

Isolated bilateral renal mucormycosis managed with preservation of one kidney

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ABSTRACT

Mucormycosis is an opportunistic invasive fungal infection, usually seen in immunocompromised individuals. Isolated renal involvement is unusual and is commonly a part of multi system involvement. Combined surgical and medical management is imperative for isolated renal mucormycosis (IRM) in unilateral cases. Prognosis is even more decimal in bilateral cases. Till date only available option for management of bilateral renal mucormycosis is bilateral nephrectomy with renal replacement therapy. We are sharing our experience of bilateral renal mucormycosis managed by unilateral nephrectomy and medical management with successful long term outcome.

KEYWORDS: Amphotericin B, Nephrectomy, Percutaneous nephrostomy, Renal mucormycosis.

INTRODUCTION

Mucormycosis is an opportunistic invasive fungal infection, usually seen in immunocompromised individuals. Isolated renal involvement is unusual and is commonly a part of multi system involvement ^{1, 2}. Isolated renal mucormycosis (IRM) is even rarer in immunocompetent individuals. IRM is universally associated with loss of renal units and mortality. Diagnosis is delayed because of non-specific presentation. Organ function preservation is virtually ineffective with currently available treatment options ^{3, 4}. Bilateral nephrectomies with renal replacement therapy had been described in literature with overall poor outcome. We are sharing our experience of bilateral renal mucormycosis managed by unilateral nephrectomy and medical management with successful long term outcome.

CASE REPORT

A 24 year male presented with complaint of abdominal distention and right flank pain for 10 days. He had undergone left percutaneous nephrolithotomy (PCNL) with bilateral double J (D-J) stent placement for left renal calculi and right side pelviureteral junction obstruction (PUJO) with infected hydronephrosis (HDN). He had no previous history of any other significant medical or surgical disease. On examination he was found to be febrile with a grossly distended right kidney. Investigations revealed leucocytosis (Total leukocyte count=22900) with deranged renal function (Serum creatinine=2.3). ELISA for HIV was negative. Ultrasound kidney-ureter and bladder revealed right side gross HDN with internal echoes and DJ stent in situ.

Repeated attempt of draining the right pelvicalyceal system with PCN tube failed because of repeated blockage of tube with fluffy material. On evaluation with Contrast enhanced computed tomography of abdomen he was found to have right kidney gross hydronephrosis with marked thinning of renal parenchyma with Left sided moderate HDN with right PUJO. (Figure 1) Renal scan was suggestive of decrease in renal function and deterioration of function in both kidney (glomerular filtration rate, left kidney 31.23 milliliter/minute, right kidney 6.16 milliliter/minute) and obstructed pattern in right renal unit. He underwent right open nephrectomy under general anaesthesia. In postoperative period he developed repeated blockage of left DJ stent in view of which left percutaneous nephrostomy was placed which was also getting blocked repeatedly. Serial urine culture was found to be sterile and acid fast staining was negative. Urine culture for fungus was found to be positive for mucormycosis. Nephrostogram was suggestive of filling defect in pelvicalyceal system. (Figure 2) After dilatation of percutaneous nephrostomy tract up to 26 Fr, nephroscopy (rigid nephroscope) was done under general anaesthesia and irrigation and removal of thick purulent fluid and fungal hyphae was done. Patient was kept on irrigation with amphotericin B through PCN tube and intravenous clotrimazole. Histopathology report of right nephrectomy specimen was suggestive of renal mucormycosis. (Figure 3) Patient gradually improved over a period of 2 week and is doing well without recurrence of the disease at follow up of 2 years with stabilization of renal function (Serum creatinine=0.8).

DISCUSSION

Mucormycosis is an infection caused by fungus of group Zygomycetes⁵. Mucormycosis generally occurs as multisystemic disease in immunocompromised host like diabetes mellitus, malignancy, organ transplantation⁶ and HIV⁷. IRM is a rare event, but in these cases bilateral renal unit involvement is more common than unilateral involvement of kidney. Healthy people are affected rarely^{8, 9}, but high incidence of disease affecting immunocompetent host in northern India may be due to high environmental load⁴. Broad nonseptate, irregularly shaped hyphae with right angle branching is specific histological characteristic of this group of fungi. Hyphae invade blood vessels resulting in thrombosis and necrosis which is a common finding in mucormycosis⁸. Combined surgical and medical management is imperative for IRM. Extensive debridement of necrotic nonviable tissue (with or without nephrectomy) along with medical management in form of intravenous amphotericin B is the treatment of choice. Overall survival for unilateral IRM is 65%.¹⁰ Prognosis is even decimal in bilateral cases. There are isolated reports of successful management of IRM with amphotericin B alone^{9, 11}. Till date only available option for management of bilateral renal mucormycosis is bilateral nephrectomy with renal replacement therapy. To the best of our knowledge it is the 1st reported case of bilateral

renal mucormycosis managed by unilateral nephrectomy and medical management with successful long term outcome.

