

SHORT COMMUNICATION

Case report

Delayed-onset postoperative endophthalmitis caused by *Hafnia alvei*J.M.¹ RUIZ-MORENO^{1,2*}, J.L. ALIÓ^{1,2**}, F. de la HOZ^{2**}¹Department of Ophthalmology, Miguel Hernández University School of Medicine²Instituto Oftalmológico de Alicante (*Vitreo-Retinal Unit; **Refractive Unit), Alicante - Spain

PURPOSE. To identify *Hafnia alvei* as an etiological factor of delayed-onset endophthalmitis.

CASE REPORT. A 68-year-old woman had uneventful cataract extraction by phacoemulsification with foldable posterior chamber intraocular lens implantation under topical anesthesia in the left eye. Four weeks later, the patient presented anterior uveitis treated by topical corticosteroids. Seven weeks later a posterior uveitis with retinal vasculitis appeared. The patient was treated by systemic and intravitreal corticosteroids without result. Due to the poor course pars plana vitrectomy was done, and a vitreous sample was taken. Microbiologic examination disclosed *Hafnia alvei*, gram-negative bacteria rarely isolated from human specimens.

CONCLUSIONS. *Hafnia alvei* should be considered in the etiology of delayed-onset endophthalmitis. (*Eur J Ophthalmol* 2001, 11: 189-92)

KEY WORDS. Endophthalmitis, *Hafnia alvei*

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INTRODUCTION

Infectious endophthalmitis is an uncommon but important complication of cataract surgery despite pre- and postoperative antibiotic prophylaxis and despite all antiseptic measures (1, 2). The disease is not always manifested in an acute form in the early postoperative period, and may appear with delayed onset, in a subacute or chronic form (3).

Hafnia alvei is a gram-negative bacterium rarely isolated from human specimens, and is not frequently considered to be pathogenic (4). We report a case of delayed-onset endophthalmitis caused by *Hafnia alvei* after cataract surgery.

Case Report

A 68-year-old woman came to the Instituto Oftalmológico in Alicante in December 1998, because of loss of vision in her left eye (LE). Her medical histo-

ry was significant for diabetes mellitus type II treated for 16 years with glibenclamide (Euglucon®), and hypertension, in treatment with nifedipine (Adalat®). The patient had undergone vitrectomy in her right eye (RE) to treat a persistent vitreous hemorrhage, but the functional result was poor. Best-corrected visual acuity (BCVA) at presentation was counting fingers at 50 cm in both eyes.

Biomicroscopy showed an incipient nuclear cataract in RE and a cataract in LE. Intraocular pressure (IOP) was normal in both eyes and there was terminal diabetic retinopathy in RE and non-proliferative diabetic retinopathy in LE, with incipient macular edema. The potential acuity meter showed 0.1 in LE.

The patient was given antibiotic prophylaxis for three days preoperatively (polymyxin & trimethoprim: one drop three times a day). The patient was operated by phacoemulsification on July 1, 1999, under topical anesthesia. A foldable posterior chamber intraocular lens was implanted (Allergan AR40®) in the bag, with no intraoperative complications. Intracameral antibi-

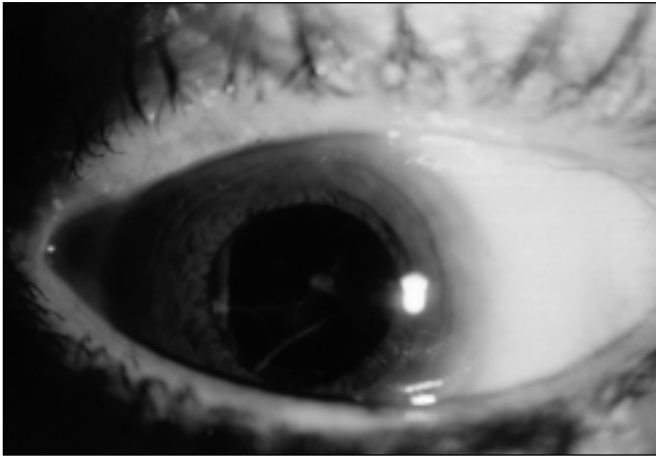


Fig. 1 - Delayed-onset endophthalmitis caused by *Hafnia alvei*. Fibrin can be detected in the anterior chamber.

