

Fatal brain abscess in a 36-year old poorly compliant renal transplantation recipient.

Jacob Olugbenga Awobusuyi^{1&2}, Ajay Sharma^{2&3} Ahmed Halawa^{2&4}

¹ Department of Medicine, Lagos State

University College of Medicine (LASUCOM), Ikeja, Lagos, Nigeria.

² Faculty of Health and Science, Institute of Learning and Teaching, University of Liverpool, UK.

³ Royal Liverpool University Hospital, Liverpool, UK. ⁴ Sheffield Teaching Hospitals, Sheffield, UK.

Introduction

In patients with organ transplantation, infections generally are considered to be the commonest cause of morbidity and mortality⁽¹⁾. The most common causes of infection after the first few weeks of transplantation are opportunistic infections as a result of immunosuppressive therapy which reduces the body's immunity against microorganisms' invasion. Thus, prophylaxis and regular surveillance for opportunistic infections are part of clinical guideline recommendations in the management of post renal transplant patients⁽²⁾. Brain abscess is an uncommon but potentially life threatening condition that requires prompt diagnosis and institution of effective treatment. The case presented highlights management problems in sub-Saharan Africa, where poor treatment compliance and late presentation, are common factors that contribute to poor treatment outcomes in patients with severe and life threatening conditions.

Case presentation

Mr. AO is a 36-year old senior civil servant who had live-related 1-0-1 mismatched kidney transplant in June 2010 at a centre outside the country. His perioperative period was uneventful, his glomerular filtration rate two

months after transplantation was 78mls/min. Immunosuppression was achieved with Thymoglobulin induction, maintenance therapy was with Tacrolimus, Mycophenolate Mofetil and prednisolone.

Six months post transplantation, he developed new onset diabetes after transplantation (NODAT) which was controlled with insulin and pioglitazone. Mr. AO's clinic attendance became irregular shortly after the diagnosis of diabetes mellitus and his compliance with medications also became poor.

Two years after transplantation, he presented at the nephrology clinic with a two month history of recurrent multiple boils all over his body, cough, nausea and persistent weakness. His symptoms had worsened progressively over the period and difficulty in breathing had become marked about 3 days prior to presentation. Physical examination at presentation showed a pale chronically ill looking man, who was drowsy, dyspneic at rest, febrile, with moderate pitting pedal oedema. He had wide spread coarse crepitations in his lungs bilaterally. He had tachycardia, elevated jugular venous pressure and a displaced apex beat that was heaving. He had no lateralizing signs on evaluation of his central nervous system. His admission blood pressure was 170/120mmHg.

Figure 1: Computerized tomography of the patient's brain

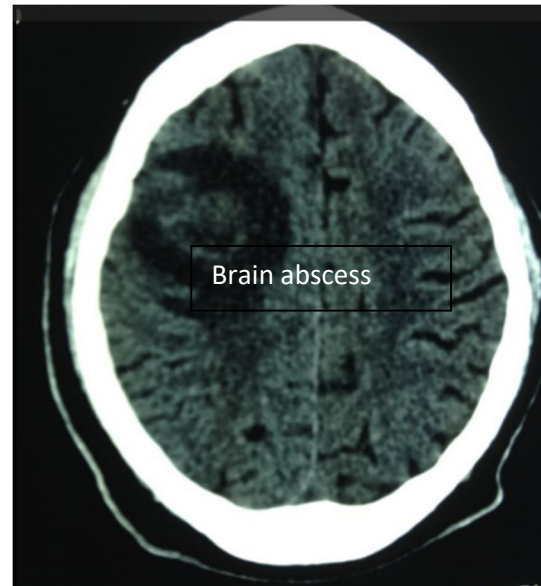
The laboratory findings at presentation:

PCV: - 23%, WBC:- 6,100/mm³, Sodium: - 133mmol/L, Potassium:- 3.4mmol/L, Bicarbonate: - 17mmol/L, Chloride:- 105mmol/L, Calcium:- 7.0mmol/L, Urea:- 257mg/dl, Creatinine: -9.0mg/dl.

A diagnosis of chronic allograft rejection secondary to poor medication compliance, congestive cardiac failure and sepsis was made. He was commenced on intravenous Ceftriaxone 1g daily, Furosemide 80mg 12-hourly, Telmisartan 80mg daily, in addition to commencement on haemodialysis with ultrafiltration as required.

Three days after admission, Mr. AO had a generalized tonic-clonic convulsion intra-dialysis and subsequently became unconscious. Brain computerized tomography showed a ring enhancing space occupying lesion in the right frontal lobe with oedema of the surrounding white matter. [Figure 1] A diagnosis of bacteria brain abscess was made based on the history of recurrent boils, septicemia and immunosuppression.

Mr. A.O died on the 3rd day of admission shortly after returning from the radiology Unit.



Discussion

This case illustrates two common clinical scenarios in medical practice in Africa namely; poor medication adherence and late presentation for treatment.

Mr. AO's compliance became poor shortly after being diagnosed as having diabetes mellitus. Several attempts at counselling did not alter his treatment adherence. Quite unlike the case with the majority of patients in Sub-Saharan Africa where financial constraint is the dominant factor influencing medication adherence, his position as a senior civil servant with adequate financial support for his medical bill by the state government ruled out poor financial status as the reason for poor treatment compliance. Therefore, his poor adherence to treatment presumably was as a result of factors other than financial constraint.

