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Case Report

Infectious Diseases Section

Endophthalmitis Due to *Corynebacterium Jeikeium:* A Case Report

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ABSTRACT

Endophthalmitis is a grave complication of ocular trauma. We report here a case of acute post-traumatic endophthalmitis following a penetrating injury caused by an opportunistic organism, *Corynebacterium jeikeium*. The patient was treated with intra-vitreal antibiotics like ceftazidime and vancomycin to control the infection.

Key Words: Endophthalmitis, Corynebacterium, Ocular trauma

INTRODUCTION

We report here a case of endophthalmitis caused by Corynebacterium jeikeium after accidental trauma. This is the first of such a case to the best of our knowledge and adds this species to the list of unusual pathogens complicating ocular infections. Ophthalmologists treating patients with endophthalmitis should be aware of this bacterial genus as a potential cause of invasive ocular infections.

CASE HISTORY

A 7-year-old female sustained a penetrating injury to the right eye with a iron rod,while playing outdoors. Patient reported to a regional institute of Ophthalmology within 12 hours after trauma with redness and watering of the right eye and had been treated with topical eye drops by a local doctor. On examination, the patient had lid oedema, conjunctival as well as ciliary congestion and central full thickness corneal tear, as shown in [Table/Fig-2] with iris prolapse with shallow anterior chamber. The view of lens and posterior segment was hazy, vision was counting finger 1 metre.

Immediately, patients conjuctival swab was sent for culture and sensitivity which yielded no growth of micro-organisms. Patient was admitted and repair of corneal tear with iris abscission was done under local anaesthesia. Intravenous (I.V) antibiotic amoxycillin + clavulanic acid (50-100 mg/Kg/day) three times a day with I.V Metrogyl (10mg/Kg/dose) three times a day was started. Next day patient was followed up, there was diffuse corneal haziness with circumciliary congestion, four corneal sutures were visible. Other details of anterior chamber could not be made out. The vision had dropped to no perception of light. Patient was started on topical fortified cefazolin 5% with fortified tobramycin 1.4% along with homatropine 2% eye drops three times a day, hypersol 6% (hypertonic sodium chloride 6% w/w) eye ointment, flurbiprofen (0.3%) eye drops four times a day and tablet serratiopeptidase 10mg twice a day. B-scan was performed which revealed multiple dot like opacities in the vitreous which disappeared at low gain.

So the presumptive diagnosis of endophthalmitis was made and 0.3ml vitreous tapped for Gram's stain, potassium hydroxide (KOH) mount and bacterial and fungal culture & sensitivity was sent to the Microbiology laboratory. Concurrent intravitreal injection of ceftazidime 2.25mg/0.1ml of saline and vancomycin 1 mg/0.1 ml of saline was given.

Patient was followed up daily, systemic antibiotics were continued for 5 days and the same topical antibiotics were continued. Her vision had improved to perception of light by the 5th day. Patient was asked to follow up on Day 3, 7, 14, 21 and then monthly. After 2 months, patient's vision had not improved and patient had developed complicated cataract with other posterior fundus details not made out. Patient was sent for B scan again but was lost to follow up.

MICROBIOLOGICAL INVESTIGATION

The Vitreous tap was received at the Department of Microbiology. The Gram stain of the specimen showed plenty of pus cells with short Gram positive rods. The KOH mount was negative for fungal elements. The sample was processed by inoculating onto 5% sheep blood agar, brain heart infusion broth and Robertson's cooked meat media and incubated at 37^{0}C. For fungal culture the sample was inoculated onto Sabouraud's dextrose agar.

After overnight incubation, blood agar revealed growth of pearly white colonies that were non-haemolytic on blood agar as shown in [Table/Fig-1]. Gram's stain of the colonies revealed short, Gram positive bacilli. Albert's stain revealed bacilli in palisade arrangement without metachromatic granules. Conventional tests revealed the strain that was positive for catalase, negative for oxidase, non-motile, fermented glucose and produced black colonies on potassium tellurite agar. Anaerobic culture yielded no growth after 10 days. Fungal culture yielded no growth after 4 weeks.

Presumptive identification of Corynebacterium spp was made and the isolate was further identified by commercially available API Coryne system (version 2.0; bioMe´rieux, Marcy-l'Etoile, France) which identified the strain as Corynebacterium jeikeium.

The isolate was tested for antibiotic sensitivity on Muller Hinton agar by Kirby Bauer disc diffusion technique using standard methods. The antibiotic discs used were Amikacin (30mcg), Cephalexin (30mcg), Ciprofloxacin (01mcg), Tobramycin (10mcg), Ampicillin (10mcg), Vancomycin (30mcg). The strain was resistant to ampicillin, ciprofloxacin and cephalexin.

[Table/Fig-1]: Pearly white, non-haemolytic colonies of C.jeikeium on blood agar

[Table/Fig-2]: Photograph showing corneal tear with haziness taken on the day of admission

DISCUSSION

Infectious endophthalmitis is a potentially devastating complication of penetrating ocular injuries. Traumatic endophthalmitis due to unusual organismsis not uncommon and usually causes a poor final visual outcome, especially with virulent organisms [1].

C. jeikeium is considered part of the normal flora of the skin, particularly of inpatients and can also be recovered from the inanimate hospital environment. *C. jeikeium*, formerly characterized as diphtheroids belonging to CDC group JK, currently belongs to lipophilic Corynebacterium. They were known to be associated although not exclusively, with immunocompromised hosts with malignancies, in-place medical devices, prolonged hospital stays, breaks in integument, and therapy with broad spectrum antibiotics [2].

Clinical manifestations of *C. jeikeium* infections include nosocomial septicemia, bacteremia, pulmonary infiltrates in patients with bone marrow disorders, cavitating pneumonia in a patient with chronic obstructive pulmonary disease, skin rashes, septic cutaneous emboli, meningitis, and soft tissue infections, particularly among granulocytopenic patients [3, 4].

C. jeikeium isolates are pleomorphic, occasionally club shaped, gram-positive rods, arranged in V forms or palisades. After 24 h of growth on Sheep Blood Agar at 37°C, colonies are nonhemolytic, small (0.5 to 1 mm), entire, low convex, and pearly-white. The organism is a strict aerobe, with no growth occurring anaerobically. The CDC identification scheme identifies catalase-positive, oxidase-negative, penicillin-resistant (usually), lipid-requiring coryneforms that are nitrate and urea negative but able to ferment glucose, usually galactose, and sometimes maltose, as group JK. These strains are otherwise biochemically inert [5].

C. jeikeium strains are often multi-resistant to antibiotics but are susceptible to glycopeptides and pristinamycin, with variable susceptibility to erythromycin, tetracycline, rifampin, and quinolones. Resistance to antibiotics is thought to be chromosomal rather than plasmid associated. In fact, multiple resistance has been used as a screening test for this species [6].

To conclude, multidrug resistant strains of commensal organisms can also lead to fulminant endophthalmitis with dire consequences as seen in our case. With meticulous microbiological evaluation including drug sensitivity and timely intervention with appropriate medication results appear encouraging.

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