Section: Microbiology

Case Report

CASE REPORT: "ISOLATION OF ASPERGILLUS TERREUS FROM URINE SAMPLE OF A PATIENT WHO UNDERWENT URETEROSCOPY

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ABSTRACT

A 55-year-old type 2 diabetic mellitus patient was suspected to possess renal stone after radiological investigation. The suspicion started because of urethral obstruction where the patient complaints of abdominal pain and passing whitish urine on and off. During the ureteroscope, the obstruction seemed to be fluffy and was only partially removed by threads. Three months prior to this complaint, he had a history of hospital admission for undergoing ureteroscopic lithotripsy for the purpose of removal of renal stone and where ureteral stent was placed. However, due to abnormal discharge and persistent obstruction, the stent was removed and antibiotics was prescribed for a while. The urine sample is whitish and showed the growth of Aspergillus terreus. The patient was treated with fluconazole, which after no improvement was changed to voriconazole.

Keywords: Ureteroscopic lithotripsy, Aspergillus terreus, voriconazole.

INTRODUCTION

The term Aspergillus was proposed in 1729 by Pietro Antonio Micheli, a biologist, and Italian priest, who noticed that the organism resembles aspergillum, an instrument that is used to sprinkle holy water.[1] Some of the species of Aspergillus are found in air, water, soil, and food. They contribute to number of diseases which includes allergic bronco pulmonary disease, nasal sinusitis, otomycosis, mycotic keratitis and invasive infection.[2]

Aspergillus terreus is a ubiquitous obligate aerobic and saprophytic fungi and it is mostly a pulmonary pathogen that can also cause urinary tract infections, which predominantly occurs in uncontrolled diabetes mellitus, AIDS, chronic immunosuppressive therapy, chronic alcohol, intravenous drug use, neutropenia, inherited immunodeficiency, solid organ transplant and urinary tract instrumentation. Species like A.fumigatus, A.flavus, and A.niger also cause similar diseases.[3] Aspergillosis in the urinary tract occurs mainly either by hematogenous disseminated spread involving renal parenchyma, or by casting of the renal pelvis causing the formation of fungal balls.[4] The clinical manifestation of the Aspergillus in patients ranges from common asymptomatic colonization, pyelonephritis, ureteric obstruction, sepsis, renal failure or disseminated aspergillosis.[5,6] In the previous studies, according to Ahuja Et al, patients usually no complaints of dysuria, oliguria or passing of whitish masses before ureteroscopy, signifying that the infection might have occurred during Instrumentations because of improper sterilization.[6]

Effective treatment of invasive aspergillosis is to start early antifungal treatment, immunomodulation and to remove substances that obstruct urine outflow. Surgery is recommended in some severe cases.[7]

CASE STUDY

A 55-year-old male patient was admitted to Madha Medical College located in Kovur, Chennai on March, 2022. The patient complaints of severe dysuria, burning micturition and pungent smell while passing urine. The patient also complaints of urethral obstruction and lower abdominal pain which is radiating to the groin regions. The Patient had no past history except for suffering with type II Diabetes mellitus for past five years and is undertaking OHA (Oral hypoglycemic agents). The patient slowly revealed a past history of undergoing ureteroscopic

lithotripsy in some other private hospital for removal of renal calculi in both kidneys, where it was broken into several pieces and urethral stent was placed to prevent future hydronephrosis. The patient was alright for two months after the procedure and then started to have the following clinical manifestations mentioned above.

PROCEDURES CARRIED IN MADHA MEDICAL COLLEGE-DEPARTMENT OF UROLOGY, BEFORE THE PRECLINICAL FINDINGS:

Abdominopelvic Computed Tomography (CT) scan, retrograde pyelography and ultrasonography were taken which revealed dilations on both side of ureters near pelvic inlet and calyx. Ureterescopic procedure was carried out to check for presence of renal calculi and for checking any other complications. The stents were clogged with multiple fluffy whitish mass around 2-4 cm. The whole mass was removed using ureteroscopic forceps and an NTRAP TM basket. The urine sample was sent to Microbiology laboratory. Amoxicillin was being administered initially suspecting it to be some bacterial urinary tract infection. No improvement was seen.

PROCEDURES CARRIED IN MADHA MEDICAL COLLEGE-DEPARTMENT OF MICROBIOLOGY, BEFORE THE PRECLINICAL FINDINGS:

Urine sample was sent to the Department of Microbiology on 15th of March, 2022. The urine sample was sent for routine investigation as well as for mycology.

Macroscopic appearance of the urine

The urine sample was showing to have blood and also had whitish precipitation in the bottom of the urine container. The urine sample was unusually thicker.

