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CASE REPORT

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Large benign rheumatoid nodules of the trunk in an elderly patient: radiologic appearance mimicking a soft-tissue sarcoma

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Abstract An 80-year-old woman without any evidence of rheumatoid arthritis presented with two large (maximum diameter: 6 cm and 7 cm), rapidly growing, rubbery nodules on the trunk. Although the clinical and radiological appearance suggested malignancy, the nodules were pathologically identical to rheumatoid nodules in rheumatoid arthritis, and the nodules regressed spontaneously. The final diagnosis was benign rheumatoid nodules. Recognition of this rare clinical entity is important to avoid unnecessary examination and treatment.

Key words Benign rheumatoid nodule · Elderly patient · Magnetic resonance imaging (MRI) · Soft-tissue sarcoma · Trunk

Introduction

Benign rheumatoid nodule (pseudorheumatoid nodule, deep granuloma annulare, subcutaneous granuloma annulare, and subcutaneous palisading granuloma) is a rare clinical entity and pathologically identical to rheumatoid nodule in patients with rheumatoid arthritis (RA).[1–6] Benign rheumatoid nodule usually develops in healthy children and is characterized by subcutaneous location with predilection for pretibial regions and scalp, spontaneous regression, and frequent recurrence.[7–9] Few reports have described the radiological presentation of this entity; however, all cases were in children and the maximum size of the lesions was not more than 5 cm.[10–13] We herein report a case of two large benign rheumatoid nodules on the trunk, which were thought to be soft-tissue sarcomas radiologically, in an elderly patient without any rheumatic disease.

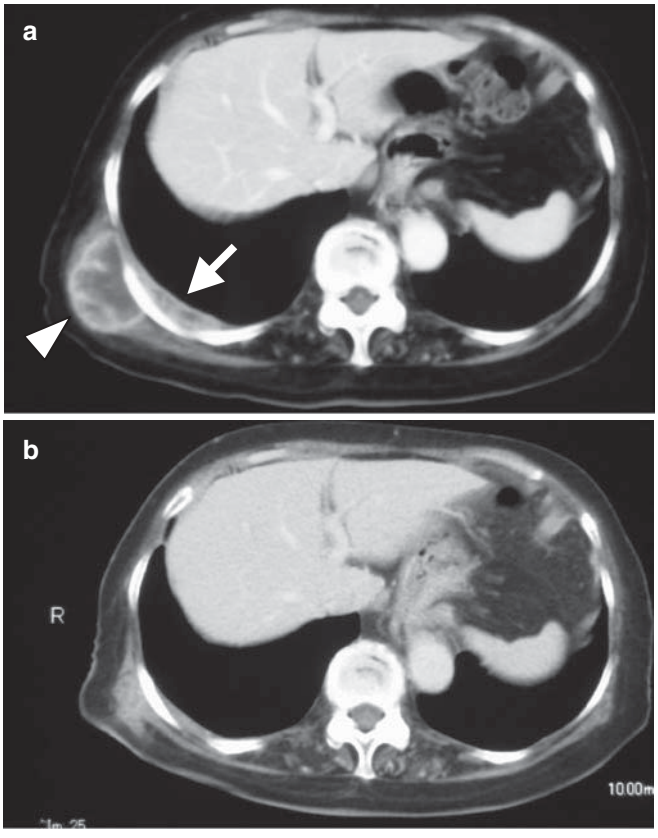

Fig. 1a,b. Computed tomography (CT) scans. **a** In addition to the extrathoracic nodular lesion (*arrowhead*), a flat crescent-like lesion (*arrow*) was revealed at the intrathoracic wall. **b** Four months after the biopsy, the nodular mass regressed spontaneously, and CT scans showed the trace of the nodular lesion

