Incidental finding of renal stone on scintigraphy: Case report

AHMED SAYEED[1], ZAHID KHAN[1], GULSHAD HASSAN ASHRAF[1], ASIF MASOOD AFROOZ[2]

[1]Department of Internal Medicine, King Abdullah Medical City, Makkah, Kingdom of Saudi Arabia; [2]Department of Nuclear Medicine,Kasturba medical hospital, Manipal, India

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ABSTRACT

Seventy-eight-year-old female with a case of invasive ductal carcinoma presented with local recurrence. The whole body scan was done to evaluate distant metastasis and it showed uptake in the right kidney. The Computed Tomography of abdomen correlation showed this uptake was due to a known renal stone. It is very rare for renal calculi to be seen on a bone scan as they do not take up the radioactive substances. It is unclear why this renal stone was shown in this bone scan. After extensive literature search, in one case report it was mentioned that a bladder stone was shown in the whole body scan as the stone was infected. The stone was not removed as the patient was asymptomatic and there is no hydronephrosis. She is being followed up in clinic.

KEY WORDS: Scintigraphy, Bone scan, Renal calculi, Renal scan, Nuclear images

Introduction

The whole body scan usually detects conditions like tumors, infections and bone fractures [1]. It is unusual to find a renal stone in a bone scan as these renal calculi do not uptake the radioactive material. Hence we report this case as a rare incidental finding of a renal stone on scintigraphy

Clinical details

The seventy-eight-year-old female was presented to the surgical department with right breast swelling and the biopsy done showed invasive ductal carcinoma. She underwent a right mastectomy with a sentinel lymph node biopsy. Two years later she was presented again with a local recurrence and the whole body scan was done to look for any evidence of metastasis. This scan showed no scintigraphic evidence of metastasis but it showed the focal area of increased tracer uptake seen in the right kidney on the planar images (figure 1). This was correlated to SPECT-CT and it showed that non-specific uptake in the right kidney was due to a known renal stone (figure 2). The CT abdomen with contrast done two years ago showed renal stone in the right kidney (figure 3). This patient was asymptomatic for a renal stone, there was no evidence of hydronephrosis and the renal functions were normal so the stone was not removed and is being followed up.

Correspondence to: Dr Ahmed Sayeed
Email: sayeedheena@gmail.com

Discussion

A bone scan is an established technique which images the metabolic activity of the bone. The advantages are many like it is a low cost procedure and it can scan the whole body with high sensitivity. It is primarily used for diagnosing primary bone cancers and also bone metastasis. It can detect fractures and infections as well. It can also differentiate metastatic from traumatic bone fractures. The metastatic lesions appear as areas of increased tracer uptake. It can also show other patterns like diffuse involvement (super scan), photopenic lesions (cold lesions), normal scintiscans, flare phenomena, and soft-tissue lesions. The Bone scan shows nonspecific tracer uptake and other imaging techniques like CT or MRI are needed to further characterize the lesions. It is rare to find a renal stone on a whole body scan using technisium-99m as renal stones do not take up this radioactive material. [2-5].

The usual methods of investigating renal calculi are conventional radiography, computed tomography, magnetic resonance imaging and ultrasonography. The most sensitive and specific investigation of choice for detection, localization, and characterization of renal calculi is helical computed tomography. However, nuclear medicine imaging is useful in determining the differential renal function for treatment planning. It can also predict how much renal function can recover after the obstruction like renal calculus is removed. [6-8]

Technical details

A small amount of radioactive material is injected into the vein and then the whole body is scanned with a gamma camera. Multiple images are taken at different points of time and these images are analysed on the computer.

Figure 1. Focal area of increased tracer uptake seen in right kidney on planar images.

Figure 2. The SPECT-CT showed non-specific tracer uptake in known right renal stone (arrow).