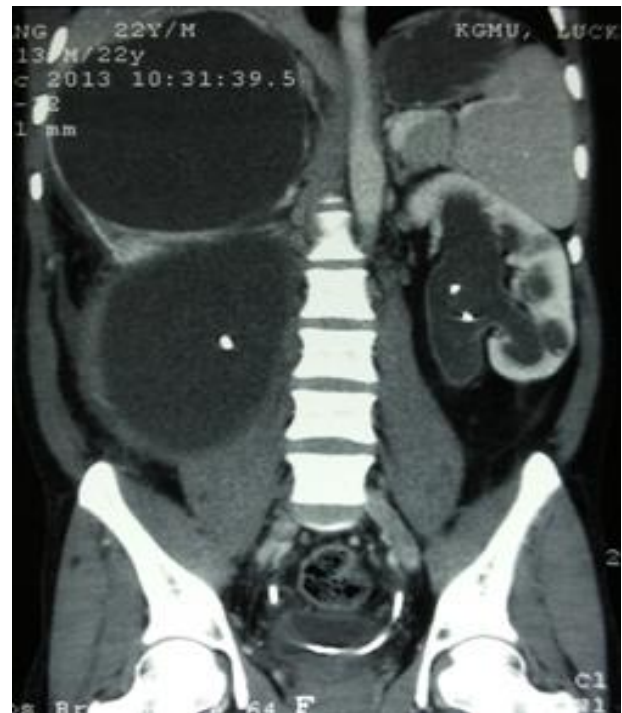


Fig 1: CECT abdomen showing right gross hydronephrosis with marked thinning of renal parenchyma with Left moderate HDN with bilateral double J stent in situ



Figure 2: Left nephrostogram showing filling defect in left pelvicalyceal system.

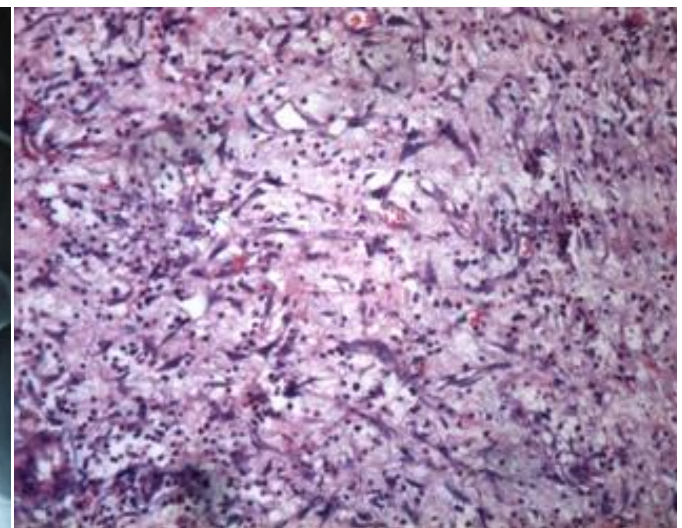


Figure 3: Microscopic examination of right kidney shows broad non-septate fungal hyphae.

CONCLUSION

IRM is a rare event. Mucormycosis generally occurs as multisystemic disease in immunocompromised host like diabetes mellitus, malignancy, organ transplantation and HIV. In situations of IRM bilateral renal unit involvement is more common than unilateral involvement of kidney. Healthy people are affected rarely. Diagnosis is delayed because of non-specific presentation. Organ function preservation is virtually ineffective with currently available treatment options. Till date only described option for management of

bilateral renal mucormycosis is bilateral nephrectomy with renal replacement therapy. Selected cases of bilateral renal mucormycosis can be managed by at least preservation of one renal unit.

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CONFLICTS OF INTEREST

No authors have any conflicts of interest or financial ties to disclose.

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