

RAPID LOSS OF RENAL FUNCTION DUE TO OBSTRUCTION: MINIMAL RESIDUAL ACTIVITY

Richard P Spencer, MD, PhD and Mozafareddin K Karimeddini, MD

Department of Nuclear Medicine, University of Connecticut Health Center,
Farmington, CT 06030, USA

ABSTRACT

A man with metastatic carcinoma of the colon had a bone scan which revealed urinary retention in the left kidney. Ten months later, a Tc-99m-DTPA renal glomerular study showed the left kidney to have only 8% of total renal function. Fifteen months after that, the same kidney demonstrated 9% of total function, while the right kidney had evolving obstruction due to his neoplasm. The case shows that loss of a significant amount of renal activity can occur over relatively short intervals, but that a small degree of functional activity can persist.

Key words: kidney; renal function; carcinoma of colon; neoplasm

INTRODUCTION

The human kidney can secrete urine against a slight pressure gradient. When this pressure is exceeded, as in partial or complete obstruction of the drainage system, renal damage can occur. The rapidity of this change, as well as retention of slight function, has been demonstrated by the male patient presented in this report.

CASE REPORT

A 52-year-old male, with metastatic carcinoma of the colon, had a Tc-99m-MDP bone scan (Fig. 1, left) which demonstrated marked retention in the left kidney. This evolved into left hydronephrosis, related to neoplastic obstruction to outflow. Ten months after the bone scan, a dynamic renal study (Tc-99m-DTPA) indicated that the affected kidney had only 8% of total renal function (Fig. 1, right).

Fifteen months after this examination, a repeat study had indicated 9% of total function in the left kidney (Fig. 2), with evidence of right renal obstruction. The image shown was obtained at 4 minutes into the study and showed right renal retention. This was related to widespread metastatic disease which rapidly progressed and led to his demise within several months.

DISCUSSION

These imaging results, in a man with metastatic colon carcinoma, are consistent with the commonly stated finding that renal function sometimes does not completely cease after urinary tract obstruction (1). This may be related to some escape of urine around the site of obstruction, as well as reabsorption by the renal apparatus. The findings also demonstrate the rapidity with which renal damage can occur after an obstructive event.

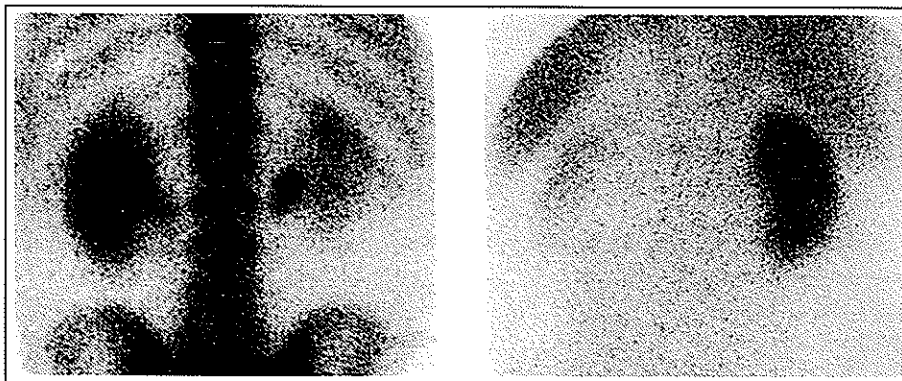


Fig. 1. Left: renal image on the initial bone scan. Right: renal study performed with the glomerular agent Tc-99m-DTPA, 10 months later.

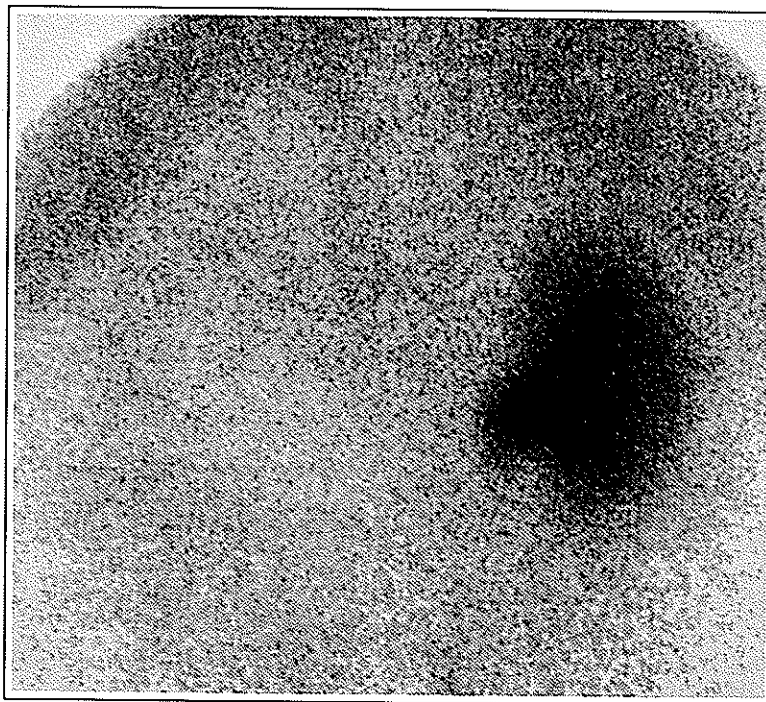


Figure 2. Repeat Tc-99m-DTPA study, 15 months after the first study (posterior).

REFERENCE

1. Davidson, AJ: Radiology of the kidney. Philadelphia: WB Saunders; 1985: 267-268.