Endogenous endophthalmitis caused by bacteria with unusual morphology in direct microscopic examination of the vitreous

Dear Editor,

Endogenous endophthalmitis is a rare condition in immunocompetent individuals. In this letter, we share our experience of two cases in apparently otherwise healthy individuals with unusual, misleading morphological forms of bacteria in vitreous samples, probably due to previous inadequate treatment. A 45-year-old man (case 1) and a 26-year-old lady (case 2) presented with redness, watering, photophobia, pain and diminution of vision (case 1: left eye, 15 days; case 2: right eye, 3 days). They had been previously treated with topical (chloramphenicol, ofloxacin) and subconjunctival antibiotic (amikacin) and corticosteroids. The presenting visual acuity in the affected eye was hand movement in the first patient and counting finger close to face in the second patient. B-scan showed low to medium reflective echoes in the vitreous cavity in both the cases. All systemic investigations were unremarkable. They were started on systemic and topical corticosteroids and antibiotics (ciprofloxacin). Pars plana vitrectomy with intraocular antibiotics (vancomycin, ceftazidime) and microbiological processing of the vitreous (smear and culture on aerobic and anaerobic media) was done in both. In case 1, the Gram-stained smear revealed gram-positive, thin, beaded, branching filaments and bacilli [Fig. 1a] suggestive of Actinomycetales, which were non–acid-fast (1% H$_2$SO$_4$). Gram stain of the culture [Fig. 1b] resembled Corynebacterium sp. [Fig. 1c]; however, it was identified as Cellulosimicrobium cellulosum by API® CORYNE V-3.0 method. The Gram-stained smear of vitreous from case 2 showed gram-variable, thick, long, beaded bacilli with occasional vacuoles resembling spores and were suggestive of Bacillus sp. [Fig. 2a]. Dirty, moist, yellow colonies [Fig. 2b] grown in culture were gram-negative bacilli [Fig. 2c] and were biochemically identified as Escherichia coli. Thus, the initial microscopic examination of the vitreous fluid in both cases was misleading and the culture results were most unexpected. The organisms grew rapidly in ordinary culture media such as blood agar, chocolate agar, brain heart infusion broth and thioglycollate broth. Although the morphology was altered, the organisms remained sensitive to antibiotics tested by Kirby Bauer disk diffusion method. Abnormal forms of bacteria have been observed in clinical specimens including blood, sputum and cerebrospinal fluid of patients on antibiotic therapy.[1-3] This report highlights the observation of unusual morphological forms of bacteria in vitreous samples. We also
report the first case of endogenous endophthalmitis caused by *C. cellulans*. Infections by *C. cellulans* have been reported in immunocompromised hosts[4] and traumatic endophthalmitis.[5] Post treatment, the final visual acuity was counting fingers at 2.5 m in the first and 20/400 in the second patient.

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The eye hospital was reimbursed through the grant of the Community-assisted and financed eye care (CAFÉ) project. The idea was to create a community-assisted and financed eye care project in 16 villages of West Godavari district, in Andhra Pradesh, between October 2001 and February 2006. The project aimed to provide universal, affordable, continuous, and self-sustaining eye care delivery to all members of the community, irrespective of their economic status, a novel initiative, the ‘Community-assisted and financed eye care’ project was initiated in 16 villages of West Godavari district, in Andhra Pradesh, between October 2001 and February 2006. The project was implemented through a field team that collected a payment of one rupee per person per month on a yearly basis for the entire family. An identity card, ensuring accountability, costing five rupees five. Drop outs included those who could not sustain transportation, and reluctance to pay the identity card charge due to any eye problem, preference for free camps with food and inaccessibility, thus losing the wages for the day, unnecessary visits without availing services included prolonged waiting at the hospital, inaccessibility to eye care was observed. Barriers to registration and cataract surgeries with IOL performed. A noticeable increase in the number of outpatients was observed. In the first year of the project, 14,798 outpatients and 903 children were examined, and 1166 cataract surgeries were performed. In the second year, 23,637 outpatients and 1805 children were examined, and 1859 cataract surgeries with IOL were performed. In the third year of the project, revealed that 34% of the population, strongly felt they did not require eye care. Evaluation at the registration after utilizing the services showed that 30% of the population preferred free camps with food and inaccessibility. Barriers to registration included prolonged waiting at the hospital, inaccessibility to eye care. In the fourth year, 65% of the families utilized the hospital services. More than 70% of the population of these villages registered. Credibility was maintained by audits conducted annually. The registration was regularly started from the eleventh month. The state government reimbursed the administrative cost of registration and renewals. Based on our experience, we recommend that such projects and schemes can reach their full potential only if they are envisaged on a larger scale, for the entire state or country. It is also important that these schemes be brought under the umbrella of a universal insurance / health financing scheme, rather than an umbrella of a private insurance / health financing scheme, with the help of village heads, social workers, and health personnel, and teachers, awareness should be spread in the community with regard to the need for eye care and regular eye checkups. In addition, such schemes can provide employment.

### References

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4. Athraraman TN. The cost effective and affordable health insurance for service delivery costs, provided there is a high degree of registration and renewals. Based on our experience we recommend that such projects and schemes can reach their full potential only if they are envisaged on a larger scale, for the entire state or country. It is also important that these schemes be brought under the umbrella of a universal insurance / health financing scheme, rather than an umbrella of a private insurance / health financing scheme, with the help of village heads, social workers, and health personnel, and teachers, awareness should be spread in the community with regard to the need for eye care and regular eye checkups. In addition, such schemes can provide employment. With the help of village heads, social workers, and health personnel, and teachers, awareness should be spread in the community with regard to the need for eye care and regular eye checkups. In addition, such schemes can provide employment.