Role of Duplex Ultrasonography in Evaluation of Complications of Transplanted Kidney

Essay

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بسم الله الرحمن الرحيم

قَالُوا سُبْحَانَكَ لاَ عِلْمَ لَنَا إِلاَّ مَا عَلَّمْتَنَا

إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ

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Key word

Transitional cell carcinoma

Duplex Ultrasonography

Angiotensin converting enzyme

Abstract

Complications are numerous and varied include parenchymal insultsi.e. vascular occlusion, obstruction, hemorrhage, urinary leak, collections, infection and drug toxicity. Ultrasound is useful in its dual role of notonly monitoring transplant dysfunction but also assessing response to therapy. Doppler sonography has been widely used inmonitoring renal allograft over the past decade because of its non invasiveness convenience and real time nature. Doppler sonography represents a useful diagnostic tool for detecting vascular complications of renal transplant such as AV fistulas and stenosis or thrombosis of renal vessels.

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List of Abbreviations

Abbrev.	Mean

ACE ..... Angiotensin converting enzyme

AR ..... Acute rejection

AT ..... Acceleration time

ATN ..... Acute tubular necrosis

AVF ..... Arteriovenous fistula

BFAR ..... Blood flow area ratio

BKV ..... Polyoma BK virus

CAN..... Chronic allograft nephropathy

CR ..... Chronic rejection

EBV ..... Epstein Barr virus

HCB ..... Hypertrophied column of Bertin

IgA..... Immunoglobulin A

PD ..... Power Doppler

PI ..... Pulsatility index

PRF ..... Pulse repetition frequency

PSV ..... Peak systolic velocity

PTLD ..... Post-transplantation lymphoproliferative disorder

RI..... Resistance index

SD ..... Standard deviation

TAMX ..... Time average mean velocity

TCC..... Transitional cell carcinoma

Tx ..... Transplantation

US ..... Ultrasound

UB ..... Urinary bladder

VCU ..... Voiding cysto-urethrography

VUR ..... Vesico-ureteric reflux

Introduction

Continued improvements in graft survival have led to widespread acceptance of renal transplantation as the preferred treatment for the majority of patients with end-stage renal disease. The long-term care of these patients is often provided away from transplantation centers **(*Akbar et al., 2005*).**

Renal transplantation has established itself as the treatment of choice for the majority of patients with end-stage renal failure. Compared to dialysis it is more cost-effective, produces better survival and allows a more normal lifestyle ***(Kabala, 2003).***

The increasing number of renal transplantations and the increased survival rate of renal transplantation patients lead to an increase of the number of complications [vascular, urological, collections] ***(Nikolovski et al., 2004).***

An understanding of renal transplant anatomy and the risks of post-transplantation immunosuppressive therapy is essential. In addition, familiarity with the indications and limitations of surgical techniques as well as

collaboration between the radiologist and the transplantation surgeon are vital for maximizing the chances of renal allograft survival. Complications of renal transplantation can be diagnosed and managed with minimally invasive techniques ***(Kobayashi et al., 2007).***

Ultrasound is unequivocally the most valuable noninvasive imaging modality used in monitoring the renal transplant. Renal transplants are routinely evaluated with sonography as either a component of a screening protocol, or as a work up for renal dysfunction based on a rising serum creatinine level or a decreased urine output ***(Muradali & Wilson, 2005)***

Intrarenal CDUS is a noninvasive, accurate diagnostic tool that can be administrated portably and is easily repeatable, thereby making it not only a highly valuable imaging technique but also the method of choice in screening and diagnosing vascular complications of renal transplants **(*Gao et al., 2007)***