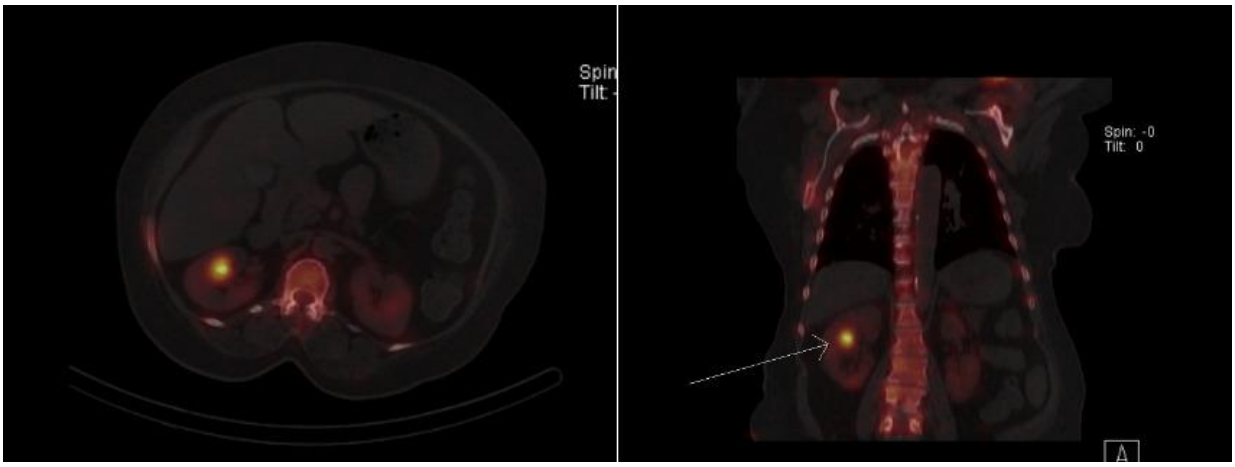
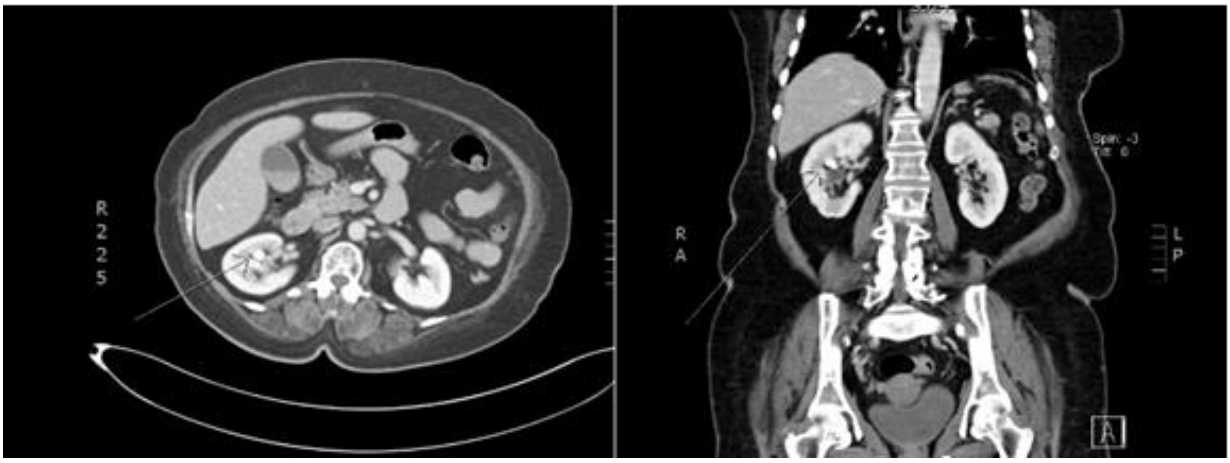


Figure 3. The CT abdomen n with contrast showed renal stone in middle calyx of right kidney.



The usual dose is 20-30mCi and it is recommended to use the least possible dose. Half of it is taken up by the bones and areas of focal uptake can be seen on bones which indicate tumor, infections or fracture. This procedure should be

differed in pregnancy and lactation should be discontinued for 24 hours after the injection. Generally, most of the patients tolerate this procedure. However, some patients can develop itching, skin rashes, nausea, and vomiting. [4, 9,10].

Learning points

It is rare to find a renal stone on scintigraphy as the stones generally do not take up radioactive material.

It may be mistaken for tumor/infection and therefore, Computed tomography correlation is advised.

One case reported in the literature is that the stone can be detected by scintigraphy if it is infected.

We recommend that scintigraphy should not be used as the modality to diagnose nephrolithiasis even though it is cheap but involves radioactive exposure.

Conflict of Interest

We declare that we have no conflict of interest.

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