSION
WH
1832

References

- Results of the Endophthalmitis Vitrectomy Study. a randomized trial of immediate vitrectomy and of intravenous antibiotics for the treatment of postoperative bacterial endophthalmitis. Arch Ophthalmol 1995;113(12):1479-96.
- Kuhn F, Gini G. Ten years after... are findings of the Endophthalmitis Vitrectomy Study still relevant today? Graefes Arch Clin Exp Ophthalmol 2005;243(12):1197-9.
- Liu Y, Lobo A-M, Sobrin L. Endophthalmitis in immunocompromised and diabetic patients. In: Durand ML, Miller JW, Young LH, eds. Endophthalmitis. Cham: Springer International Publishing; 2016:223-238.
- Patel SN, Storey PP, Pancholy M, et al. Changes in management based on vitreous culture in endophthalmitis after intravitreal anti-vascular endothelial growth factor injection. Am J Ophthalmol 2019;207:224-31.

Thank You!