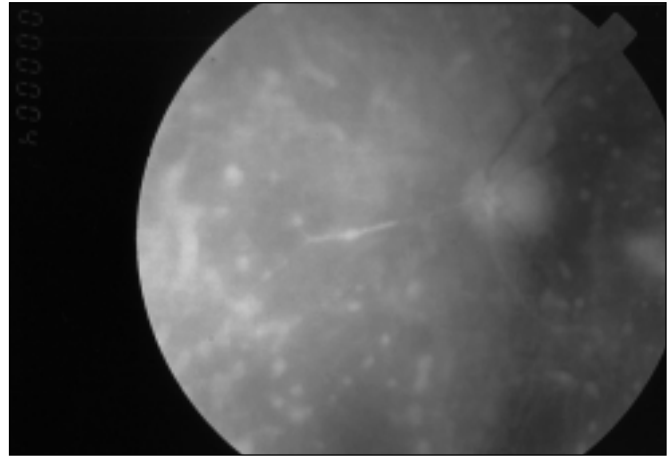


Fig. 2 - Left eye with frozen retinal vasculitis and vessel occlusions near the optic disc.

otic was injected (cefuroxime 1 mg in 0.1 ml) at the end of surgery.

On postoperative day 3, the patient had BCVA of 0.1 in her LE, IOP 16 mm Hg and normal postoperative course. On postoperative day 30, she had redness, with the same BCVA but flare +, fibrin exudates and keratic endothelial precipitates. She was treated topically with dexamethasone, neomycin and polymyxin B (Maxitrol®) five times a day. On postoperative days 40, 45, 50 and 55 the redness disappeared but the flare persisted, and fibrosis of the posterior capsule appeared (Fig. 1). On postoperative day 60 vitreous inflammation started, the anterior segment inflammatory reaction showing no change.

On postoperative day 64, BCVA in LE was light perception. Frozen retinal perivasculitis was found on examination of the fundus (Figs. 2 and 3). Fluorescein angiography showed considerable inflammation of the vessels with intraretinal and intravitreal exudation (Figs. 4-7). The patient was treated with oral prednisone (1 mg/kg) but there was no ophthalmoscopic improvement on days 70 and 75 (Fig. 8).

On postoperative day 80 the patient developed anterior vitreitis, requiring intraocular injection of triamcinolone (Trigon®). On postoperative day 85, the BCVA was counting fingers at 50 cm, with massive intraretinal exudation. A diagnosis of delayed-onset postoperative infectious endophthalmitis was suspected. On September 30, a diagnostic/thera-

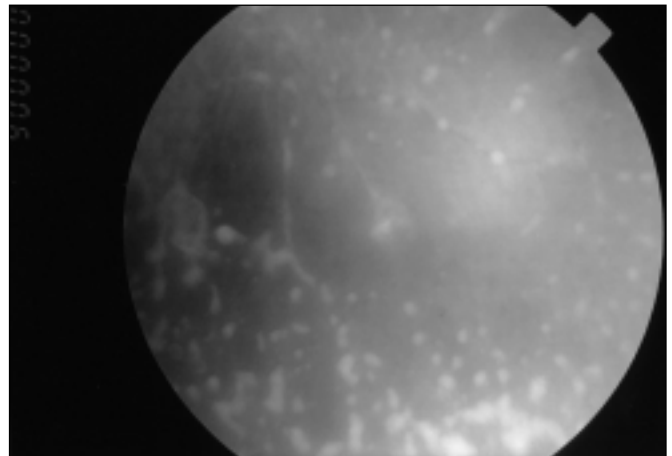


Fig. 3 - Vessel occlusion with intravitreal exudates.

peutic pars plana vitrectomy was done and vancomycin (1 mg in 0.1 ml) was injected intravitreally at the end.

Microbiological examination identified *Hafnia alvei* gram-negative coccobacillus, as Ziehl stain was negative. On October 2, we repeated the intravitreal injection of vancomycin (1 mg in 0.1 ml) and amikacin (0.4 mg in 0.1 ml). In line with the antibiotic sensitivity findings (Tab. I), we injected ceftazidime (2.25 mg in 0.1 ml) intravitreally on postoperative days 95 and 97.

