

## $^{99m}\text{Tc(V)}$ -DMSA and $^{67}\text{Ga}$ -citrate images in a patient with recurrent extraabdominal fibromatosis

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$^{67}\text{Ga}$ -citrate and  $^{99m}\text{Tc(V)}$ -DMSA images were obtained in a patient with recurrent extraabdominal fibromatosis of the left calf. The  $^{67}\text{Ga}$ -citrate image showed abnormal uptake in the left calf lesion and right calf, which was considered due to probable myositis caused by overexertion. On the other hand, the  $^{99m}\text{Tc(V)}$ -DMSA image showed abnormal uptake only in the left calf lesion. Surgical and radiation therapy was performed. Two years after the treatment, two lesions of the recurrent extraabdominal fibromatosis followed, and a  $^{99m}\text{Tc(V)}$ -DMSA image could demarcate the two lesions.  $^{99m}\text{Tc(V)}$ -DMSA images were considered to be useful in following up of recurrent extraabdominal fibromatosis.

**Key words:** extraabdominal fibromatosis,  $^{67}\text{Ga}$ -citrate,  $^{99m}\text{Tc(V)}$ -DMSA

### INTRODUCTION

EXTRAABDOMINAL FIBROMATOSIS frequently behaves in an aggressive manner despite its bland microscopic appearance, and recurs frequently. The terms extraabdominal desmoid, well-differentiated nonmetastasizing fibrosarcoma and aggressive fibromatosis have also been used to describe this neoplasm.<sup>1</sup>

We report a case of recurrent extraabdominal fibromatosis examined by  $^{67}\text{Ga}$ -citrate and  $^{99m}\text{Tc(V)}$ -DMSA scintigraphy and discuss the usefulness of  $^{99m}\text{Tc(V)}$ -DMSA scintigraphy in the evaluation of the tumor.

### CASE REPORT

A 21-year-old male was referred to our hospital due to a tumor of the left calf. At age 17 and 19, the patient underwent surgical removal of extraabdominal fibromatosis of the left calf at another hospital.

Scintigraphic examinations were performed.  $^{99m}\text{Tc(V)}$ -DMSA was prepared by the already reported Hirano's method.<sup>2</sup> In short, 0.2 ml of 7%  $\text{NaHCO}_3$  solution (Otsuka

Pharmaceutical, Tokushima, Japan) was added to a Technetium-99m DMSA kit (Daiichi Radioisotope Laboratory, Tokyo, Japan), immediately followed by the addition of 2 ml, 500 MBq of  $^{99m}\text{Tc}$ -pertechnetate solution.

Whole-body images were obtained 1 hour and 72 hours after intravenous injection of 500 MBq of  $^{99m}\text{Tc(V)}$ -DMSA and 111 MBq of  $^{67}\text{Ga}$ -citrate, respectively.

The  $^{67}\text{Ga}$ -citrate image showed abnormal uptake in the left calf tumor and right calf (Fig. 1), but no abnormal physical findings were recognized in the right calf. A  $^{99m}\text{Tc(V)}$ -DMSA image showed abnormal uptake only in the tumor (Fig. 2). Tumor resection was performed and the histopathological diagnosis was extraabdominal fibromatosis. After surgery and post-operative irradiation, the patient was doing well but at age 23 the patient noticed two tumors in the left calf.  $^{99m}\text{Tc(V)}$ -DMSA image showed abnormal uptake in the tumors (Fig. 3). A diagnosis of extraabdominal fibromatosis was confirmed, but considering the history of frequent operations the patient is now being carefully observed.

### DISCUSSION

This case report describes  $^{67}\text{Ga}$ -citrate and  $^{99m}\text{Tc(V)}$ -DMSA scintigraphy of a recurrent extraabdominal fibromatosis, and was presented for two reasons. First,

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Fig. 1



Fig. 3



Fig. 2

**Fig. 1**  $^{67}\text{Ga}$  image showed abnormal uptake in the extraabdominal fibromatosis of the left calf and abnormal uptake in the right calf, which was considered due to probable myositis caused by overexertion.

**Fig. 2**  $^{99\text{m}}\text{Tc(V)}$ -DMSA image showed abnormal uptake in the extraabdominal fibromatosis of the left calf.

**Fig. 3**  $^{99\text{m}}\text{Tc(V)}$ -DMSA image showed abnormal uptake in the tumors, which were considered extraabdominal fibromatosis recurrence (arrow). Diffuse slightly increased uptake in the left calf was considered due to surgery and irradiation (arrowhead).

$^{99\text{m}}\text{Tc(V)}$ -DMSA prepared by Hirano's method was accumulated in the tumor. Second,  $^{99\text{m}}\text{Tc(V)}$ -DMSA scintigraphy was useful for following up of the tumor.

Hirano's simple method has already been reported to be useful for thyroid medullary carcinoma imaging.<sup>2</sup> This case showed that Hirano's method was also useful for extraabdominal fibromatosis.

The recurrence rate of extraabdominal fibromatosis in the literature ranges from 29% to 65% and depends largely on the completeness of local excision.<sup>1</sup> Therefore, it is important to determine the exact location and extent of the tumor. Morphological examinations such as US, CT and MR play an important role, but it is sometimes not easy to distinguish the recurrence from post-therapeutic changes. Scintigraphy with  $^{99\text{m}}\text{Tc}$ -bleomycin,  $^{67}\text{Ga}$ -citrate

and  $^{99m}\text{Tc(V)}$ -DMSA is a useful complementary tool in assessing the extent of extraabdominal fibromatosis,<sup>3-6</sup> but  $^{99m}\text{Tc}$ -bleomycin is now not widely used. The sensitivity of  $^{99m}\text{Tc(V)}$ -DMSA scintigraphy is higher than that of  $^{67}\text{Ga}$ -citrate scintigraphy, in addition,  $^{99m}\text{Tc}$  has superior properties to  $^{67}\text{Ga}$  for scintigraphy.<sup>4,5</sup> In the present case,  $^{67}\text{Ga}$  uptake in the right calf was considered clinically due to probable myositis caused by overexertion, although histological examination was not performed. No  $^{99m}\text{Tc(V)}$ -DMSA uptake in the overexerted muscle was recognized. Indeed  $^{99m}\text{Tc(V)}$ -DMSA uptake is also seen in other soft tissue tumors and even in surgical scars.<sup>4-6</sup> To distinguish the uptake in the recurrent tumor from that of surgical scars, follow-up scintigraphy is thought to be useful.

In conclusion, we presented a case of recurrent extraabdominal fibromatosis in which  $^{99m}\text{Tc(V)}$ -DMSA scintigraphy was useful for demarcating the lesions.

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