

Using Ga-67 scintigraphy in prostatic abscess

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The use of Ga-67 scintigraphy (Ga) in prostate inflammatory diseases may be restricted by the difficulty in distinguishing between the accumulation of Ga-67-citrate (Ga-citrate) in the lesion and feces. The diagnosis of prostatic abscess has been mainly made by other radiologic methods without scintigraphic studies and no finding of Ga has been reported. This patient demonstrated that coordinating the findings of Ga-citrate accumulation can be helpful in making a prompt diagnosis of a possibly fatal prostatic abscess, especially in those patients with poorly defined clinical symptoms and high risk factors.

Key words: prostate, abscess, Ga-67 scintigraphy, CT, sonography

INTRODUCTION

IT IS HARD TO ESTIMATE the incidence of prostatic abscess,¹ and the cases reported in the literature are still fairly rare. This disease may be fatal if treatment is delayed. Several reports have shown the computed tomographic (CT) and sonographic spectra (US) of the prostatic abscess and proved the diagnostic value of these two methods, but the uptake of Ga-citrate in the abscess had not been reported. Here we report a prostatic abscess with poorly defined clinical symptoms to emphasize the usefulness of Ga for confirming the disease and excluding other inflammatory origins.

CASE REPORT

A 67-year-old male with diabetes mellitus (DM) and a history of hepatic abscess complained of intractable fever of unknown origin that had been treated for a full week by his family physician before visiting us. In addition to a high concentration of serum glucose (368 mg/dl) and CRP (26 mg/dl) on admission, no other biochemical or hematological abnormalities were identified. The next day, he began having polyuria, pain upon micturition and a feeling of urinary obstruction. He was then examined by a urologist. An enlarged prostate, without tenderness, was

pointed out after digital rectal examination. Emergent US was ordered and a cystic lesion within the prostate was demonstrated (Fig. 1). A low attenuation with a rim enhanced lesion, corresponding to the cystic lesion found on US, was also identified on CT on the same day (Fig. 2a and 2b). Although the radiologic examinations suggested that the lesion may be a prostatic abscess, the lesion without tenderness might also indicate a malignancy. Perineal needle aspiration under sonographic guidance was performed four days later but failed because of the unreachable depth.

Conservative antibiotic therapy was initiated at this point. In seeking evidence of malignancy and other inflammatory origin, examination of the serum concentration of prostatic tumor markers (prostatic acid phosphatase, γ -seminoprotein and prostate-specific antigen), the bone and Ga scintigraphy were arranged. Clinical symptoms and CRP improved gradually and follow-up US showed a healed prostate 25 days after the therapy commenced (Fig. 3). No tumor marker increase was noticed. Normal bone scintigraphy was demonstrated. Abnormal uptake of Ga-citrate after intravenous application of 111 MBq of Ga-citrate was observed in the prostate, either in the anterior or the posterior images taken 15 days after admission (ten days after antibiotic therapy) (Fig. 4a and 4b). The patient was discharged 45 days after admission. There was no further abnormal accumulation of Ga-citrate in the follow-up study at 7 days after discharge (Fig. 4c and 4d). Neither aerobic nor anaerobic organisms were cultured from the urinary and blood samples that were obtained during the entire period.

