

Aspergillus endophthalmitis

R SIHOTA, H C AGARWAL, A K GROVER, AND N N SOOD

From the Dr Rajendra Prasad Centre for Ophthalmic Sciences, All India Institute of Medical Sciences, New Delhi 110 029, India

SUMMARY A case is reported of bilateral aspergillus endophthalmitis in an infant without any detectable systemic predisposition or focus of infection. The patient is the youngest recorded case of endogenous aspergillus endophthalmitis so far, with an onset of symptoms at the age of 15 days. After histopathological confirmation of the aetiology by enucleation of the atrophic eye, systemic amphotericin B therapy was instituted with excellent results in the fellow eye. This is the first recorded instance of a complete clinical cure in aspergillus ocular disease on systemic amphotericin B therapy alone.

Aspergillus infections of ophthalmic interest usually cause keratitis or orbital cellulitis, and less commonly conjunctivitis and canaliculitis.¹ Aspergillus endophthalmitis, a relatively rare condition, has a devastating course, with blindness as its usual outcome. The clinical diagnosis is often difficult and the therapy is disappointing, with little or no reported success.²

This is a report of an infant with bilateral aspergillus endophthalmitis. As far as we are aware this is the youngest patient on record. The report is unusual in that the patient had bilateral ocular lesions in the absence of any detectable systemic predisposition or focus of infection elsewhere in the body. This is the first recorded instance of a complete clinical cure with good visual recovery in one eye brought about by intravenous amphotericin B therapy alone.

Case report

A 1-month-old male infant was brought to the hospital with complaints of redness, tearing, and a whitish reflex in the left eye of 15 days' duration. He had been born normally at full term, had no symptoms suggestive of bronchitis, pneumonia, or sinusitis, and had not received any systemic corticosteroid or antibiotic prior to his illness. There was also no history of any maternal disease.

On examination the left eye was grossly hypotonic, with evidence of atrophica bulbi. There was marked ciliary congestion, and the cornea was hazy and the iris muddy. A greyish white mass extended through

the pupillary area into the shallow anterior chamber, obscuring the fundal glow. The anterior segment of the right eye was normal except for mild ciliary congestion, with a posterior synechia at 9 o'clock. The pupil reacted well to direct light. Fundus examination revealed haziness of the media with a non-rhegmatogenous retinal detachment involving the superotemporal, inferotemporal, and inferonasal quadrants. There were multiple superficial haemorrhages. A thorough systemic examination of the child revealed no focus of infection. Clinically a provisional diagnosis of bilateral endophthalmitis was made. However, the possibility of a bilateral retinoblastoma, with inflammation induced by tumour necrosis, could not be definitely excluded. The patient was started on systemic antibiotics and local corticosteroids, antibiotics, and atropine.

The total and differential leucocytic counts, sedimentation rate, and skiagram of chest, orbit, skull, and, optic foramina were found to be normal. The immune status was within the accepted limits of normal. There was a decrease in the number of T cells and T helper cells, with a marginal increase in B cells and T suppressor cells, a picture consistent with that of chronic inflammation (E-RFC, 23%; Sm Ig, 23%; OKT₃, 38%; OKT₄, 29%; OKT₈, 30%). Immunoglobulin electrophoresis was normal (C₄, 16 mg; IgA, Low; IgM, 208 IU; IgG, 97 IU). 'A' mode ultrasonography of the left eye showed a small eyeball with spikes of low to medium reflectivity throughout its extent, suggesting a gross disorganisation of the internal structures. 'A' scan ultrasonography of the right eye confirmed the exudative nature of the

Correspondence to Dr R Sihota.

retinal detachment without any evidence of a solid mass lesion.

The left eyeball was therefore enucleated. On sectioning the enucleated left eyeball the pus obtained from the vitreous cavity was cultured on Sabouraud's dextrose agar and glucose broth, but showed no bacterial or fungal growth.

The cytopathological examination of the aqueous from the right eye revealed polymorphs, lymphocytes, a few histiocytes, and some bare nuclei. There were no malignant cells. The lactic dehydrogenase activity was 14 units in the aqueous and 480 units in the serum.

