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Case Report

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MORGANELLA MORGANII INFECTION LEADING TO PANOPTHALMITIS – A CASE REPORT FROM S.D EYE HOSPITAL A TERTIARY EYE CARE HOSPITAL

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ABSTRACT

Morganella morganii is a opportunistic pathogenic species of Gram-negative bacteria. It is most often encountered as nosocomial infections in postoperative cases and also infrequently seen as a cause of secondary eye related diseases like panophthalmitis following trauma and cataract surgery.[1] Here we report a case of Morganella morganii induced Panophthalmitis which lead to auto evisceration and the attributable risk factor in this case was inappropriate and incomplete usage of antibiotic therapy for dacrocystitis .Conventional culture of pus from both eyes showed growth of the infectious agent a gram negative bacilli which was ascertained as Morganella morganii basing on the cultural characters and biochemical tests. For further confirmation of the identification and also for antimicrobial susceptibility Vitek 2® automated system was used. The isolate was sensitive to cefotaxime, Amikacin, Gentamycin, cefperazone /sulbactam, Piperacillin / Tazobactam, Meropenem ceftazidime cefepime, minocycline, aztreonam andresistant to cotrimoxazole Imipenem, levofloxacin, Ciprofloxacin, Tigecyclin, colistin.

KEYWORDS: Morganella morganii, Panophthalmitis Evisceration.

INTRODUCTION

Morganella morganii is a opportunistic, facultative anaerobic, Gram- negative bacilli a member of Proteae spp of the Enterobacteriaceae family and which is usually found in the environment and in the intestinal tracts of humans,mammals,and reptiles as normal flora,[2] The genus Morganella has two subspecies, namely, morganii and sibon.[3]

M. morganii is a motile, non-lactose fermenting bacterium, and with the Proteus members it shares the ability for urease production and presence of phenylalanine deaminase. In recent years,due to its extra genetic determinants there is increased incidence of the drug resistance of M. morgani often resulting in clinical treatment failure.[4] Its virulence factors, such as urease, hemolysins, and lipopolysaccharide all play a role it its function as an opportunistic pathogen The disease spectrum of M. morganii infection varies and is changeable according to its virulence evolution. Appropriate dual antibiotic therapy is important for the best treatment of the disease. Combination therapy with two antibiotics based on susceptibility of organism is preferred for complicated cases and immune compromised patients This case study aims to summarize the epidemiology of M. morganii, focus on its resistance profile anddiscuss its disease spectrum and risk factors.

CASE REPORT

A 47 year old man from a rural background presented to Sarojini Devi Eye Hospital, a tertiary eye care hospital at Hyderabad, with complaints of pain, itching, redness, watering from left eye followed by pus discharge and inability to open the left eye. The symptoms were insidious in onset and progressive in nature. There was no history of trauma, previous ocular surgeries and there were also no systemic co morbidities.

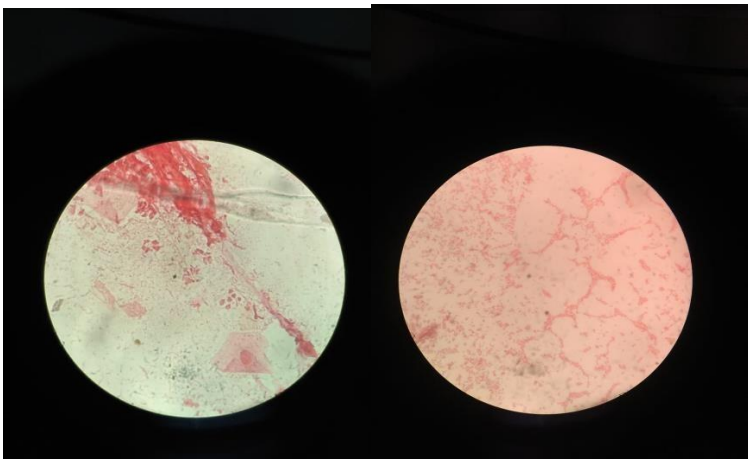
On examination patient had severe edema of left eye, rise of temperature and tenderness and the clinical picture was fulminating. Patient gave history of discharge of pus from right punctum one month back for which he has taken inappropriate and incomplete antibiotic therapy. on examination regurgitation of purulent fluid on application of pressure was noticed in both eyes. Both eyes were having dacrocystitis. Left eye showed orbital cellulitis and totalcorneal melt.

B scan showed normal vitreous, posterior staphyloma was seen.

Patient was kept on injection cefotaxime, gentamycin and metronidazole, and he respondedwell.

In the microbiology laboratory, a direct smear was made from the specimen and was seen under the microscope and later the specimen was inoculated onto 5% sheep blood agar and Eosin MacConkeys agar media plates and they were aerobically incubated at 37 °C for 24 hours. Growth of gram negative, non-lactose fermenting, off-white and opaque in color, colonies appeared on MacConkey agar and there was no swarming The biochemical tests like Indole, methyl red, voges prausker urease catalase and PPA were positive, TSI showed K/A without H2S, citrate and oxidase were negative, Xylose was not fermented, gelatin not liquefied, Ornithine-decarboxylase and inositol were positive, and it produced acid from mannose. Further confirmation of the isolate and its susceptibility testing was performed by using automated system Vitek 2. Interpretation of antimicrobial susceptibility was done as per Clinical Laboratory Standard Institute (CLSI 2018) guidelines.

