

## REASONS FOR USING INTRAVITREOUS INJECTIONS IN THE OPHTHALMOLOGIC OFFICE

## RAZONES PARA REALIZAR LAS INYECCIONES INTRAVÍTREAS EN EL CONSULTORIO OFTALMOLÓGICO

GÓMEZ-ULLA F<sup>1</sup>, BASAURI E<sup>2</sup>

Since Ohm (1) published almost a century ago his intravitreal air injection technique for treating retinal detachment, this administration pathway has gradually extended for treating many other diseases such as endophthalmitis, retinitis due to cytomegalovirus, choroidal neovascularization secondary to ARMD or pathological myopia, macular edema secondary to diabetes, venous occlusions, etc. this extension probably makes that this technique the most frequent procedure in retina practice.

At many ophthalmological meetings discussing treatments requiring the injection of a drug in the eye, and particularly intravitreal as injections, a debate inevitably arises about whether this procedure should be carried out in the surgery or the office.

At the latest congress of the Spanish Ophthalmological Society held in nearly 1 year ago in Las Palmas, the question arose in the course of a round table on ARMD about the best place for carrying out the said procedure. Surprisingly, the majority stated they would rather do it in the surgery. When asked to provide reasons, they said it was to preempt possible claims or because they believed the percentage of infections was lower. We posed the same question in the Internet forum of the Pan-American Retina and Vitreous Society. Out of 14 renowned retina experts who replied the question from different countries, 8 put the injection in the office and the other six in the surgery in order to avoid legal problems.

We have made a bibliographical revision on endophthalmitis in intra-vitreous injections without

finding a single publication discussing the frequency of complications based on the injection location. Recently, Pilli et al (2) reported a suspected endophthalmitis prevalence 0.029% in 10,254 anti-VEGF intravitreal injections (406 of pegaptanib, 3,501 of bevacizumab and 6,347 of ranibizumab). All the injections were made in the ophthalmologists office without using ocular cloth or prior antibiotic. The only precaution was iodated povidone and usual aseptic conditions. Wu et al (3) identified a slightly high prevalence of endophthalmitis of 0.16% in 4,303 intra-vitreous injections of bevacizumab. A year earlier, Quiroz-Mercado et al (4) has published a similar percentage of endophthalmitis secondary to intravitreal bevacizumab injected in the office (0.169% in 1,765 intravitreal injections). The MARINA study (ranibizumab) exhibited a prevalence of endophthalmitis per injection of 0.05% (5). When the injected drug is triamcinolone, these percentages may vary between 0.6 and 0.16% (6,7) or even reach 1.9% (8). The intravitreal injection guide published in *Retina* in 2004 (9) does not make any recommendation about the location for the procedure. In addition none of the clinical trials with intravitreal medication indicate that the injections must be put in the surgery.

Generally, the reasons given for surgery injection are basically for protection against claims or preempt the appearance of complications. The former reasons are valid only in the countries in which there is an explicit official recommendation for carrying out injections in the operating theatre. The

<sup>1</sup> Ph.D. in Medicine. President of the Spanish Retina and Vitreous Society. Santiago de Compostela University. Technological Ophthalmology Institute (ITO). Santiago de Compostela. La Coruña. Spain.  
E-mail: gomezulla@itogalicia.es

<sup>2</sup> Ophthalmologist. Son Llatzer Hospital and Balearic Ophthalmology Institute (IBO). Palma de Mallorca. Spain.

letter reason is not proven, as discussed above, and it doesn't seem reasonable to attribute an infection to the contaminated air of an office which is very unlikely to be the cause of the propagation of bacteria from an injection with a 30G needle. If we believed otherwise, we should also perform intramuscular injections in the surgery. Finally, for an improved acceptance by the patient of complications, particularly as severe as endophthalmitis (which is difficult to understand due to the apparently exaggerated secondary reaction to "a simple injection"), we should take care to clearly explain therapeutic options, risks inherent in the technique and related to the drug, the possibility and frequency of repetition of injections, as well as giving the patient all these explanations in writing and secure his or her signature, i.e., obtain an informed consent.

