



CODEN [USA]: IAJ PBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF  
PHARMACEUTICAL SCIENCES**Available online at: <http://www.iajps.com>

Research Article

**PSYCHOLOGIC AND NEUROLOGIC COMPLICATIONS  
AFTER KIDNEY TRANSPLANTATION**<sup>1</sup>Dr Yasir Yaqoob, <sup>2</sup>Dr Muhammad Owais Fazal, <sup>3</sup>Dr Ahmad Zeeshan<sup>1,2,3</sup>Assistant Professor Medicine, Punjab Medical College and Allied Hospital, Faisalabad.**Article Received:** December 2019    **Accepted:** January 2020    **Published:** February 2020**Abstract:**

Neurological and psychological complications are often associated with drug toxicity, infections or symptoms caused by kidney transplant function. Metabolic encephalopathy, hypertensive encephalopathy, cerebrovascular events and recent epileptic seizures have been reported in recipients of organ transplants. Infections can be caused by listeria, Cryptococci, nocardia, aspergilla's and mucus. Toxoplasma, coccidia, cytomegalovirus (CMV) and herpes infections have also been reported. Cerebral bleeding may occur secondarily to septic embolism or intra cerebral aneurysms.

**Aim:** The purpose of this study is to present the results of a study of 100 recipients of kidney transplant having neuropsychological complications.

**Study Design:** A Retrospective Study.

**Place and Duration:** In the Department of Nephrology, Allied Hospital, Faisalabad for three years duration from May 2016 to May 2019.

**Methods:** We reviewed these patients' medical data retrospectively of 100 recipients 70 (70%) were males and 30 (30%) were females. The average age at transplant is 33.74. ± 0.7 years. 68 patients (82%) received transplants from unrelated living donors, 30 patients (7.5%) from living donors and 2 (0.5%) cadaver donor. The observation period ranged from one to three years.

**Results:** According to this study, 3 to 15% of recipients had neuropsychological disorders, and peripheral neuropathy, depression and tremor were most common, with 8 (4%), 5 (2.5%) and 4 (2%) recipients, respectively.

**Keywords:** kidney transplant, Psychological complications, neurological complications and immunosuppression.

**Corresponding author:****Dr Yasir Yaqoob,**Assistant Professor Medicine, Punjab Medical College and Allied Hospital,  
Faisalabad.

QR code



Please cite this article in press Yasir Yaqoob et al., *Psychologic And Neurologic Complications After Kidney Transplantation.*, Indo Am. J. P. Sci, 2020; 07(02).

**INTRODUCTION:**

Kidney transplantation has become a common surgery performed thousands of times around the world. Surgical techniques for transplantation are well known and the procedure is allied with a high accomplishment ratio. The incidence of complications associated with surgery is particularly low compared to other abdominal organ transplants, such as liver and pancreatic transplants. However, the detection, correct diagnosis and timely management of surgical complications following kidney transplantation are important tasks of the management team for these patients. Delay in the diagnosis or treatment of these complications may result in the risk of graft loss or death, and a significant incidence for the recipient. Most surgical complications include wounds or one of three anastomoses (renal artery, renal vein or ureter). Examples include wound infection, thrombosis of the renal vessels or arteries, and loss of urine. Many of these complications require surgical or radiological intervention for proper treatment. Transplant is now considered life-saving therapy. New findings in the field of immunology and the development of better immunosuppressive therapy have led to higher transplant success rates and reduced patient mortality [1-3]. Due to the metabolic and infectious causes and the importance of neuropsychological complications associated with hypertension, drug toxicity and seizures, it is necessary to detect and treat these complications early [4]. Neuropsychological complications of 100 kidney transplant recipients will be discussed in this document.

**MATERIAL AND METHODS:**

This analysis was held in the Department of Nephrology, Allied Hospital, Faisalabad for three years duration from May 2016 to May 2019. We reviewed these patients' medical data retrospectively of 100 recipients 70 (70%) were males and 30 (30%) were females. The average age at transplant is 33.74.  $\pm$  0.7 year. 68 patients (68%) received transplants from unrelated living donors, 30 patients (30%) from living donors and 2 (2%) cadaver donor. The observation period ranged from one to three years. Immunosuppressive regimens included azathioprine, cyclosporine and prednisolone, and patients with acute rejection received a pulse of methylprednisolone / ALG.

**RESULTS:**

Neuropsychological disorders are shown in Table I. Peripheral neuropathy was detected in 10 patients (4%). One-sided lower limb neuropathy was diagnosed in the first week after kidney transplantation in five patients. Muscle strength, numbness and parenthesis were recorded by means of electromyography documentation and nerve conduction studies (EMG, NCV) regarding the involvement of the lumbosacral plexus and femoral nerve. Three patients were diagnosed with bilateral neuropathy, such as par aesthesia, about 2 years after transplantation. 7 patients (2.5%) were diagnosed with depression. Three patients were accompanied by depression and irritability in the first month after transplantation. These three patients had acute rejection of their renal allograft concomitantly; two of them received methylprednisolone pulse and dialysis and one of them methylprednisolone pulse and plasma-apheresis. Two patients were diagnosed with depression 2 years after transplantation.