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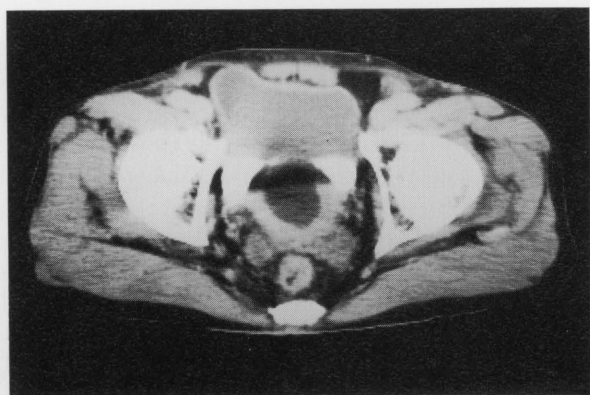
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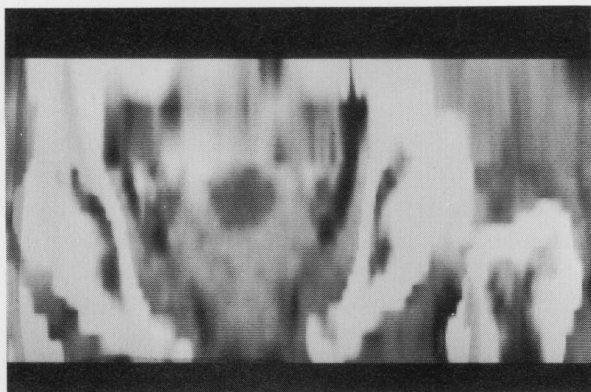
◀ **Fig. 1** Ultrasonography: Axial image before antibiotic therapy; abscess appeared as a cystic lesion with debris inside. The demarcated tissue of the prostate could be identified around the border of the lesion.



Fig. 3 Ultrasonography: Axial image in the same level when the abscess healed 25 days after therapy. Enlargement of the central lobe of the prostate was demonstrated.



a



b

Fig. 2 Computed tomography: Abscess appeared as a low attenuation area in the prostate on the axial image (a). A rim enhancement was also identified. Same appearance was identified on coronal (b) image reconstructed from the axial study.

DISCUSSION

Differential diagnosis of a cystic lesion inside the prostate includes benign lesions of cystic degeneration of prostatic hyperplasia, retention cysts, cavitory prostatitis and prostatic abscess.² The malignant cystic lesion may also be found in prostatic carcinoma and metastatic tumor.² A sonographic-pathologic relation study indicated that a concomitant malignancy may co-exist with a cystic lesion.³

Inflammation is usually found in the following two kinds of benign cystic lesions: long-standing, for cavitory prostatitis, and acute, for prostatic abscess. Acute inflammatory symptoms such as fever, chills, back pain and perineal pain are often encountered. Dysuria, discharge pain and urinary obstruction may be observed. Most patients have manifestations of tenderness upon digital rectal examination.^{2,5-8} One report described a prostatic abscess without tenderness similar to the abscess in our patient.⁹

A low attenuation mass, with or without rim enhancement, is used to describe the prostatic abscess on the CT image.^{4-6,9} The US finding is a well-demarcated cystic lesion with or without septums and debris.⁷⁻⁹ These find-