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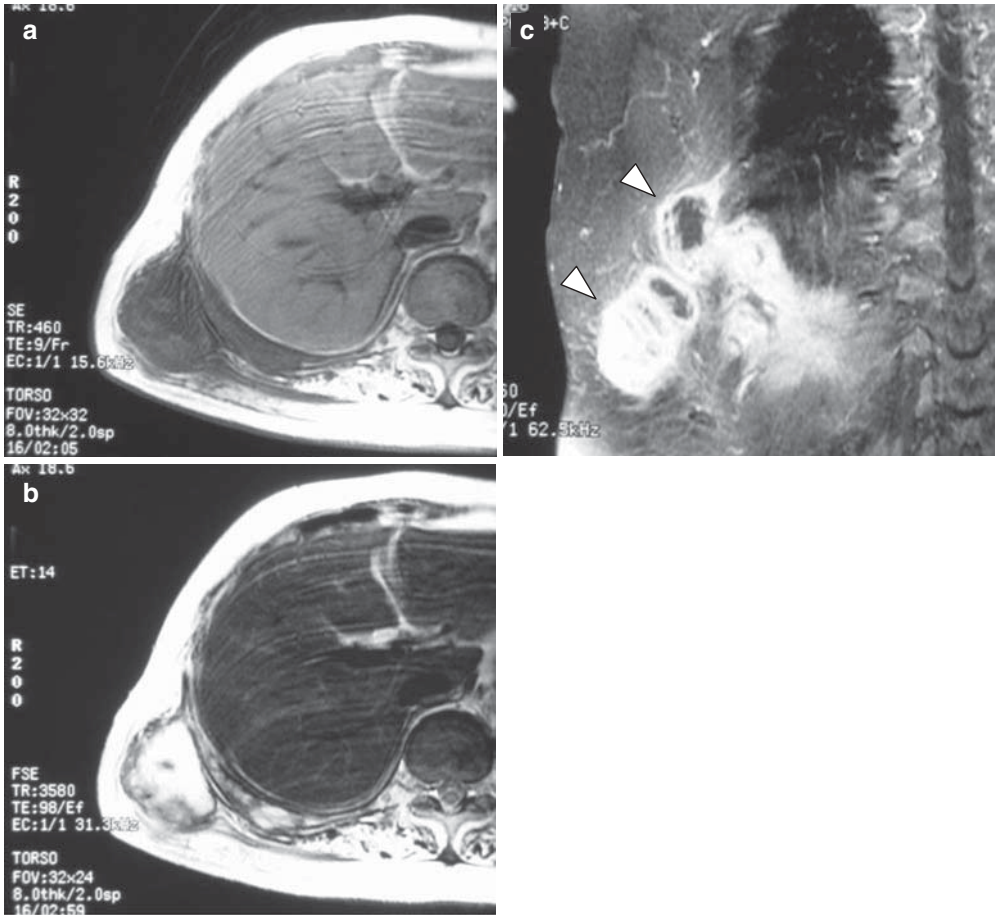

Fig. 2a–c. Magnetic resonance images. The nodules had cystic components that were surrounded by a solid nodular tissue that was hypointense on T1-weighted (**a**) and slightly hyperintense on T2-weighted (**b**) images, and enhanced on T1-weighted images after gadolinium injection (**c**). (**a,b** axial image, **c** coronary image). *Arrowheads* indicate the two nodules