Neuropsychological disease	No	%
Convulsion	2	5.4%
Hemorrhagic CVA	2	5.4%
Post-herpetic neuralgia	1	2.8%
Ramsay-Hunt Syndrome	1	2.8%
3rd cranial nerve palsy	1	2.8%
Tremor	5	13.5%
Headache	1	2.8%
Peripheral neuropathy	10	27.2%
Psychosis	1	2.8%
Brain abscess	1	2.8%
Depression	7	19%
Hypertensive encephalopathy	4	11%
Brain tumor	1	2.8%
Total	37	100%

Tremor was detected in 5 patients (2%). In one of them, the level of cyclosporine in the blood was above the therapeutic level. Hypertensive encephalopathy was detected in 4 patients (1.5%). Acute renal transplant rejection was also noted in these 4 patients. 2 patient in this group developed hypertension in the malignant range, while the other underwent a transplant nephrectomy. Seizures were diagnosed in 2 patients: one with severe hypernatremia, the other with kidney dysfunction with transplant and uremia.

One patient in our series had post herpetic neuralgia and constant headache for 3 months after infection with herpes posterior neck and face. One patient had Ramsay-Hunt syndrome and herpetic infection on the face involving ganglion and facial nerve. Another patient with pain in the middle of the face was diagnosed with unilateral paralysis of the third cranial nerve due to drooping eyelids and double vision and atherosclerosis. The patient who experienced severe psychosis and confusion responded to the temporary cessation of cyclosporine.

Other neurological disorders include: cerebrovascular accident (CVA) in 2 patients with parietal lobe bleeding; brain abscess and meningitis due to Staph aureus and acoustic neuroma in the cerebellopontine angle in a known case of AL port's syndrome.

### DISCUSSION:

Peripheral neuropathy was diagnosed in 5% of our series. One of the reasons is trauma to the lumbosacral plexus and femoral nerve during transplant surgery [5-6]. As a result, the muscles will experience weakness in the knees, reduced patellar reflexes and sensation of the anterior thigh and inner calf. Ischemic changes of the lumbosacral plexus are more serious in patients with diabetes and if this happens, they complain of pain in the gluteal region and weakening of the calf muscles [7-8]. Sometimes sub-acute tetra paresis after kidney transplantation is caused by reactivation or primary CMV infection [9].

Cyclosporine toxicity is an entity-rejecting encephalopathy that needs to be distinguished from encephalitis, malignant hypertension, pseudo tumor brain and cerebral lymphoma. This encephalopathy is an acute and reversible neurological syndrome in young men, especially during periods of rejection accompanied by headache, dizziness, irritability, convulsions and papilloma edema. Widespread encephalopathy, from disturbances of consciousness to coma, has many causes: tremor, cyclosporine toxicity, seizures and blurred vision; meningitis; encephalopathy due to motor and speech disorders

and listeria infection; Cryptococci infection; or encephalopathy due to hypertension, or hypernatremia, aspergilla's, listeria, nocardia, toxoplasma, Candida, herpes virus, Cryptococci, Mycobacterium tuberculosis and progressive multifocal leukoence-phalopathy can be caused by nervous system infections<sup>10</sup>. One article listed neurological complications in 30% of kidney transplant recipients and found that infections are the most common disease in research groups. Sometimes focal lesions in the central nervous system may be due to nocardia, toxoplasma, aspergilla's, brain lymphoma and amyloidosis [11-12].

Stroke has been reported in 3% of kidney transplant recipients, and chronic dialysis treatment is more common in patients with a history of hypertension, age 40, diabetes, lupus erythematosus, hyperlipidemia, and atherosclerosis. Convulsion in these patients can be due to brain lymphoma, infections, brain infarction, & acute rejection, or cyclosporine toxicity. Cyclosporine will diminish the convulsion threshold. That's why in cases of convulsion one should measure the cyclosporine blood level, serum sodium, sugar, calcium and also magnesium, because of the possibility of hypomagnesaemia due to cyclosporine [13].

Some neuropsychological side effects of immunosuppressive drugs are as follows: cyclosporine induces tremor, parenthesis, leukoencephalopathy, visual hallucinations, depression, insomnia, and cortical blindness, decline of convulsion threshold, mood disorder and psychosis. Reflex sympathetic dystrophy syndrome (RSDS) with pain and tenderness in the extremities, vasomotor instability, and trophic changes of skin and bone demineralization has also been reported due to this drug [14].