Intravitreal injection has become a usual procedure frequently repeated in the same patient to treat diseases such as ARMD in which an injection is required every four or six weeks. Undoubtedly it is a much more efficient use of time to make the injection in the office during the same visit in which visual acuity is measured and the ophthalmological exploration and the OCT are made. At these times, when it is necessary to "optimize" health resources and procedures, intravitreal injections involved an important expenditure in time and human as well as economic resources. These factors must be taken into account as long as they do not act in detriment of the quality of the medical action and the patient's safety.

Intravitreal injection is a precise and short procedure in experienced hands. There is evidence to state that specific prophylactic measures such as the use of iodine povidone in eyelids and conjunctiva, gloves and sterile material and eye drops (9) reduce the risk of endophthalmitis. These measures aim at reducing the bacteria flora at the site of the injection and avoid contamination of the needle, but again not indicate the location where the injection should be placed. Considering available evidence, we believe that an ophthalmological office in which it is possible to comfortably apply of the above prophylactic measures for the patient as well as for the

ophthalmologists are an adequate location for performing intravitreal injections.

The Spanish Retina and Vitreous Society will shortly publish a guide reviewing the protocol to be followed. This guide will also comprise Society recommendations, which explicitly stated that the injection can be carried out in the office. This could be useful for ophthalmologists as an argument against a possible lawsuit, provided that they have proceeded in accordance with the recommended protocol.

## REFERENCES

1. Ohm J. Über die Behandlung der Netzhautablösung durch operative Entleerung der Subretinalen Flüssigkeit und Einspritzung von Luft in den Glaskörper. *Albrecht von Graefes Arch Ophthalmol* 1911; 79: 442-450.
2. Pilli S, Kotsolis A, Spaide RF, Slakter J, Freund KB, Sorenson J, et al. Endophthalmitis associated with intravitreal anti-vascular endothelial growth factor therapy injections in an office setting. *Am J Ophthalmol* 2008; 145: 879-882.
3. Wu L, Martínez-Castellanos MA, Quiroz-Mercado H, Arevalo JF, Berrocal MH, Farah ME, et al. Twelve-month safety of intravitreal injections of bevacizumab (Avas-tin(R)): results of the Pan-American Collaborative Retina Study Group (PACORES). *Graefes Arch Clin Exp Ophthalmol* 2008; 246: 81-87.
4. Quiroz-Mercado H, Ustariz-González O, Martínez-Castellanos MA, Covarrubias P, Dominguez F, Sanchez-Huerta V. Our experience after 1765 intravitreal injections of bevacizumab: the importance of being part of a developing story. *Semin Ophthalmol* 2007; 22: 109-125.
5. Rosenfeld PJ, Brown DM, Heier JS, Boyer DS, Kaiser PK, Chung CY, et al. Ranibizumab for neovascular age-related macular degeneration. *N Engl J Med* 2006; 355: 1419-1431.
6. Jager RD, Aiello LP, Patel SC, Cunningham ET Jr. Risks of intravitreal injection: a comprehensive review. *Retina* 2004; 24: 676-698.
7. Moshfeghi DM, Kaiser PK, Scott IU, Sears JE, Benz M, Sinesterra JP, et al. Acute endophthalmitis following intravitreal triamcinolone acetonide injection. *Am J Ophthalmol* 2003; 136: 791-796.
8. Jonisch J, Lai JC, Deramo VA, Flug AJ, Fastenberg DM. Increased incidence of sterile endophthalmitis following intravitreal preserved triamcinolone acetonide. *Br J Ophthalmol* 2008; 92: 1051-1054.
9. Aiello LP, Brucker AJ, Chang S, Cunningham ET Jr, D'Amico DJ, Flynn HW Jr, Grollone LR, et al. Evolving guidelines for intravitreal injections. *Retina* 2004; 24: S3-S19.