The patient developed a total retinal detachment with proliferative vitreoretinopathy. Intraocular cultures were negative on days 100 and 105. The final result is phthisis bulbi without light perception.

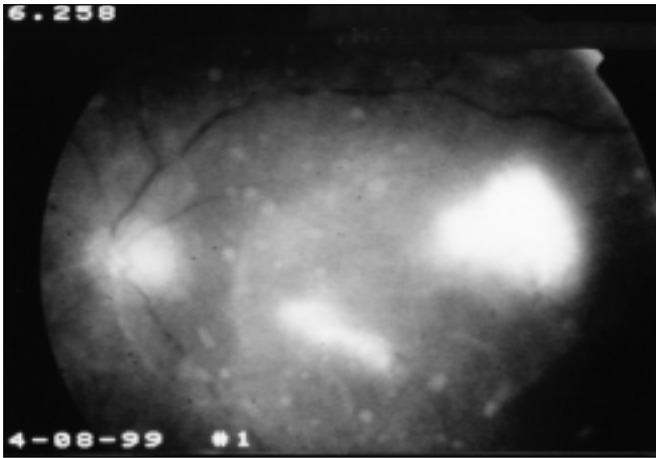


Fig. 4 - Red-free fundus photography showing intra-retinal exudates and occlusion of the inferior vessels.

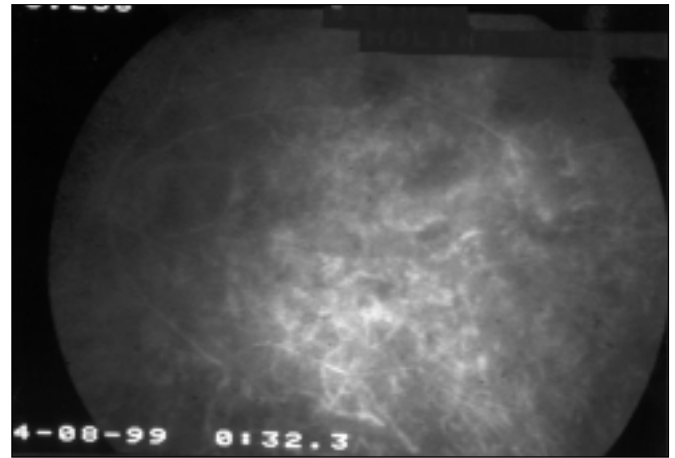


Fig. 5 - Arterial phase of the angiogram with dye leakage from the temporary vessels and no permeability of the inferior vessels.

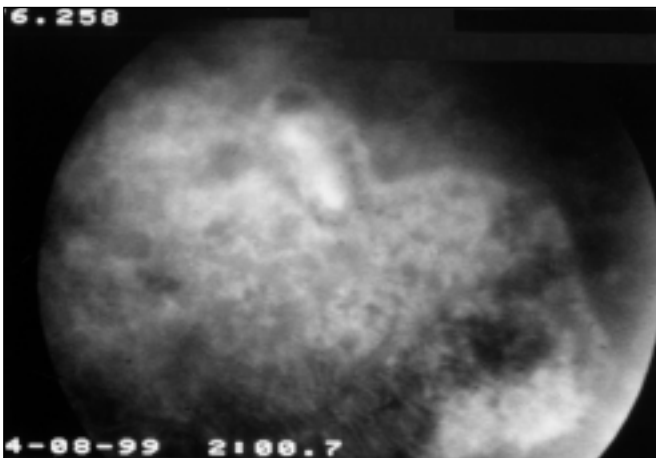


Fig. 6 - Venous phase of the fluorescein angiography with clear delineation of the retinal area with inflammation.

