Recent Updates in Neuropsychiatric Complications of Organ Transplantation and their Management

Essay

Submitted For Partial Fulfillment of the Master Degree in **Neurology and Psychiatry**

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بِشِهُ لِسُلِ الْجَنْزِ اللَّهِ عَيْرِ إِلَّهُ عَيْرٍ إِلَّهُ عَلَيْكُ عَلَيْكُ اللَّهُ عَلَيْكُ عَلَّهُ إِلَّهُ عَلَيْكُ عَلَيْكُ اللَّهُ عَلَيْكُ عَلَيْكُ اللَّهُ عَلَيْكُ اللّلْهُ عَلَيْكُ اللَّهُ عَلَيْكُ اللّهُ عَلَيْكُ اللَّهُ عَلَيْكُوا اللَّهُ عَلَيْكُ اللَّهُ عَلَيْكُ اللَّهُ عَلَيْكُ اللَّهُ عَلَيْكُ اللّهُ عَلَيْكُ اللَّهُ عَلَيْكُ اللَّهُ عَلَيْكُ اللَّهُ عَلَيْكُوا اللَّهُ عَلَيْكُ اللَّهُ عَلَيْكُ اللَّهُ عَلَيْكُ اللَّهُ عَلَيْكُ اللَّهُ عَلَيْكُوا اللَّهُ عَلَيْكُ اللَّهُ عَلَيْكُوا اللّهُ عَلَيْكُوا اللَّهُ عَلَيْ اللَّهُ عَلَيْكُوا اللَّلْمُ عَلَيْكُوا اللَّهُ عَلَيْكُوا اللَّهُ

وقُل اعْمَلُوا فَسَيَرَى اللَّهُ عَمَلُكُمْ وَلَيْ وَالْمُؤْمِنُونَ وَرَسُولُهُ وَالْمُؤْمِنُونَ

صدق الله العظيم سورة التوبة آية (١٠٥)



First, thanks are all due to Allah for Blessing this work until it has reached its end, as a part of his generous help throughout our life.

My profound thanks and deep appreciation to **Prof. Dr. Taha** Kamel Taha Alloush, Professor of Neuropsychiatry, Faculty of Medicine, Ain Shams University for his great support and advice, his valuable remarks that gave me the confidence and encouragement to fulfill this work.

I am also thankful to **Prof. Dr. Ayman Mohammad Nassef** Professor of Neuropsychiatry, Faculty of Medicine, Ain Shams University for his valuable supervision, co-operation and direction that extended throughout this work.

I would like to direct my special thanks to **Dr. Lobna M. El-Nabil El-Sayed**, Assistant Professor of Neuropsychiatry, Faculty of Medicine, Ain Shams University, for her invaluable help, fruitful advice, continuous support offered to me and guidance step by step till this essay finished.

I am deeply grateful to my family who directed and encouraged me during the preparation of this work.



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List of Abbreviations

AED : Antiepileptic drug

Allo-BMT: Allogeneic bone marrow transplantation

APPT : Activated partial prothrombin time

BMT : Bone marrow transplantation CABG : Coronary artery bypass grafting

CADP : Chronic acquired demyelinating polyneuropathies

CMV : Cytomegalovirus

CNI : Calcineurin inhibitor CNS : Central nervous system

CPM : Central pontine myelinolysis

CSF : Cerebrospinal fluid

CT : Computerized tomography
CVD : Cerebrovascular diseases

CVST : Cerebral venous sinus thrombosis

DM : Diabetes mellitusEBV : Epstein-Barr virus

EEG : Electroencephalography

ELISA : Enzyme-linked immunosorbent assay

GVHD : Graft-versus-host disease

HIE : Hypoxic-ischemic encephalopathy

HLA : Human leukocyte antigen

HSCT : Hematopoietic stem cell transplantation

HSV-1/2 : Herpes viruses 1 and 2 IQ : Intelligence quotient ICH : Intracranial hemorrhage

KS : Kaposi's sarcoma

LDLT : Living-donor liver transplantation

LOC : Level of consciousness

LP : Lumbar puncture LT : Live transplantation

List of Abbreviations (Cont.)