Case report

An 80-year-old Japanese woman had a 1-month history of a rapidly growing mass in her right chest wall, and was referred to our hospital for further management. Physical examinations revealed two rubbery nodules with maximum diameters of 6 cm and 7 cm. Computed tomography (CT) scans showed the nodules protruding from the thoracic wall and revealed a flat crescent-like lesion in the intrathoracic wall (Fig. 1a). On magnetic resonance (MR) imaging, the nodules had cystic components that were surrounded by gadolinium enhanced solid nodular tissue that was hypointense on T1-, and slightly hyperintense on T2-weighted sequences. Although there were no cortical erosions and medullary involvement in the rib bones, MR imaging also revealed a flat crescent-like lesion in the intrathoracic wall (Fig. 2). A thallium-201 scintigraphy showed increased abnormal uptake in the mass. A technetium-99m-HMDP bone scintigraphy revealed no abnormal uptake. We performed an incisional biopsy of one of the masses, and the biopsy specimen showed a granulomatous lesion with fibrinoid necrosis surrounded by histiocytes and fibrosis with focal lymphocytic infiltration (Fig. 3). By bacterial culture studies, including acid-fast bacillus culture, no causal bacteria were identified. The patient had no evidence of rheumatoid arthritis and serological tests for rheumatoid factor were negative. No abnormal findings were detected on routine laboratory testing. The final diagnosis was benign rheumatoid nodules and there was no additional treatment. Four months after the biopsy, the nodular mass regressed spontaneously, and CT scans revealed only a trace of the nodular lesion (Fig. 1b). One year after the biopsy, the patient was alive without disease recurrence.

Discussion

Benign rheumatoid nodule (also known as pseudorheumatoid nodule, deep granuloma annulare, subcutaneous granuloma annulare, and subcutaneous palisading granuloma) is a benign inflammatory subcutaneous lesion of unknown etiology.[1–5] The most characteristic histological finding is a central zone of necrotic collagen surrounded by palisading histiocytes and mononuclear inflammatory cells.[7–9] On histologic evaluation, benign rheumatoid nodule

Table 1. Clinical features of benign rheumatoid nodules in children and adults over middle age

First author (year)[Ref.]	Number	Age (years)	Sex	Location	Size	Comments/Comorbidity
In children						
Felner (1997)[7]	47 cases	1–14 (mean: 4.3)	Not stated	Lower extremity 22 nodules Scalp 13 nodules Upper extremity 18 nodules (total 53 nodules)	1.0–3.5 cm	Nine patients (19%) had a recurrence No patient progressed to any systemic illness
McDermott (1998)[8]	35 cases	1–19 (mean: 5.4)	19 females 16 males	Lower extremity 24 cases Scalp 13 cases Upper extremity 8 cases Multifocal 16 cases	0.6–4.0 cm (mean: 2.1 cm)	Seventeen patients (71%) of 24 patients with follow-up data had a recurrence No patient progressed to any systemic illness
Grogg (2001)[9]	34 cases	<10 (mean: 4.6)	21 females 13 males	Lower extremity 26 cases Scalp 3 cases Upper extremity 5 cases	Not stated	Thirteen patients (38%) had a recurrence of the initial lesion, and 5 patients (15%) had a recurrence at other locations Two patients had diabetes mellitus
In adults (over middle age)						
Causey (1972)[17]	1 case	58	Male	Elbow, knee	1.0 cm	Hypertension
Cohen (1993)[18]	1 case	61	Female	Elbows	1.5 cm	Chronic lymphocytic leukemia and borderline lepromatous leprosy
Miyamato (1996)[19]	1 case	85	Female	Scalp, sacral	Thumb-head sized	Hodgkin's disease
Present case	1 case	80	Female	Trunk	6.0–7.0 cm	No systemic illness

is similar to the nodules seen in patients with rheumatoid arthritis.[6]

Benign rheumatoid nodule usually develops in healthy children. The clinical presentation is a painless, enlarging, firm subcutaneous mass mainly distributed on the anterior tibia, feet, scalp, forearms, and hands. The mass is noted over a period of a few weeks to several months, and in some cases, a recent rapid increase in size of the lesion, which is usually less than 5 cm, prompts individuals to seek medical attention.[7–9] In the case presented, the patient's age and the size and location of the nodules were not typical of benign rheumatoid nodule. To the best of our knowledge this subject is the largest benign rheumatoid nodule.