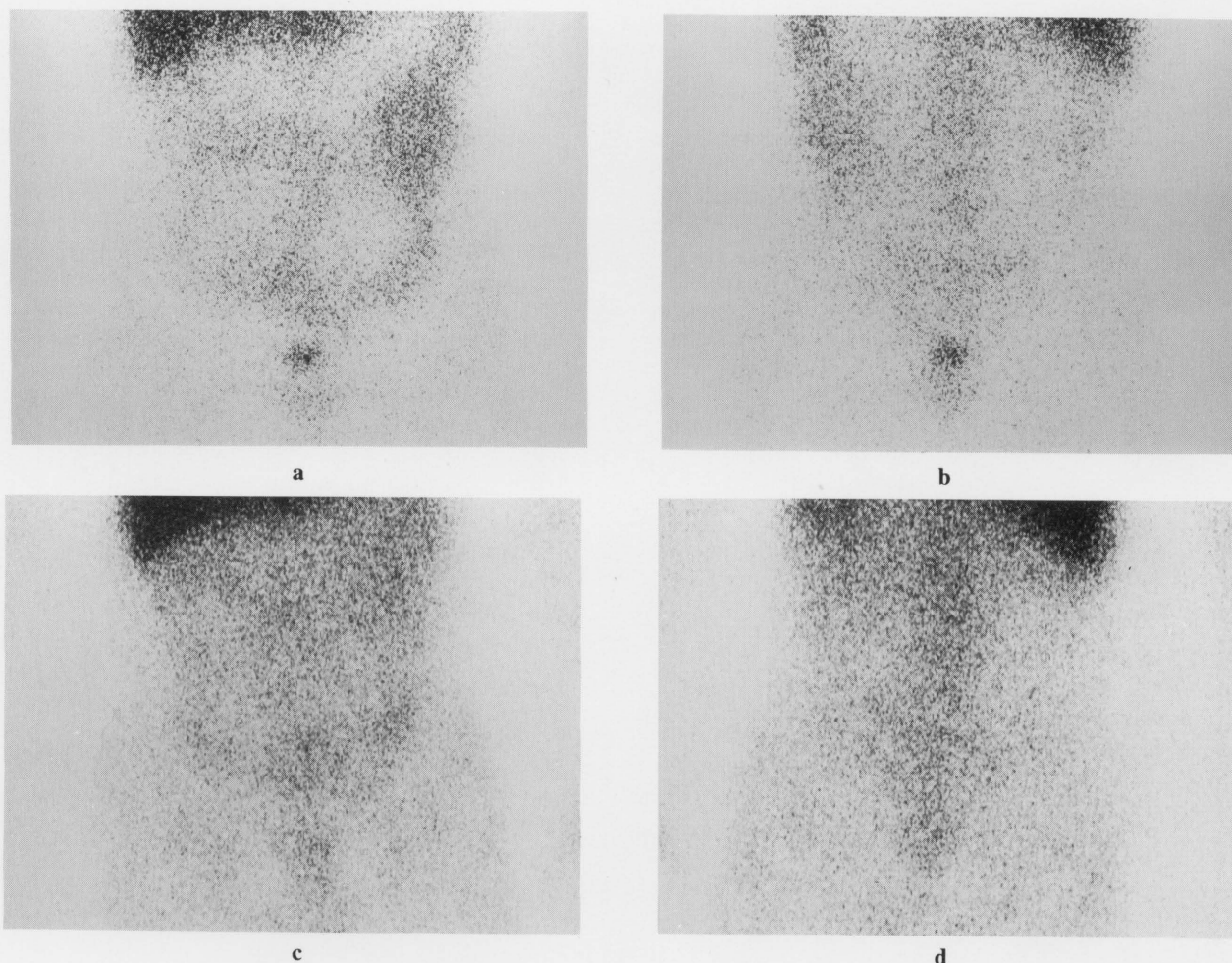


Fig. 4 Ga-67 scintigraphy: Anterior (a) and posterior (b) scans taken three days after the injection of 111 MBq of Ga-67-citrate. The abnormal accumulation of Ga-67-citrate in the prostate was shown in both images. Follow-up study was taken 15 days after admittance (ten days after initiation of antibiotic therapy). At this time CRP lowered to 2 mg/dl (normal limit is below 0.4 mg/dl). The abnormal radionuclide accumulation disappeared in the follow-up study, 7 days after discharge (c: anterior, d: posterior).

ings were recognized in our patient. MR imaging demonstrates the lesion as an abscess that occurred elsewhere in the body: hypo-intensity on short TE images and hyper-intensity on long TE images.⁸ The increasing activity of Ga-citrate in the prostate was described in two cases of prostatitis¹⁰ but not in prostatic abscesses.

US and CT examinations are able to prove the existence of a lesion but not to exclude malignancy. Ga may have the same ability under some conditions. It had been suggested that Ga was not suitable for use in cases of prostatic abscess because of the inability to exclude prostatitis and the three days required for the study.⁶ Yet, it is not necessary to wait for the results of Ga and to delay the treatment if a potentially fatal abscess is suspected. Furthermore, it is usually want to obtain other evidences to confirm the inflammation suspected and rule out the malignancy, even after the therapy is initiated in patients having poor clinical symptoms. Ga is a useful

method in this condition.

Functional characteristics able to determine the severity of the inflammatory lesion corresponds to the amount of Ga-citrate accumulation, makes Ga suitable for observing outcome of the inflammation in the clinical course. The ability to observe the whole body provides Ga a superiority to other radiologic examinations in scanning systematic lesions in patients with basic diseases such as DM, immune deficiency and drug abusers who are at high risk of multiple inflammatory origin.

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