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CASE REPORT

A severe *Morganella morganii* endophthalmitis; followed by bacteremia

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ABSTRACT

Morganella morganii is rarely isolated from nosocomial infections. However, postoperative infections due to *Morganella* spp. were documented in literature and eye involvements of the infections usually result in severe sequels. We present a severe case infection, which was caused by *M. morganii subsp. morganii,* firstly appearing as conjunctivitis and complicated by bacteremia. The infectious agent isolated from both conjunctival and consecutive blood cultures. Identification and antimicrobial susceptibility tests were performed with the Vitek 2® automated system. The isolate was resistant to cephalosporins and carbapenems and it had ability to produce extended spectrum beta-lactamases. Patient was successfully treated with intravenous ciprofloxacin according to susceptibility test results. This is the first report of *M. morganii* infection detected as a local infection then complicated by bacteremia.

Keywords: *Morganella morganii,* Conjunctivitis, Bacteremia, Ciprofloxacin

INTRODUCTION

Morganella morganii is a Gram-negative bacillus commonly found in the environment and in the intestinal tracts of humans as normal flora. It is previously classified under the genus *Proteus, Proteus morganii*. Now, it belongs to genus *Morganella*. *M. morganii* is the single member of the genus with two subspecies; *M. morganii subsp. morganii* and *M. morganii subsp. sibonii* (1). Despite its wide distribution, it is relatively rare cause of invasive infection. It is mostly encountered in postoperative cases and rarely (less than 1%) nosocomial infections as opportunistic pathogen in hospitalized patients, particularly those on antibiotic therapy such as neonatal sepsis, brain abscess, pericarditis, endophtalmitis (2-5).

Here, we present a severe case of *Morganella morganii* infection. The case is worth mentoning since the infection began as postoperative endophtalmitis and periorbital ulcerations, and complicated by bacteremia. As far as we know this is the first reported case of *M. morganii* with those complex infection characteristics.

CASE REPORT

A 76-year-old female diabetic patient admitted to ophthalmology clinic due to bilateral post-operative conjunctivitis which occurred 15 days after cataract surgery (Picture). She was suffering severe pain, photophobia and decreased vision. Signs of tense conjuctival injection and chemosis, corneal and periorbital edema, hypopyon, decreased red reflex

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and visual acuity were detected in the eye examination. Conjunctival swap samples were sent to microbiology laboratory. Approximately at the 36th hour of the follow-up, patient deteriorated with presenting symptoms like dyspnea and tachycardia. Fever, low blood pressure, cardiac insufficiency and high glucose levels were primarly detected. There upon, she transferred to intensive care unit. Vital signs were as follows; body temperature 38.9 ºC, arterial blood pressure 84/60 mm-Hg, respiratory rate 28/min. White blood cell count 12900/ml, hemoglobin 11,3 gr/dl, erythrocyte sedimentation rate 69 mm/hr, glucose 145 mg/dl detected as laboratory findings. Patient got monitored; cardiac supporting treatment began, and urine, sputum, blood cultures were collected. In the Gram stain of the conjunctival swab specimen, Gram-negative bacilli and inflammatory cells were observed abundantly. Both conjunctival and blood cultures yielded *M. morganii subsp. morganii.* Other cultures of the patient were negative. The Vitek 2® automated System (*Biomerieux, France*) was used for identification and antimicrobial susceptibility testing. Kirby-Bauer disc-diffusion method was also used to detect presence of extended spectrum beta lactamase (ESBL). Both of the isolates were resistant to ampicillin, ampicillin/sulbactam, cefazolin, cefuroxime, ceftriaxone, ceftazidime, meropenem and imipenem, and they produced ESBL. They were susceptible to quinolones and aminoglycosides. The patient was consulted to the department of infectious disease. Then, the patient was treated successfully with intravenous ciprofloxacin 200 mg, twice a day, according to susceptibility test results. After initiation of antimicrobial therapy, clinical response was achieved, WBC decreased to 8600/ml, and signs of sepsis regressed. At the 10th day of admittance, the patient was transferred to internal medicine department and the day of 16th, the patient was discharged healthy.

DISCUSSION

Endophtalmitis is one of the most serious ocular complication and despite the all precautions it still occurs nearly 0.1% of the patients following opthalmic surgery (6). Most organisms that exist as normal flora implicated in endophthalmitis and periorbital ulcerations. Gram-negative bacteria are less commonly isolated than Gram-positive ones from the patients with endophtalmitis. *Pseudomonas* spp., *Haemophilus* spp., *Klebsiella* spp., and *Proteus* spp. are frequent cause of Gram-negative endophthalmitis (7,8). In contrast, *M. morganii* is an uncommon isolate from normal ocular flora. Okumoto and colleagues isolated *M. morganii* from 5 of 1000 (0.5%) normal preoperative human eyes (9). It causes opportunistic infections especially in patients with risk factors such as immunosuppression, surgical trauma, malignancy, diabetes mellitus, malnutrition, long-term urinary catheterization, corticosteroid therapy, malignancy, intravenous drug use, alcoholism, and prior exposure to β-lactam antibiotics (10). In this case, previous surgery, diabetes mellitus, and exposure to β-lactam antibiotics served as predisposing factor and constituted backdrop for *M. morganii* infection.

Like other members of the *Enterobacteriaceae, M. morganii* has a natural resistance to β-lactam antibiotics. Many strains of *M. morganii* are resistant to the cefazolin, cefixime, cefpodoxime, and ampicillin (1, 11). The drug resistance of *M. morganii* occur due to extra genetic and/or mobile elements that carry $bla_{C\text{-}TX\text{-}M}$ genes producing β-lactamase (12, 13).

In our case, we detected that the isolate also had ESBL, which limited treatment choices. Resistance to carbapenems also was detected together with resistance to cephalosporins, which limited treatment options to the quinolones and aminoglycosides. Fortunately, the patient was treated with IV ciprofloxacin. It is obvious that early detection and accurate identification and antimicrobial susceptibility testing of the causative agent, is crucial to successfully treatment without any sequel such as blindness and/or death for *Morganella* infections.

Picture: Post-operative conjunctivitis caused by *M. morganii subp. morganii.*

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