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Incidence of postoperative nosocomial endophthalmitis: results of an 8-year prospective surveillance program in a university hospital in France.

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Sir,

Endophthalmitis is a major complication of eye surgery¹. Infection control measures include epidemiological surveillance of nosocomial infections, are a component of hospital infection prevention². In France, the 2010 guidelines³ (SFAR) recommended antibiotic prophylaxis with oral levofloxacin, and indicate that intracameral cefuroxime injection could reduce the incidence of postoperative endophthalmitis but with a low level of evidence. With continuous improvement in surgical techniques and infection control measures, there is a need to assess current rates of postoperative endophthalmitis in routine practice.

The department of ophthalmology at our tertiary care university hospital in France performs 2000 surgical procedures each year. Patients receive a preoperative shower and face cleaning with povidone-iodine scrub the day before and the morning of surgery. In the operating room, after topical administration of tetracaine 1%, povidone-iodine 5% is applied to the skin around the eye and to the ocular surface and instilled in the fornix, before surgery. Until 2010, levofloxacin antibiotic prophylaxis was administered to patients with diabetes, long-term corticosteroid-therapy, or immunosuppressive therapy, and to patients undergoing secondary implantation, or revision surgery with an intraocular period of less than 1 month. Since 2010, levofloxacin antibiotic prophylaxis is also administered for procedures involving implantation of a device, excepting for cataract surgery. In 2011, intracameral injection of cefuroxime was introduced for cataract surgery, except for patients with allergies to cephalosporins and penicillin. The aim of our present study was to calculate the incidence of postoperative endophthalmitis through a prospective surveillance programme during an 8-year period between 2007 and 2014.

Prospective surveillance of postoperative endophthalmitis has been performed at our university hospital since November 2006. All intraocular surgical procedures, except reoperations for endophthalmitis, are included in the surveillance programme. Possible cases of endophthalmitis are identified via both systematic review of bacteriological samples and weekly meetings with eye surgery nurses and with the operating room team. Possible cases of infection are systematically presented to surgeons for validation. Diagnosis of postoperative endophthalmitis is based on the definitions issued by the Center for Disease Control (CDC)⁴ for nosocomial infections. All cases of endophthalmitis occurring within 30 days of intraocular surgery (or within 1 year for implants) are taken into account⁵. The number of surgical procedures is obtained via the hospital information system.

A total of 15865 intraocular surgeries (7425 cataract surgery procedures) were performed between 1st January 2007 and 31st December 2014, in 8245 men and 7620 women, median age of 67.7 years (0-102.4). Postoperative endophthalmitis was diagnosed in eight eyes of eight different patients, yielding an incidence of 0.05% (0.02-0.10: 95% CI). Cataract surgery procedures (with or without intraocular lens) accounted for seven of the eight cases of endophthalmitis yielding an incidence of 0.09% (0.04-0.19: 95% CI). The incidence of postoperative endophthalmitis after cataract surgery decreased from 0.32% in 2007 to 0% in 2014. The characteristics of infected patients are summarized in Table 1.

The incidence of postoperative endophthalmitis observed in our survey was low and decreased throughout the study period. We were not able to detect a significant difference

in the incidence of postoperative endophthalmitis after the introduction of intracameral antibiotic prophylaxis despite a reduction by half of the incidence of endophthalmitis during the period with cefuroxime versus the period without-cefuroxime. This may be explained by the small number of cases of endophthalmitis. The rate of endophthalmitis decreased in our study just after the surveillance programme was set up. This phenomenon has previously been described (under the name of Hawthorne effect) in some instances after the introduction of a nosocomial infection surveillance programme in hospitals⁶, although not in a constant way⁷. The fact that the incidence of endophthalmitis remained stable between 2008 and 2014 after the initial decrease may be explained by the low baseline incidence of postoperative endophthalmitis at our university hospital. A study by Wykoff *et al.* with a similar population and long-term surveillance showed a significant decrease in rates in the 2002-2009 period only when compared with a reference period 20 years previously, suggesting that long-term follow-up is required to highlight a decrease in low rates of postoperative endophthalmitis⁸.

The limitations of our study are that it was a single centre study and that in this real life survey we did not collect patients' characteristics. The strengths of our study are the large size of the cohort; the active search method for collecting data on postoperative infections combining several sources of information; the validation of endophthalmitis by both the infection control team and the surgeon; the low risk of missed diagnoses since ours is the only hospital in the region caring for patients with endophthalmitis; and the fact that the same method was used consistently throughout the study period.

In conclusion, our study, conducted in a large cohort, provides an up-to-date incidence rate for postoperative endophthalmitis, which could be used as a reference.

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Table 1

Demographics and culture data for patients with postoperative endophthalmitis

Patient no.	Age (years)	Sex	Year of diagnosis	Initial surgery	Latency (days)	Bacteria
1	75	F	2007	Cataract	6	<i>S epidermidis</i>
2	56	M	2007	Cataract	3	<i>S epidermidis</i>
3	79	F	2007	Cataract	6	<i>S epidermidis</i>
4	66	F	2008	Cataract	35	MRSA
5	82	F	2009	Cataract	4	<i>S epidermidis</i>
6	62	M	2012	Cataract	2	<i>Streptococcus spp.</i>
7	61	M	2013	Cataract	5	<i>S pneumoniae</i>
8	54	M	2013	Trabeculectomy	6	NI

S epidermidis, *Staphylococcus epidermidis*; MRSA, Methicillin-resistant *Staphylococcus aureus*; *S pneumoniae*, *Streptococcus pneumoniae*; NI, not isolated.