

Painful snapping in rheumatoid knees

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Accepted: 19 March 1997

Summary. *Painful snapping caused by a solitary intra-articular nodular mass was found in 11 knee joints of 8 patients with rheumatoid arthritis. The masses were characteristically situated in the anterolateral aspect of the lateral femoral condyle of each joint, and appeared to jump and slip in and out of the patellofemoral articulation during flexion and extension. The snapping caused by the solitary mass was noticed as the joint flexed from 15° to 30° in 9 knees and from 50° to 60° in 3. Histopathological examination of the masses revealed typical findings of a rheumatoid nodule in 4 knee joints and myxomatous degeneration and collagen necrosis in 7.*

Résumé. *11 genoux présentant un ressaut douloureux à cause d'un nodule intra-articulaire ont été opérés chez 8 patients atteints d'arthrite rhumatoïde. Les nodules se situaient sur la face latérale du condyle fémoral externe et s'introduisaient dans l'articulation fémoro-patellaire lors de la flexion du genou. Le ressaut survenait aux environs de 15 à 30° de flexion pour 9 genoux et 50 à 60° de flexion pour 3. L'examen histologique a montré un aspect typique de nodule rhumatoïde dans 4 cas et une dégénérescence myxoïde avec nécrose collagène dans les 7 autres cas.*

Introduction

Rheumatoid nodules are usually found either in the subcutaneous tissues overlying bony prominences, or around small joints. They occur in patients with

advanced stages of rheumatoid arthritis who are strongly seropositive. There have been very few recorded examples since Chamberlain's report which in 1971 described intra-articular nodules of sufficient size to cause mechanical symptoms [1].

We have studied 8 patients with rheumatoid arthritis who complained of painful snapping of their knee joints ($n = 11$) and who had a solitary intra-articular nodular mass. These were usually situated near the anterolateral aspect of the lateral femoral condyle of the knee joint and were investigated by computed tomography and histopathological examination.

Patients and methods

Between 1988 and 1996, 8 patients with rheumatoid arthritis complaining of painful snapping of the knee joints were seen in our hospital. The condition had been present on average for 10 years (range 2–23 years). The mean age of the patients was 41 years (range 27–61 years), and there was only 1 male (Table 1). The disease activity was not well controlled in 7 of the 8 patients, and 7 tested positive for rheumatoid arthritis. Subcutaneous rheumatoid nodules were noted in 2.

All the patients in this study complained that "something clicked" in their knee during daily activity. Intra-articular nodular masses were palpable on the anterolateral aspect of the lateral femoral condyle, and all the knee joints showed the typical change of rheumatoid arthritis. Three patients had intra-articular nodules in both knees. The nodules ranged in size from 1.5 cm to 3.0 cm in diameter and appeared to slip in and out of the joint during flexion and extension. The masses were firm and elastic in consistency.

Radiographs of the knees were assessed using the scoring system based on weight-bearing radiographs described by Larsen et al. [5]. Arthroscopy was carried out on 3 knees and revealed a solitary mass between the patella and the lateral femoral condyle (Fig. 1). Synovectomy of the knee joint was carried out in 4 patients and excision of the solitary nodular mass in 7 (Fig. 2).

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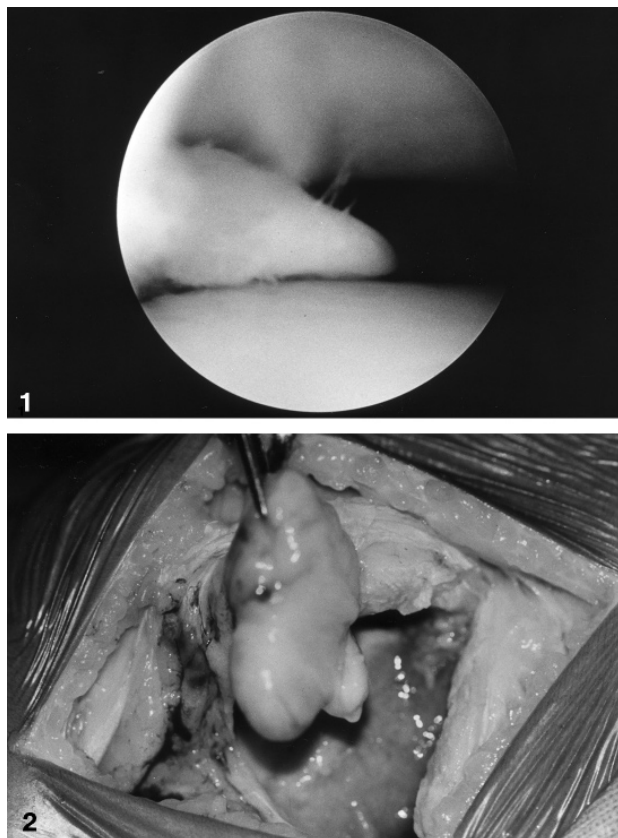


Fig. 1. Photograph at arthroscopy showing a solitary intra-articular nodular mass in the lateral aspect of the patello-femoral joint. Histopathological examination of the mass (case 4) revealed mainly myxomatous degeneration and collagen necrosis

Fig. 2. Photograph at operation demonstrating the intra-articular nodular mass in the lateral aspect of the knee joint (case 8) which histopathological examination revealed as a typical rheumatoid nodule

Results

The size of the masses ranged from 1.5 cm to 3.0 cm in diameter. The snapping was noticed as the joints flexed from 15° to 30° in 8 knees and from 50° to 60° in 3. Anteroposterior, lateral and axial radiographs did not show any abnormalities which could account for the presence of the intra-articular mass. The radiographic changes were relatively mild: Grade I in 3 knee joints, Grade II in 6 and Grade III in 2.