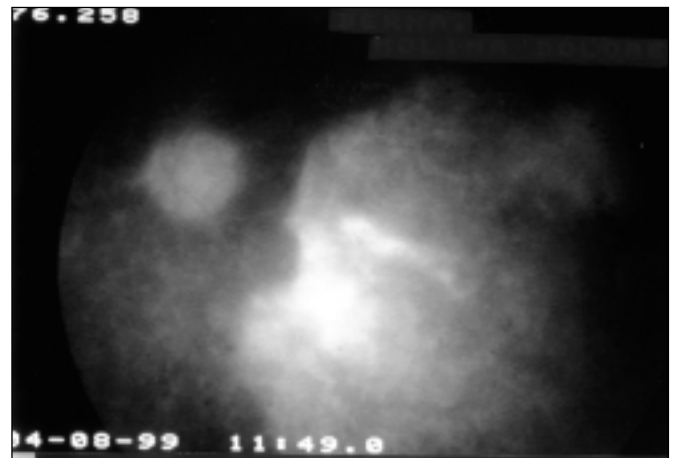


Fig. 7 - Late phase of the fluorescein angiogram shown in Figures 4 to 6. Intense dye leakage is evident.

DISCUSSION

Enteric pathogens rarely affect organs other than the gastrointestinal system. *Hafnia alvei* is only exceptionally isolated from human specimens and is rarely considered pathogenic. In the literature we only found one case of endophthalmitis due to *Hafnia alvei* (4). The infection in this case was due to two pathogens: *Hafnia alvei* and *Salmonella arizonae*, and despite antibiotic treatment, based on laboratory susceptibility tests, the final result was therapeutic enucleation of the eye (4).

In our case the patient presented one factor associated with postoperative endophthalmitis, i.e. diabetes with marked and uncontrolled oscillations

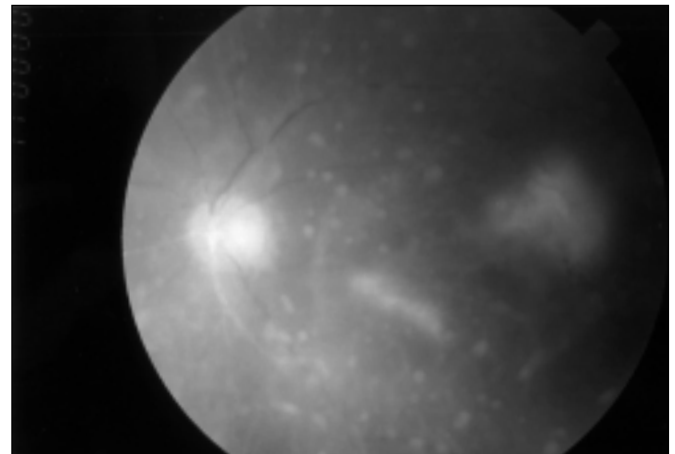


Fig. 8 - Intra-retinal exudates with occlusion of inferior vessels and vitreous opacities.

TABLE I - ANTIBIOTIC SENSITIVITY OF HAFNIA ALVEI ISOLATED FROM THE PATIENT

Hafnia alvei	S	I	R
Amikacin	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Gentamicin	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Tobramycin	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cefalotin	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cefazolin	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cefuroxin	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cefotaxime	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceftazidime	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ampicillin	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Amoxicillin-Clavul.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Aztreonam	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Imipenem	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Piperacillin	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Piperacillin-Tazobact.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ampicillin-Sulbactam	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Norfloxacin	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ofloxacin	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Levofloxacin	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fosfomycin	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Nitrofurantoin	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Tetracycline	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sulfamethoxazol	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SXT	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Colistin	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

S: Sensitive; I: Intermediate; R: Resistant

in blood glucose (5). To our knowledge this is the first case of postoperative infectious endophthalmitis due only to *Hafnia alvei*. The microorganism was sensitive to norfloxacin, ofloxacin and ceftazidime in the antibiotic susceptibility test (Tab. I), but despite appropriate treatment the final course was very poor, with retinal detachment and proliferative vitreoretinopathy, and finally phthisis bulbi.

The case was initially misdiagnosed as a postoperative inflammatory reaction and the fundus study, including fluorescein angiography, showed a frozen periphlebitis with retinal and vitreous exudated (Figs. 3 and 4). Only the poor results with systemic corticosteroids and intravitreal injection of triamcinolone induced us to suspect delayed postoperative intraocular infection. The delayed inflammation in the anterior segment with the posterior segment showing frozen retinal periphlebitis unresponsive to steroids led us to overlook the possibility of a postoperative infection due to *Hafnia alvei*. This microorganism should be added to the list of pathogens that can occasionally cause postoperative endophthalmitis.

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