



Published in final edited form as:

Retina. 2017 September ; 37(9): e106–e107. doi:10.1097/IAE.0000000000001807.

LETTER TO THE EDITOR

Andrzej Grzybowski, MD^{1,2}, Stephen G. Schwartz, MD, MBA³, Nidhi Relhan, MD³, and Harry W Flynn Jr., MD³

¹Department of Ophthalmology, Poznan City Hospital, Poznan, Poland ²Department of Ophthalmology, University of Warmia and Mazury, Olsztyn, Poland ³Department of Ophthalmology, Bascom Palmer Eye Institute, University of Miami Miller School of Medicine, Miami, Florida, USA

We read with interest the paper by Freiberg and colleagues,¹ “Low endophthalmitis rates after intravitreal anti-vascular endothelial growth factor injections in an operating room: a multicenter retrospective study”. In their series of 134,701 intravitreal injections performed in an operating room (OR) with laminar airflow, they reported an exceptionally low rate of endophthalmitis of 0.0074% per injection.

In the US and Canada, intravitreal injections are overwhelmingly performed in a clinic setting, but the use of an OR for this purpose is relatively more common in Europe. Reported rates of post-injection endophthalmitis are generally very low. A US population-based estimate from a large commercial insurance database reported a rate of 0.053%.² Large (>100,000 injections) retrospective series from the US, in which essentially all injections were performed in clinic settings, reported rates of 0.016%² and 0.036%³.

A large French series (316,576 injections) in which 96% of injections were performed in a dedicated injection room and 40% had filtration airflow reported a rate of 0.021%; the rate was not significantly different in injections performed without filtration airflow.⁴ Smaller (approximately 40,000 injections) OR-based European series reported rates of 0%⁵ and 0.0075%.⁶ Similarly, a smaller German OR-based series (20,179 injections) reported a rate of 0.03%, although the cohort of patients injected later in the study had a rate of 0.009%, perhaps suggesting a learning curve effect.⁷

Tabadneh and colleagues compared two cohorts of patients – one injected in a clinic setting and one injected in an OR – and reported rates of 0.035% and 0.065% respectively, which were not significantly different.⁸ A meta-analysis (445,503 injections) concluded that location (OR versus clinic) did not significantly affect endophthalmitis rates.⁹

Although it is difficult to directly compare rates from different series performed at different times on different continents, the results reported by Freiberg and colleagues are certainly impressive. It is biologically plausible that their stricter aseptic methods may lead to lower

Corresponding Author/Address for reprints – Andrzej Grzybowski, MD, PhD, MBA, Professor of Ophthalmology, Department of Ophthalmology, Poznan City Hospital, Ul. Szwajcarska 3, 60-285, Poznan Poland, ae.grzybowski@gmail.com.

Conflict of Interest – No conflicting relationship exists for any author.

endophthalmitis rates. But at what cost? Should US-based physicians consider performing injections in an operating room?

Freiberg et al.'s rate of 0.0074% results in one case of endophthalmitis per 13,514 injections. In contrast, the US population-based estimate of 0.053% results in one case per 1,887 injections, or about 7 times more infections. If these results are "true", then if US physicians performed all injections in an operating room, they might prevent 6 cases of endophthalmitis per 13,514 injections, or about 1 additional case per 2,000 injections. Alternatively, the Bascom Palmer Eye Institute reported a rate of 0.016%, resulting in one case of endophthalmitis per 6,250 injections, or about 2 times more infections. Again, performing injections in an operating room might prevent about 1 additional case per 6,000 injections.

Should longstanding US practices change to prevent these additional cases? (Presumably, the patients with endophthalmitis that might have been prevented would think so.) Performing injections in an operating room incurs additional costs and has substantial effects on efficiencies. Either clinics would have to be located near operating rooms or patients would have to travel to receive the injections, perhaps on a separate day, which would inconvenience patients and family members.

There are no easy answers to these questions. In this paper, Freiberg and colleagues have presented important data that should be considered by physicians, insurers, and policymakers.

Acknowledgments

Dr. Grzybowski reports grants, personal fees and non-financial support from Bayer, grants and non-financial support from Novartis, non-financial support from Alcon, non-financial support from Thea, personal fees and non-financial support from Valeant, non-financial support from Santen, outside the submitted work. Dr. Schwartz reports consulting fees from Alimera outside the submitted work.

Funding:

Foundation for Ophthalmology Development, Poznan, Poland.

Partially supported by NIH Center Core Grant P30EY014801, Department of Defense Grant #W81XWH-13-1-0048 (Washington, DC) and an Unrestricted Grant from Research to Prevent Blindness (New York, NY).

References

1. Freiberg FJ, Brynskov T, Munk MR, et al. Low endophthalmitis rates after intravitreal anti-vascular endothelial growth factor injections in an operation room: a retrospective multicenter study. *Retina*. 2017 Jan 17. [Epub ahead of print].
2. Gregori NZ, Flynn HW Jr, Schwartz SG, et al. Current infectious endophthalmitis rates after intravitreal injections of anti-vascular endothelial growth factor agents and outcomes of treatment. *Ophthalmic Surg Lasers Imaging Retina*. 2015; 46:643–648. [PubMed: 26114845]
3. Rayess N, Rahimy E, Storey P, et al. Postinjection endophthalmitis rates and characteristics following intravitreal bevacizumab, ranibizumab, and aflibercept. *Am J Ophthalmol*. 2016; 165:88–93. [PubMed: 26944277]
4. Dossarps D, Bron AM, Koehrer P, et al. Endophthalmitis after intravitreal injections: incidence, presentation, management, and visual outcome. *Am J Ophthalmol*. 2015; 160:17–25. [PubMed: 25892127]

5. Brynskov T, Kemp H, Sorensen TL. No cases of endophthalmitis after 20,293 intravitreal injections in an operating room setting. *Retina*. 2014; 34:951–957. [PubMed: 24317292]
6. Casparis H, Wolfensberger TJ, Becker M, et al. Incidence of presumed endophthalmitis after intravitreal injection performed in the operating room: a retrospective multicenter study. *Retina*. 2014; 34:12–17. [PubMed: 23945639]
7. Nentwich MM, Yactayo-Miranda Y, Schwarzbach F, et al. Endophthalmitis after intravitreal injection: decreasing incidence and clinical outcome: 8-year results from a tertiary ophthalmic referral center. *Retina*. 2014; 34:943–950. [PubMed: 24136408]
8. Tabadneh H, Boscia F, Sborgia A, et al. Endophthalmitis associated with intravitreal injections: office-based setting and operating room setting. *Retina*. 2014; 34:18–23. [PubMed: 24362413]
9. Sigford DK, Reddy S, Mollineaux C, Schaal S. Global reported endophthalmitis risk following intravitreal injections of anti-VEGF: a literature review and analysis. *Clin Ophthalmol*. 2015; 9:773–781. [PubMed: 25999685]