A few reports have described the MR imaging appearance of benign rheumatoid nodules.[10–13] All lesions were confined to the subcutaneous adipose tissue and the lesions had well defined or poorly defined margins. The nodules were usually solid and showed variable signal intensities. Some authors described the relatively decreased signal intensity of the nodules on all pulse sequences and emphasized that benign rheumatoid nodules should be added to the list of tumors with short T2.[10,11] On the other hand, rheumatoid nodules in RA patients showed solid or cystic pattern morphologically.[14,15] In the case presented, the MR images resembled the cystic variant of rheumatoid nodules in which the cystic components were surrounded by a rim of enhancing solid nodular tissue that was hypointense on T1- and slightly hyperintense on T2-weighted sequences. In the previously reported cases of benign rheumatoid nodules, there was always extension up to but never deep into the underlying fascia. In the present case, diffuse inflammatory reaction was observed in both the extra- and the intrathoracic wall. Those radiological findings have never been reported, and led us to suspect that the lesion was malignant.

The incidence of benign rheumatoid nodule in adults is not known.[16] There have been a few case reports of benign rheumatoid nodule in adults over the middle age.[17–19] Although children with benign rheumatoid nodules are usually healthy, adult onset benign rheumatoid nodules sometimes occur in association with malignant blood disease.[18,19] The clinical features of the present case and reported cases in the literature are summarized in Table 1. Biopsy is necessary for differentiating benign rheumatoid nodule from soft-tissue sarcoma especially in adult patients with atypical clinical presentations. Because benign rheumatoid nodule is not a life-threatening disease and often regresses spontaneously, recognition of this rare clinical entity is important to avoid unnecessary examination and treatment.

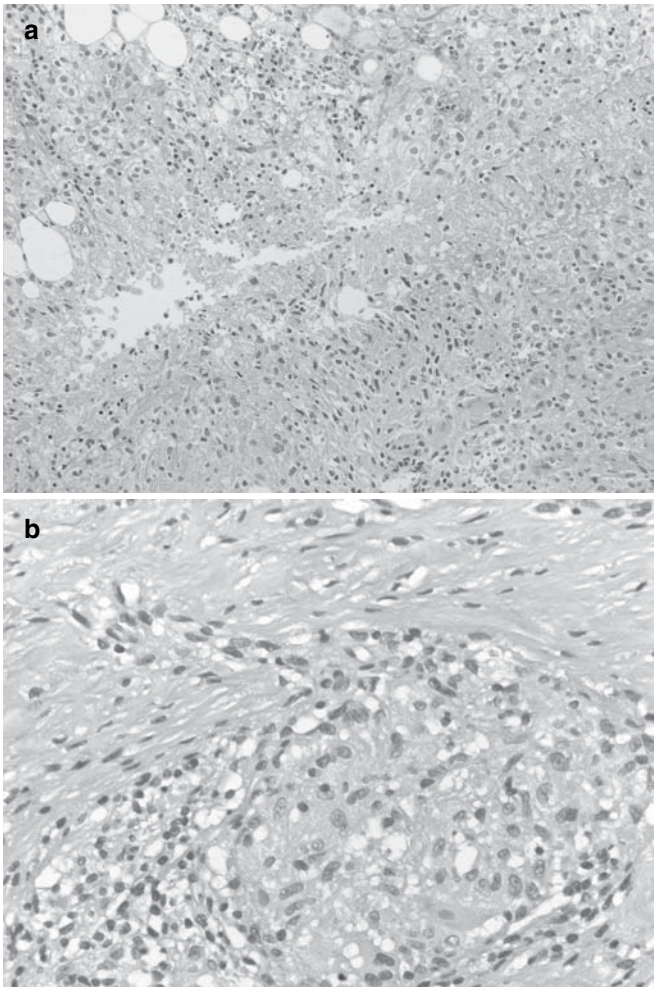

Fig. 3a,b. Incisional biopsy specimen. **a** An acellular zone of collagen necrosis is surrounded by inflammatory cells, principally histiocytes and lymphocytes. **b** Histiocytic cells have a somewhat epithelioid appearance with a vesicular nucleus and ill-defined cytoplasm. (hematoxylin–eosin stain)

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