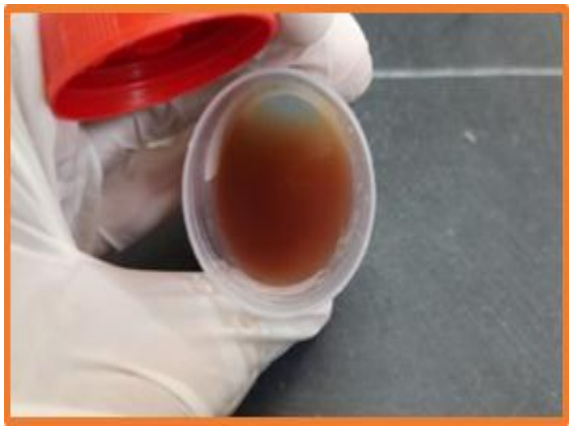

Figure A: Showing urine sample with blood and thick white precipitate at bottom of the container

Microscopic appearance of the urine sample:

The potassium hydroxide (KOH) mount showed filamentous growth in the urine sample. 10% KOH showed septate hyphae measuring 3-6 microns with acute branching.

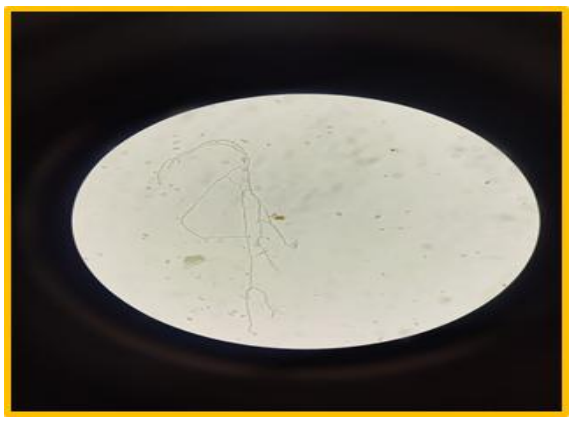

Figure B: Showing KOH mount of urine sample identified with filamentous growth.

Culture revealing

The urine sample was streaked in blood agar and CLED agar which showed no growth and the report was given as no bacteriuria. The urine sample which was stabbed on Sabouraud dextrose agar showed whitish colonies, initially without any pigments.

Figure C: Showing whitish colonies on Sabouraud Dextrose Agar.

Lactophenol cotton blue mounting was performed on the fresh culture which showed sparse developing fruiting bodies and more septate hyphae. After 2-3 days, the white colonies turned to showcasing velvety cinnamon brown pigments with tan yellow pigment in the reverse.

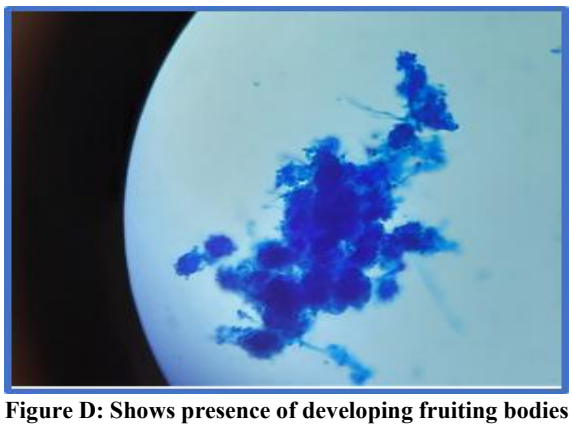

Figure D: Shows presence of developing fruiting bodies arranged sparsely.

Figure E: Shows the teasing of single hyphae.

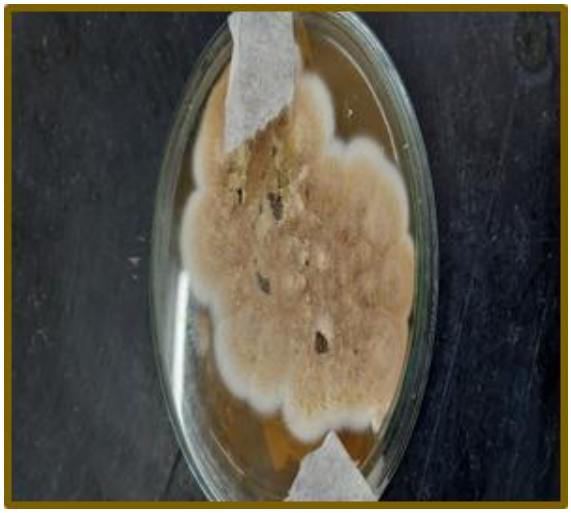

Figure F: Showing transition of the colour of the pigment.

PROCEDURES CARRIED IN MADHA MEDICAL COLLEGE-DEPARTMENT OF UROLOGY, AFTER THE PRECLINICAL FINDINGS

Fluconazole was given initially and there were no improvements. The patient again gave the sample on 13th of May which showed same colony morphology and same growth pattern. Hence, the antifungal regimen was changed from fluconazole to voriconazole. 200 mg of voriconazole was given orally for period of 10 days. Third time, the urine sample of the same patient was received. To the amaze, no growth was found.

DISCUSSION

According to Infectious Disease Society of America (IDSA) guidelines for treating Aspergillosis in 2016, voriconazole has been recommended as the initial therapy rather than amphotericin B for invasive aspergillosis because of the side effects caused by Amphotericin B [8]. Oral dose of 200 mg is recommended for every 12 hours. The dose can gradually be increased to 4 mg/kg, every 12 hours (or 300 mg every 12 hours) in patients with disease progression. Adverse effect of voriconazole includes photopia, hepatotoxicity & skin rashes when exposed to sunlight, visual hallucinations etc.[9,10]

CONCLUSION

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