Acute lobar nephronia in renal transplant: Gallium-67 scintigraphy for diagnosis and therapy monitoring

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ABSTRACT

A 33 years old female patient with chronic renal transplant rejection proved by MAG3, ultrasound and graft biopsy presented with abdominal pain and fever. Part of her work up included gallium-67 scan which revealed diffuse abnormal graft uptake with multifocal areas of marked uptake. Findings were interpreted as acute lobar nephronia. Repeat gallium scan two weeks after intravenous antibiotic therapy showed significant response reflected by resolution of most of focal areas of increased uptake which was parallel to clinical improvement.

Keywords: Acute lobar nephronia, gallium-67 scan, renal transplant

INTRODUCTION

Urinary tract infection is a known complication of renal transplant. Among these infections is an acute focal nephritis which also known as acute lobar nephronia (ALN). Ultrasound, computerized tomography (CT), and gallium-67 (Ga-67) scintigraphy are important tools in diagnosis of ALN. We report the use of Ga-67 scintigraphy in diagnosis and therapy monitoring of a patient with renal transplant and ALN.

CASE REPORT

We report a case of a 33-year-old female patient who had chronic renal impairment and received a cadaveric renal transplant 14 months before presentation. She presented with abdominal pain, fever, leukocytosis, and elevated serum urea and creatinine, and urine analysis on admission was unremarkable. She was hospitalized, and part of her work up included renal transplant ultrasound, renal transplant Tc-99m mercapto acetyl tri glycine study, and graft biopsy. Investigations revealed chronic rejection but failed to determine the cause of fever. Ga-67 scintigraphy was ordered to search for a source of infection. Whole body and spot view of the renal graft was performed 24 and 48 h postintravenous injection of 4 mCi (148 Mbq) Ga-67 using a gamma camera equipped with low energy general purpose collimator (Brightview-Phillips). Scan 48 h postinjection revealed diffuse abnormal graft uptake with multifocal areas of marked uptake [Figure 1]. Findings were interpreted as ALN. Ultrasound done was reported unremarkable. Repeat Ga-67 scintigraphy following the same protocol of the first scan 2 weeks after intravenous antibiotic therapy showed significant response reflected by resolution of most of the focal areas of increased uptake which was parallel to clinical improvement.

DISCUSSION

Rosenfield et al. in 1979 described a case of focal nephronia.[1] Thereafter, several radiological reports have described this entity which was also called ALN, acute focal bacterial nephritis or focal pyelonephritis. The process can affect one lobe (unifocal) or more than one lobe (multifocal).[2,3] The disease is an inflammatory condition which precede the formation of renal abscess.[4] Clinically, the patient with ALN usually presents with flank pain and fever with leukocytosis and urine bacteriuria. ALN in renal transplant and its management has been reported by several authors.[5,6] The diagnosis usually confirmed by radiological examinations including ultrasound, CT, and nuclear medicine tests. Ultrasound is of vital importance in the diagnosis and in follow-up of treated cases. However,
ultrasound is operator dependent but can give us accurate information by expertise. Ultrasound usually suggests the diagnosis, but false positive and false negative cases have been reported.\(^1,7\)

Computerized tomography scan with contrast is of limited use when serum creatinine is elevated. Technetium-99m dimercaptosuccinic acid studies are more useful in the follow-up of the infected kidney rather than for initial diagnosis.\(^9\) Ga-67 scintigraphy 48 h postinjection has been described to concentrate in the kidneys in several disease conditions such as inflammation, pyelonephritis, lymphoma, and other tumors as well as in acute tubular necrosis and chronic rejection of renal transplant.\(^9,10\)

Chiffoleau \textit{et al.} found that Ga-67 scintigraphy was a useful tool in detecting renal transplant suppurations and can guide abscess localization by renal graft ultrasound.\(^11\)

Gallium-67 scintigraphy was very useful in the diagnosis and therapy monitoring of our patient with renal transplant patients and ALN.

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