Gross examination of the enucleated shrunken left eyeball revealed disorganisation of intraocular structures, with a large quantity of exudates in the anterior chamber and vitreous. On microscopic examination the anterior chamber was full of acute inflammatory cells and an eosinophilic exudate. The lens was fragmented, with the capsule being present in the pupillary area. The vitreous cavity was full of an acute inflammatory exudate consisting chiefly of neutrophils, occasional eosinophils, and necrotic debris. The retina and inner layers of the choroid were distorted and riddled with microabscesses showing a number of silver methanamine-positive septate hyphae, branching at acute angles. On the basis of these histological findings an aetiological diagnosis of aspergillus endophthalmitis was made.

The patient was given amphotericin B with heparin in the form of a slow intravenous drip daily to a total of 25 mg/kg body weight (140 mg), administered over a period of three months. Periodic monitoring of the blood cells, blood urea, serum creatinine, and electrolytes was done.

Regular examination of the right eye under general anaesthesia, showed a gradual improvement in the ocular condition. The superficial haemorrhages started disappearing in the third week of therapy and were totally absorbed by the end of the fifth week, though there was no change in the exudative detachment. During the eighth week the retinal detachment showed signs of resolution in the inferonasal area and had completely settled by the eleventh week. Three months after instituting the therapy peripapillary sheathing of vessels and a pigmentary stippling of the macula were the only abnormalities seen. The patient's vision appeared to be good. Periodic re-examination of the patient after every three months for a period of three years showed no signs of recurrence of the disease.

Discussion

Aspergillus endophthalmitis is rare and usually occurs in debilitated patients.^{3,4} Its clinical import-

ance stems from the fact that it has a very fulminant course, which may sometimes be markedly modified by specific therapy. However, the clinical diagnosis of the condition has been remarkably elusive, having been possible, preoperatively, in only one⁵ of the 23 cases reported so far. It is therefore important that the condition should be considered in the differential diagnosis of leucocoria, especially when some associated systemic features exist.

The patient described here is the youngest with aspergillus endophthalmitis to have been reported so far, having developed symptoms at the age of 15 days.⁶ A slight male preponderance exists in the number of reported cases, there being 13 males and 9 females. The case report by Lorenz⁷ gave no details.

The patient under discussion was unique in having a bilateral lesion, without any detectable predisposing factors. All the six bilateral cases reported so far had associated features such as prematurity and cytomegalic virus infection,⁶ rheumatic fever,⁸ aortic stenosis,⁹ Goodpasture's syndrome,⁴ or tuberculosis,¹⁰ suggesting the significance of underlying debility in bilateral spread of the disease. Four of these six cases also had systemic aspergillosis. It is difficult to speculate on the possible mode of infection in this infant. The fact that his left eye was more severely affected is in conformity with the observation that the left eye is more vulnerable to endogenous aspergillus disease (12 of the 16 unilateral cases). This is attributed to the direct origin of the left brachio-cephalic artery from the aorta, providing direct access to intravascular pathogens. Another common predisposing factor, also absent in this infant, was the use of systemic antibiotics and steroids. Ten of the cases reported earlier were on antibiotics and steroids before the onset of ocular aspergillosis.

The clinical presentation in this case was not unusual. On review we found that the presenting complaint in the cases reported so far was a diminution of vision in 16 cases, a red eye in seven, ocular pain in four, and acute proptosis in two. Clinically, 12 cases presented with signs of iritis, five of whom had a hypopyon, and 18 showed marked chorioretinitis. A yellowish white mass with an abscess in the posterior segment was seen in 15 cases, while superficial retinal haemorrhages were present in three and a retinal detachment was observed in four. One case⁶ presented with an anterior chamber mass, quite akin to the picture presented in the left eye by this patient.

