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Management of Multiple Infections in Post Renal Transplantation

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Abstract: Due to long term use of immunosuppressive medications, renal transplant recipients are susceptible to variety of pathogenic organisms as a result of weakened immune system and impaired inflammatory responses. Moreover such medications also cause suppression of individuals' clinical symptoms leading to delay in both diagnosis and management of disease. Following is the case of a patient having multiple infections post renal transplantation. A 55 years old post renal transplant patient was admitted to hospital due to major symptoms of infection. Appropriate and timely treatment of such patients is of vital importance as due to presence of several clinical problems, treatment of such patients become complicated.

Key words: Multiple Infections · Renal Transplantation · Tuberculosis · Management

INTRODUCTION

Renal transplantation is a surgical process in which a kidney from a donor is transplanted in recipient having chronic kidney disease or end-stage renal failure. In order to prevent rejection of transplanted organ, various immunosuppressive medications are prescribed to transplant recipients [1]. Due to use of these medications, transplant recipients become more susceptible to various types of infection and inflammatory responses. Such infections vary from bacterial, viral, fungal and also include many other types of infections caused by pathogenic organism [2]. One such example is tuberculosis infection caused by Mycobacterium tuberculosis. Tuberculosis is one of the most encountered infections after renal transplantation especially in third-world countries. As compared to general population, the incidence of is 20–74 times higher tuberculosis among kidney transplant recipients, with a mortality rate of up to 30% [3]. The provision of appropriate pharmacotherapy and implementation of timely preventive strategies are extremely important for such patients. In order to highlight course of different infections and their management in such patients, following case is presented.

Case presentation: A 55 years old women was admitted to Hospital Universiti Sains Malaysia (HUSM) due to severe lethargy accompanied by fever, vomiting, severe cough and blackish stool for the past five days. Medical history of patient showed that she has undergone renal transplant 12 years ago and has been concomitantly suffering from diabetes mellitus, hypertension and hyperlipidemia. At the time of admission, patients' blood pressure was 171/78mmHg, temperature 39.7°C and hemoglobin 7.3g/dL. Moreover, patient was having palpitations with shortness of breath (SOB). Medicine history of patient showed that she has been using Azathioprine 50mg OD, cyclosporine 50mg BD and prednisolone 30mg OD in tablet dosage form for quite long time. Patient reported no history of alcoholism, smoking and denied use of any over the counter (OTC) medicine recently.

Upon admission, patient was provided with basic medical care to maintain her blood pressure and body temperature. Blood tests of patient showed low White blood cell (WBC) count i.e. $2x10^9/L$. Physician recommended therapeutic drug monitoring (TDM) of Azathioprine and Cyclosporine as both drugs have narrow therapeutic window. Patient then immediately

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underwent CT thorax scan and Asperogillus was found to be the causative agent of infection. Physician prescribed Intravenous (IV) Voriconazole 330mg BD (Loading dose) for her asperogillosis, followed by maintenance dose 220mg BD but eventually decreased dose to 200mg BD as the infection was controlled. In order to control various concurrent medical complications of patient, following medications were prescribed by physician; subcutaneous Actrapid® 8 unit (Thrice a day) to control blood sugar levels. The dose was further increased to 12 units due to uncontrolled blood sugar level even though at the time of admission patients' blood sugar was under control. Patient was further given Tablet Amlodipine 5mg once daily (OD) and tablet Furosemide 40mg OD to control blood pressure and was prescribed tablet pantoprazole 40mg BD as a prophylaxis of peptic ulcer, two tablets of potassium chloride TDS for hypokalemia, subcutaneous granulocyte stimulating factor 300µg OD to boost up white blood cell level, IV metoclopramide 10mg stat (As required) as antiemetic, syrup lactulose 15ml TDS (Thrice daily) as laxative and tablet paracetamol 1g as treatment of fever.

In addition to above mentioned medications, several antibiotics have been prescribed to patient for treatment of recurring infection i.e. IV Ceftazidime 1g OD, followed with IV meropenem 1g BD then tablet sulfamethoxazole/trimethoprim 1.2g QID. Despite of all treatment for infection, patient symptoms persisted for one week. Based on patient unstable condition, bronchoscopy test was done again. The results of bronchoscopy test finally confirmed diagnosis of endobronchial tuberculosis leading to initiation of anti-tuberculosis therapy.

DISCUSSION

The authors described the case of an old woman with renal transplant suffering from severe infection. The initial assessment of patient showed Aspergillosis as the causative agent for infection. Aspergillosis is a fungal infection that occurs in immunocompromized individuals or patients' having prolonged lung diseases [4]. In current case, patient suffered from this infection due to prolonged use of immunosuppressive medications i.e. cyclosporine, azathioprine. Immunosuppressive medications are prescribed to renal transplant recipients in order to prevent sudden rejection of transplant or deterioration of kidney function [5].

In current case, patient WBC count was very low because of Azathioprine-induced leukopenia [6]. A person is said to suffer from drug induced leukemia when the WBC count is less than <4.0 x 109/L. In this case patients' WBC was <2 x 109/L [7]. Physician withheld Azathioprine and granulocyte stimulating factor (GSF) was prescribed to ensure maintenance of WBC counts. As Azathioprine was withheld, the dose of cyclosporine was increased because TDM showed inadequate level of cyclosporine in blood. Continuous TDM of cyclosporine was ordered by physician in order to prevent fluctuations of cyclosporine blood level. As finally the last bronchoscopy test showed Mycobacterium tuberculosis as the causative agent of infection, anti-tuberculosis therapy was initiated i.e. Tablet Isoniazide 300mg OD, tablet rifampicin 600mg OD, tablet ethambutol 1250mg EOD, tablet pyrazinamide 1250mg EOD and tablet pyridoxine 10mg OD. Pyridoxine was added to this regime for prevention isoniazide side effect i.e. neuropathy.

Upon careful examination of patient condition and medications prescribed, two important issues araised. Firstly, the hemoglobin level of this patient was very low and secondly she was a transplant recipient. This calls for an urgent treatment of anemia but currently patient was not prescribed anything for her anaemic state. Secondly, one of the side effect of sulfamethoxazole is hyperkalemia [8]. This patient has been prescribed with two tablets of potassium chloride concomitantly with sulfamethoxazle. This puts patient at the risk of developing hyperkalemia. Already renal transplant recipients are at severe risk of developing hyperkaelemia. Therefore, concurrent use of these two medications should be avoided in this patient and close monitoring of serum potassium level is recommended.

CONCLUSION

Renal transplant recipients are at risk of developing various types of infection and comorbidities [9]. Due to multiple organ complications such patients should be dealt carefully as far as selection and dosage of medication is concerned.

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