NCC : Neurocysticercosis

NMSCs : Nonmelanoma skin cancers

NPCs : Neuropsychiatric complicationsOLT : Orthotopic liver transplantation

PCKD : Polycystic kidney disease PCR : Polymerase chain reaction

PIQ : Performance Intelligence Quotient

PML : Progressive multifocal leukoencephalopathy
PRES : Posterior reversible encephalopathy syndrome

PT : Prothrombin time

PTLD : Posttransplant lymphoproliferative disease

PTSD : Post-traumatic stress disorder

RPLS : Reversible posterior leukoencephalopathy

syndrome

SOT : Solid organ transplantation

SSRIs : Selective serotonin reuptake inhibitors

TIA : Transient ischemic attackTIA : Transient ischemic attacksVIQ : Verbal Intelligence Quotient

VNS : Vagus nerve stimulation VZV : Varicella-zoster virus

WNV : West Nile virus

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Introduction

Organ transplantation as a treatment of choice has increased in recent years due to concurrent advances in medical science. Patients successfully receive transplanted solid organs - kidney, heart, liver, pancreas, lungs, and intestines - and transplanted bone marrow and stem cells. The United Network for Organ Sharing (UNOS) reports more than 100,000 patients waiting for a transplant, with most waiting for a kidney or liver. That number sharply contrasts with the number of transplants completed during 2009: 28,462, of which approximately 21,000 were donations from a deceased donor and the remainder from a living donor. Because of the dramatic need for donors and the necessary immediacy of donor and recipient information, UNOS has established an online database (UNet) which provides access to information concerning waiting patients (UNOS, 2010)

Organ donation presents a range of practice issues for the psychologist. The transplant recipient has been historically identified as the patient who is the subject of both accurate assessments before transplant to determine appropriateness of the procedure and ongoing psychological interventions after transplant. However, as attention to organ donation has increased, other important patients have been identified. Because most donors are deceased, decision making about donation falls to family members at a time of significant grief and distress. These donor families are also important patients in the donation process. Additionally, families of patients eligible to receive organ donation experience many concerns during the waiting period and after transplantation, and thus form an additional patient population. Although the majority of this article focuses on patients receiving transplants, the other patients are also considered. Psychosocial issues are present before, during, and after transplantation. Patients who hope to receive a donor organ typically try to increase their medical knowledge before the transplantation process takes place. With this knowledge, however, come additional sources of anxiety, including transplant evaluation outcome, the shortage of organs, the uncertainty of donation, and increased understanding that having a transplant may not offer a cure (*Engle*, 2001).

Psychosocial stressors change during the transplant process. These changes result from relocation to the transplant center, guilt over knowing that a donor death occurred in order to procure a donor organ, coping with the medical regimen, body image concerns, and exposure to loss. Diagnosable disorders among patients during hospitalization have been identified, including anxiety disorders, cognitive impairment, depression, and even posttraumatic stress disorders (*Bunzel et al.*, 2005).

After the transplant procedure, psychosocial concerns tend to revolve around readjustment to a new lifestyle. These concerns include anxiety at discharge, perhaps due to loss of security or fear of adjustment; sadness or guilt from leaving relationships formed with other transplant patients; estrangement from family and community during readjustment to family and work roles; and increased physical and functional impairment (for reviews of psychosocial issues in organ transplant (*Olbrisch et al.*, 2002).

The posttransplantation clinical course is generally complicated by dysfunction of various organ systems, and early or delayed neurologic complications may develop in 30-60% of patients (*Zivkovic and Abdel-Hamid, 2010*). Because of the constantly changing protocols of transplantation and immunosuppression, the nature of neurologic complications has changed over time. Improved survival of patients undergoing transplant also shifts the focus of neurologic complications towards long-term complications.

Introduction and Aim of The Work

Timing of neurologic events provides significant guidance on which causes to consider; for example, most cases of metabolic encephalopathy and seizures occur in the first few weeks after transplantation, whereas most opportunistic infections occur 1 month or more after transplant. Drug toxicity tends to occur early (contributing to the high rate of seizures and altered mental status observed after transplant) but can occur at any point while the patient is on immunosuppressant therapy. The total rate of complications is variable because investigators include a variety of other neurologic symptoms, including headache, tremor, and peripheral nervous system dysfunctionin (*Munoz et al., 2010*).

Serious complications occur in roughly 10% to 30% of transplant recipients. The spectrum of neurologic morbidity may also be shifting, with a declining incidence of severe acute complications with refined operative techniques and (including lower-intensity postoperative care suppressive regimens); as transplant patients survive longer, they become more at risk for delayed complications such as opportunistic infections and malignancies. Encephalopathy remains the most common complication in these series, with rates as high as 43% (generally highest after liver, intestinal, and lung transplant); it predominantly occurs in the immediate postoperative period, out until hospital discharge and often extending length of stay (Saner et al., 2007).