

HOSPITAL PHYSICIAN®

NEUROLOGY BOARD REVIEW MANUAL

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The *Hospital Physician Neurology Board Review Manual* is a study guide for residents and practicing physicians preparing for board examinations in neurology. Each quarterly manual reviews a topic essential to the current practice of neurology.

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This publication has been developed without involvement of or review by the American Board of Psychiatry and Neurology.



Endorsed by the
Association for Hospital
Medical Education

CNS Infections in Solid Organ Transplant Recipients

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Cover Illustration by Kathryn K. Johnson

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CNS Infections in Solid Organ Transplant Recipients

Jeannina A. Smith, MD

INTRODUCTION

With advances in medical care, the number of immunosuppressed patients increases annually, particularly the number of solid organ transplant recipients. Whereas end-organ dysfunction was once a death sentence, solid organ transplantation now offers a life-saving option to tens of thousands of patients each year.

In 2004, more than 27,000 solid organ transplants were performed, including 16,000 kidney, 6168 liver, 2016 heart, 1172 lung, 880 kidney-pancreas, 604 pancreas, 146 intestine, and 39 heart/lung transplants.¹ Rapid growth in the use of solid organ transplantation has necessarily led to advances in the care of patients receiving transplants, which in turn has allowed for increased patient and graft survival. For example, the reported 3-year patient survival rates after transplantation between July 1999 and December 2001 were 87.61% for deceased donor kidney recipients, 93.98% for living donor kidney recipients, 78.19% for deceased donor liver recipients, 77.3% for living donor liver recipients, 61.17% for lung recipients, and 55.7% for heart recipients.²

With greater understanding of the clinical care needs of transplant recipients have come important lessons about potential complications of organ transplantation. These include iatrogenic complications (eg, surgical misadventures, side effects of immunosuppressive agents), exacerbation of underlying medical illness by antirejection therapy (eg, worsening diabetic control from corticosteroids, hypertension from calcineurin inhibitors), and new or unusual manifestations of disease (eg, post-transplant lymphoproliferative disease, transplant-associated infection). Indeed, each year new information is revealed about unusual clinical presentations of bacterial, viral, and fungal pathogens in recipients of solid organ transplants. Another consequence of the increase in solid organ transplantation is that medical care for transplant recipients is no longer reserved for specialized centers. The prevalence of patients with solid organ transplants mandates that all clinicians ac-

quire the knowledge and skills needed to properly care for these patients.

Neurologic complications are estimated to occur in 30% to 60% of patients after solid organ transplantation.³⁻⁵ Of these, infections of the central nervous system (CNS) are seen in 5% to 10%.⁶ The significant morbidity and mortality from CNS infections in the solid organ transplant recipient make it important that all neurologists be able to diagnose these infections early in the disease course and understand when special methods for detection and isolation are needed. CNS infections can be a difficult clinical problem in the immunosuppressed transplant recipient, and the large differential diagnosis in this setting can at times seem daunting. The effects of immunosuppressive medications used after transplantation not only increase susceptibility to infection but also change the presentation and diagnosis of the infection. However, a systematic approach allows rapid narrowing to likely pathogens and facilitates expeditious and accurate diagnosis.

RISK OF CNS INFECTION IN TRANSPLANT RECIPIENTS

FACTORS INCREASING RISK OF INFECTION

Immunosuppression

Immunosuppression was first used in transplantation in 1964 and was a combination of azathioprine and corticosteroids. At that time, 1-year renal allograft survival rates were less than 60%.⁷ It was not until more than a decade later, in 1978, that cyclosporine was used for immunosuppression in solid organ transplant recipients. Acute rejection rates and 1-year graft outcomes have improved significantly since the introduction of cyclosporine.⁸ In the last 20 years, several new immunosuppressive agents and combination therapies have been used in the induction and maintenance of transplant immunosuppression and the treatment of rejection.

Newer immunosuppressive agents have dramatically reduced the rates of acute graft rejection but also