Direct smear **Culture smear**



NLF on Mackoney agar plate **Antibiotic susceptibility on muller hinton agar**

Indole positive, citrate negative, Urease positive , TSI k/A

Glucose fermented, lactose, sucrose , maltose, mannitol , xylose not fermented

Positive ornithine decarboxylation test.

Phenylalanine deaminase test positive

Methyl red test positive , Voges proskauer test negative.

Left eye auto evisceration **Dacrocystectomy done in both eye**

RESULTS

TEST REPORT

NAME : MR.BHASKAR
Age / Gender : 47 Years / Male
Ref.By : DR SELF
Req.No : BIL0718470

TID/ SID
Registered on
13-Jan-2021 / 12:18 PM
14-Jan-2021 / 09:46 AM

DEPARTMENT OF MICROBIOLOGY
Culture and Sensitivity – Automated/Vitek 2

Investigation	Result
Specimen Type	Pus
Organism Isolated	Morganella morganii grown in culture.

Antibiotic Susceptibility

Antibiotics	Susceptibility	MIC Value
Amikacin	Sensitive	<=2
Gentamycin	Sensitive	<=1
Cefoperazone/Sulbactum	Sensitive	<=8
Piperacillin/Tazobactum	Sensitive	<=4
Imipenem	Resistant	4
Meropenem	Sensitive	<=0.25
Ceftazidime	Sensitive	<=1
Cefepime	Sensitive	<=1
Levofloxacin	Resistant	>=8
Ciprofloxacin	Resistant	>=4
Tigecycline	Resistant	>=8
Colistin	Resistant	>=16
Minocycline	Sensitive	<=16
Aztreonam	Sensitive	<=1
Co-Trimoxazole	Resistant	>=320

Comments. (Ticarcillin/Clavulanic Acid also Sensitive(MIC Value= <=8).

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The isolate was sensitive to cefotaxime, Amikacin, Gentamycin, cefperazone /sulbactam, Piperacillin / Tazobactam, Meropenem ceftazidime cefepime, minocycline, aztreonam and resistant to cotrimoxazole Imipenem, levofloxacin, Ciprofloxacin, Tigecyclin, colistin

Right Dacrocystectomy was done first to save patients unaffected eye.

Left eye got auto eviscerated and left dacrocystectomy was done. Patient responded to antibiotics given and further spread was not seen.

DISCUSSION

Morganella is a motile, facultative anaerobic non-encapsulated, gram negative, non-lactose fermenting, motile bacillus which is generally a commensal in gastro intestinal system and an opportunistic pathogen. Very few case of Morganella morgagni endophthalmitis have beenreported in literature.[5] among them both exogenous and endogenous spread was reported Endogenous spread was reported from chronic asymptomatic urinary tract infections and from biliary tract and exogenously from dacrocystitis spreading to cause orbital abscess.[6]) In our case patient suffered from dacrocystitis of both eyes which further progressed to endopthalmitis of left eye further leading to panophthalmitis. Identification of M. morganii was made basing on the cultural characters and biochemical properties,In this case, improper antibiotic therapy was the risk factor that can be attributed for M. morganii infection.

One of the most serious ocular complication following opththalmic surgery is Endophtalmitis and it is seen in 0.1% of the post operative patients in spite of taking all the precautions. The normal flora is mostly attributed as the causative agents. Though mostly the Gram positive

organisms are isolated Gram-negative bacteria like Pseudomonas spp., Haemophilus spp., Klebsiella spp., and Proteus spp are also isolated in endophthalmitis cases.[7,8]

M. morganii has been regarded as a normally harmless opportunistic pathogen, but some strains carry "antibiotic-resistant plasmids" and have been associated with nosocomial outbreaks of infections. It is seen as normal flora in 0.5% preoperative human eyes.[9] This species is a rare cause of ocular and periocular infections, such as endophthalmitis and orbital abscess . Few cases of keratitis secondary to Morganella morganii has been reported.

Several reports indicate M. morganii causes sepsis, ecthyma, endophthalmitis, and chorioamnionitis, and more commonly urinary tract infections, soft tissue infections, septic arthritis, meningitis, and bacteremia.

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, intravenous drug use, alcoholism, and prior exposure to β-lactam antibiotics.[10] M.morganii is resistant to antibiotics by chromosomally (extra genetic and/or mobile elements) encoded AmpC betalactamases and possesses the ability to develop resistance upon exposure to broad-spectrum cephalosporins.[11,12,13] Most strains are naturally susceptible to piperacillin, ticarcillin, mezlocillin, third and fourth generation cephalosporins, carbapenems, aztreonam, fluoroquinolones, aminoglycosides, andchloramphenicol.

Treatment depends on the condition of the infection and it may include both medical and surgical intervention. Due to the opportunistic character of M. morganii, underlying disease must be treated. Uncomplicated and early diagnosed infections can be treated with mono antibiotic therapy. Choice of antibiotic treatment is very important because improper antibiotic therapy is a risk factor for development of M. morganii infection.

CONCLUSION

M. morganii though a rare opportunistic pathogen it can lead to serious fulminant clinical disaster with a devastating endophthalmitis as it is is a highly resistant bacillus susceptible only to b-lactamase inhibitors. It is therefore pertinent that prompt early detection and accurate identification with very early intensive aggressive treatment including systemic antibiotic therapy and with a multidisciplinary approach is the most important factor in the possible success of avoiding severe visual sequelae of the eye like evisceration and enucleation.

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