The definitive diagnosis of a fungal lesion rests on the demonstration of hyphae in the vitreous aspirate or in the histopathology specimen. Twenty of the reported cases had fungal hyphae in the vitreous cavity on histopathology, but only five were reported to give a positive culture. The aqueous tap from the right eye provided an initial clue to the inflammatory origin of

the pathology, while the classical histopathological features observed in the enucleated eye confirmed the diagnosis. The study of aqueous humour cytology and lactate dehydrogenase activity, in conjunction with a clinical picture of exudative detachment, retinal perivasculitis, superficial haemorrhages, and signs of iritis or endophthalmitis, should suggest the possible presence of this pathogen.

The almost complete reversal of the clinical picture in the right eye on medical treatment with intravenous amphotericin B was remarkable. No similar cure on antifungal therapy alone has been reported. This was attributed to the poor intraocular penetration of amphotericin B,¹¹ but our case has demonstrated otherwise, and this mode of therapy should be attempted more often. Various modes of therapy have been tried earlier, ranging from systemic iodides, intravenous and intravitreal amphotericin B, to a vitrectomy. The last two have given the best results, with resolution of the lesions in one case,⁵ but may themselves cause ocular morbidity.

The diagnosis of aspergillus endophthalmitis should be entertained in all patients with a systemic predisposition or aspergillus disease elsewhere in the body. The help of ancillary investigations such as ultrasonography, lactate dehydrogenase activity of aqueous and serum, aqueous humour cytology, and fungal culture should be utilised to establish a diagnosis. Medical therapy of fungal lesions with intra-

venous amphotericin B in these patients may prove helpful in salvaging reasonable sight in this otherwise almost hopeless condition.

References

- 1 Brightbell FS, Fraser LK. Unilateral keratoconjunctivitis with canalicular obstruction by *Aspergillus fumigatus*. *Arch Ophthalmol* 1974; **91**: 421-2.
- 2 Clarkson JG, Green WR. Endogenous fungal endophthalmitis. In: Duane TD, ed: *Clinical ophthalmology*. Philadelphia: Harper and Row, 1980; **3**: 11, 14-15.
- 3 Naidoff MA, Green WR. Endogenous aspergillus endophthalmitis after kidney transplants. *Am J Ophthalmol* 1974; **79**: 502-5.
- 4 Jampol LM, Lahav M, Olbert DM, Craft J. Ocular clinical findings and basement membrane changes in Goodpasture syndrome. *Am J Ophthalmol* 1975; **79**: 452-63.
- 5 Doft PH, Clarkson JG, Robell G, Forster RK. Endogenous aspergillus endophthalmitis in drug abusers. *Arch Ophthalmol* 1980; **98**: 859-62.
- 6 Paradis AJ, Roberts L. Endogenous ocular aspergillosis: report of a case in an infant with cytomegalic inclusion disease. *Arch Ophthalmol* 1963; **69**: 765-9.
- 7 Lorenz H. Ein metastatische Ophthalmic durch Schimmelpilze. Munich, Dusseldorf: Nolte, 1933: dissertation.
- 8 Darell RW. Endogenous aspergillus uveitis following heart surgery. *Arch Ophthalmol* 1967; **78**: 354-7.
- 9 Walinder PE, Kock E. Endogenous fungal endophthalmitis. *Acta Ophthalmol (Kbh)* 1971; **49**: 263-72.
- 10 Friedman AH, Chishti MI, Henkind P. Endogenous ocular aspergillosis. *Ophthalmologica* 1974; **168**: 197-205.
- 11 Green WR, Bennet JE, Goos RD. Ocular penetration of amphotericin B. *Arch Ophthalmol* 1965; **73**: 769-75.

Accepted for publication 10 September 1986.



Aspergillus endophthalmitis.

R Sihota, H C Agarwal, A K Grover, et al.

Br J Ophthalmol 1987 71: 611-613

doi: 10.1136/bjo.71.8.611

Updated information and services can be found at:
<http://bjo.bmj.com/content/71/8/611>

References

These include:

Article cited in:

<http://bjo.bmj.com/content/71/8/611#related-urls>

Email alerting service

Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to:
<http://group.bmj.com/group/rights-licensing/permissions>

To order reprints go to:
<http://journals.bmj.com/cgi/reprintform>

To subscribe to BMJ go to:
<http://group.bmj.com/subscribe/>