Corticosteroids can induce pseudo tumor cerebral syndrome, psychosis, epidural lipomatosis and insomnias Tacrolimus (FKS06), which has not been used in our patients yet, is reported to induce myalgia, tremor and fatigue in one study in pediatric renal transplant recipients [15]. Other complications which should be differentiated from neurologic disorders are those which cause myopathy, such as hypophosphatemia, hypokalemia, and drugs like cimetidine, lovastatin, clofibrate, gemfibrozil, cyclosporine and corticosteroids. Myopathy due to corticosteroids, which more commonly involves proximal muscles, is more often seen when using divided doses of the drug.

### REFERENCES:

1. Brassier, A., Krug, P., Lacaille, F., Pontoizeau, C., Krid, S., Sissaoui, S., Servais, A., Arnoux, J.B., Legendre, C., Charbit, M. and Scemla, A., 2019. Long-term outcome of methylmalonic aciduria after kidney, liver or combined liver-kidney transplantation: the French experience. *Journal of inherited metabolic disease*.
2. Brassier, A., Krug, P., Lacaille, F., Pontoizeau, C., Krid, S., Sissaoui, S., Servais, A., Arnoux, J.B., Legendre, C., Charbit, M. and Scemla, A., 2019. Long-term outcome of methylmalonic aciduria after kidney, liver or combined liver-kidney transplantation: the French experience. *Journal of inherited metabolic disease*.
3. Viticchi, G., Falsetti, L., Buratti, L., Salvemini, S., Burattini, M., Potente, E., Taruscia, D., Ranghino, A., Campetella, L., Silvestrini, M. and Bartolini, M., 2019. Headache and kidney transplantation: an intriguing relationship. *Neurological Sciences*, 40(1), pp.199-200.
4. Sikavi, D., McMahon, J. and Fromson, J.A., 2019. Catatonia Due to Tacrolimus Toxicity 16 Years After Renal Transplantation: Case Report and Literature Review. *Journal of Psychiatric Practice*®, 25(6), pp.481-484.
5. Seo, E.H., Kim, S.G., Cho, Y.S. and Yoon, H.J., 2019. Tuberculum sellae meningioma with possible tacrolimus neurotoxicity manifesting as manic-like psychosis after kidney transplantation. *Annals of General Psychiatry*, 18(1), p.18.
6. Servais, A., Saitovitch, A., Hummel, A., Boisgontier, J., Scemla, A., Sberro-Soussan, R., Snanoudj, R., Lemaitre, H., Legendre, C., Pontoizeau, C. and Antignac, C., 2019. Central nervous system complications in adult cystinosis patients. *Journal of inherited metabolic disease*.
7. Seo, E.H., Kim, S.G., Cho, Y.S. and Yoon, H.J., 2019. Tuberculum sellae meningioma with possible tacrolimus neurotoxicity manifesting as manic-like psychosis after kidney transplantation. *Annals of General Psychiatry*, 18(1), p.18.
8. Dogan, U., Yaprak, M., Dogan, E.A., Onac, M., Yilmaz, V.T. and Aydinli, B., 2019, May. Cardiovascular and neurologic complications in kidney transplant recipients: A focused appraisal of symptoms. In *Transplantation proceedings* (Vol. 51, No. 4, pp. 1101-1107). Elsevier.
9. Sen, A., Callisen, H., Libricz, S. and Patel, B., 2019. Complications of solid organ transplantation: cardiovascular, neurologic, renal, and gastrointestinal. *Critical care clinics*, 35(1), pp.169-186.
10. Voora, S. and Adey, D.B., 2019. Management of Kidney Transplant Recipients by General Nephrologists: Core Curriculum 2019. *American Journal of Kidney Diseases*.
11. Seliger, S. and Waddy, S.P., 2020. Neurologic complications of chronic kidney disease. In *Chronic Renal Disease* (pp. 441-461). Academic Press.
12. Mihaylov, P., Nagai, S., Eksler, B., Mangus, R., Fridell, J. and Kubal, C., 2019. Prognostic Impact of Peritransplant Serum Sodium Concentrations in Liver Transplantation. *Annals of transplantation*, 24, p.418.
13. McCarthy, M.W., Rosengart, A. and Walsh, T.J., 2019. Intracranial, Spinal, and Paraspinal Infections in the Transplant Recipient. In *Principles and Practice of Transplant Infectious Diseases* (pp. 331-338). Springer, New York, NY.
14. Badell, I.R., Karadkhele, G.M., Vasanth, P., Farris III, A.B., Robertson, J.M. and Larsen, C.P., 2019. Abatacept as rescue immunosuppression after calcineurin inhibitor treatment failure in renal transplantation. *American Journal of Transplantation*, 19(8), pp.2342-2349.
15. Smeralda, C.L., Gigli, G.L., Vogrig, A., Marini, A. and Valente, M., 2019. Tacrolimus-induced severe headache associated with diffuse leukoencephalopathy: Evidence for an immune-mediated pathogenesis. *Journal of neuroimmunology*, 330, pp.55-58.