In literature, several factors have been observed to cause treatment non-adherence. These include; age of the recipient, the level of education, transplant vintage, as well as

Figure 2: Computerized tomography of the patient's brain (Coronal plane)



psychological factors such as depression, social stress, symptom burden and medication beliefs⁽³⁾. Conceptually, his poor compliance possibly resulted from psychological factors given the temporal relationship of the development of the behaviour to the diagnosis of NODAT. In retrospect, interactive multi-disciplinary interventions targeting behavioural, emotional and educational changes could have been more effective compared to one-off feedback at monthly intervals that was employed in the management of the patient⁽⁴⁾.

The patient had a huge brain abscess in the right frontal lobe [Figure 1] which led to the terminal event of convulsions, coma and his eventual demise. Brain abscess is a rare but potentially fatal complication of immunosuppression in renal transplant recipients. For instance, in a 14-year retrospective review by Rick Selby et al. , brain abscess occurred in 0.36% of 1,650 renal transplant subjects included in their study⁽⁵⁾.

Aetiologically, brain abscesses could result from fungal infections such as; *Nocardia asteroides*, *Aspergillus fumigatus*; *Listeria monocytogenes*; *Mycobacteria Tuberculosis* as well as pyogenic brain infections^(5,6). The history of recurrent multiple furuncles over a two-month period informed the consideration of pyogenic brain abscess as the most plausible diagnosis in this patient, although microbiological confirmation was not obtained in the patient, given the short interval of time between diagnosis and demise of the patient.

The patient presented for treatment after two months of development of symptoms. This trend has been the usual observation in patients with chronic diseases seen in sub-Saharan Africa. Ignorance, poverty, use of traditional and alternative medicines are

contributory factors that have been identified as being responsible for poor treatment compliance in many of the patients^(7,8). The absence of lateralizing neurological signs in this patient led to the non-recognition of the space occupying lesion as a contributory factor to his drowsiness at presentation which was ascribed to uraemic encephalopathy and overwhelming sepsis.

Unfortunately, the patient died a few minutes after returning from surgery. Had diagnosis been made earlier, the outcome might have been better with stereotactic drainage of the abscess and institution of the appropriate antimicrobial agent^(6,9).

In conclusion, poor medication adherence and late presentation played prominent roles in the poor outcome of renal transplantation in the case presented. The institution of interactive multi-disciplinary interventions targeting behavioural, emotional and educational changes could probably have improved compliance and treatment seeking behaviour, which could have resulted in better treatment outcome in the patient. There is a need for transplant units especially in the developing countries to improve on currently employed measures aimed at addressing poor treatment compliance in post-transplant patients. Institution of interactive multi-disciplinary interventions may be more effective compared to intermittent “one-off” feedback approach that is currently being employed by most units.

References

1. Hashmi S, Poommipanit N, Kahwaji J, Bunnapradist S. Overview of renal

- transplantation. *Minerva Medica*. 2007. p. 713–29.
2. Journal A. Special Issue: KDIGO Clinical Practice Guideline for the Care of Kidney Transplant Recipients. *Am J Transplant [Internet]*. 2009;9(Suppl 3):S1–155. Available from: <http://doi.wiley.com/10.1111/j.1600-6143.2009.02834.x>
 3. Griva K, Davenport A, Harrison M, Newman SP. Non-Adherence to immunosuppressive medications in kidney transplantation: Intent Vs. forgetfulness and clinical markers of medication intake. *Ann Behav Med*. 2012;44(1):85–93.
 4. Low JK, Williams A, Manias E, Crawford K. Interventions to improve medication adherence in adult kidney transplant recipients: a systematic review. *Nephrol Dial Transplant*. 2014;(June 2014):1–10.
 5. Rick Selby CBRRSIKSKTESJF. Brain Abscess in Solid Organ Transplant Recipients Receiving Cyclosporine-Based Immunosuppression. *Arch Surg. NIH Public Access*; 1997;132(3):304.
 6. Arunkumar MJ, Rajshekhar V, Chandy MJ, Thomas PP, Korula Jacob C. Management and outcome of brain abscess in renal transplant recipients. *Postgr Med J*. 2000;76:207–11.
 7. Boima V, Ademola AD, Odusola AO, Agyekum F, Nwafor CE, Cole H, et al. Factors Associated with Medication Nonadherence among Hypertensives in Ghana and Nigeria. *Int J Hypertens*. 2015;2015.
 8. Jackson IL, Adibe MO, Okonta MJ, Ukwe C V. Medication Adherence in Type 2 Diabetes Patients in Nigeria.
 9. Garzón MI, Abiega C, Zarate AH, Sanchez PE, Medeot MF, Chiurchiu C, et al.

Antifungal therapy and surgical drainage for the treatment of a cerebral abscess caused by *Scedosporium apiospermum* in a renal transplant patient - a case report. *F1000Research [Internet]*. 2014;70:1–6. Available from: <http://f1000research.com/articles/3-70/v1>