Two different locations of the lesions were confirmed by computed tomography. When the mass was palpable and “snapped” between 15° and 30° of flexion it was located immediately adjacent to the lateral margin of the patella (Fig. 3). When it was palpable and “snapped” between 50° and 60° of knee flexion it was located a little further away from the lateral margin of the patella (Fig. 4).

Histopathological examination showed the synovial membrane to have the typical perivascular infiltration, characteristic of rheumatoid arthritis. Rheumatoid nodules, with a central area of necrosis surrounded by palisading epithelioid cells and adjacent lymphocytes and plasma cells, were found in 4 of 11 specimens.

In all patients, the symptoms were relieved by synovectomy or excision of the intra-articular mass. There has been no evidence of recurrence of the lesions or of painful snapping during a mean follow-up of 4 years.

Discussion

When a rheumatoid patient gives a history of “clicking” around the knee joint, the differential diagnosis should include an intra-articular nodular mass in addition to a possible mechanical derangement of the knee joint. Chamberlain et al. [1]

Table 1. Clinical findings in patients with painful snapping knees in rheumatoid arthritis

Case	Age (yrs)	Sex	Disease duration (yrs)	Affected knee	RF	Mass size	Knee angle	X-ray grade	Treatment	Pathological findings
1.	32	F	14	L R	+	Thumb Index	60° 60°	3 3	Synovectomy Synovectomy	Rheum. nodule Myxomat. change
2.	45	F	6	R	+	Index	20°	1	Excision	Rheum. nodule
3.	27	F	7	L	+	Index	25°	2	Excision	Myxomat. change
4.	61	F	20	L R	+	Index Index	15° 15°	2 2	Excision Synovectomy	Myxomat. change Myxomat change
5.	38	F	8	L R	-	Index Index	25° 25°	1 1	Synovectomy Excision	Myxomat change Myxomat change
6.	34	M	3	L	+	Thumb	60°	2	Excision	Myxomat change
7.	42	F	2	R	+	Index	25°	2	Excision	Rheum. nodule
8.	47	F	23	L	+	Thumb	15°	2	Excision	Rheum. nodule

L. Left; R. Right; Rheum. Nodule: Rheumatoid Nodule; Myxomat. Change: Myxomatous Degeneration and Collagen Necrosis

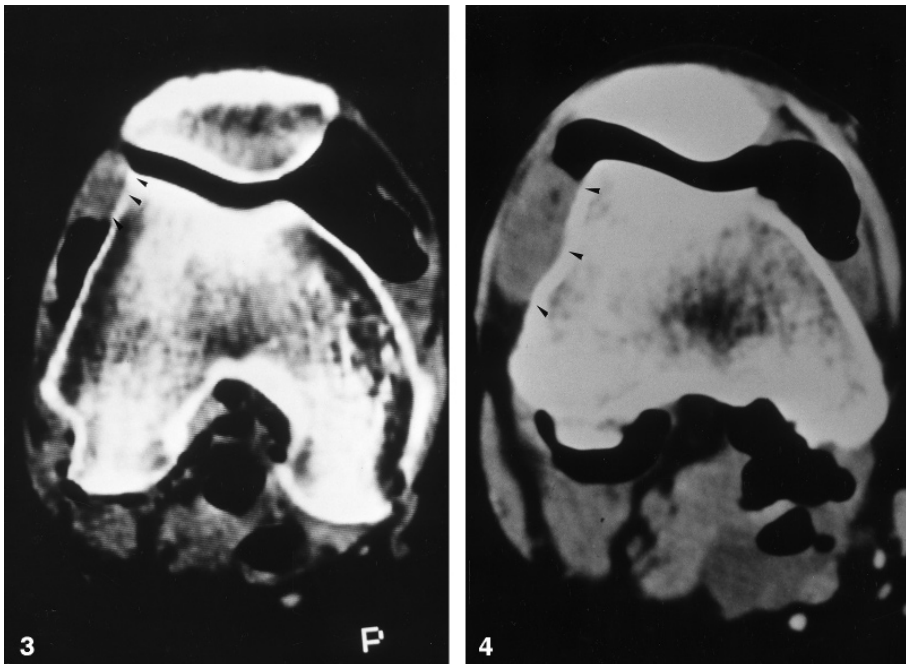


Fig. 3. Computed tomograph with air arthrograph demonstrating an intra-articular nodular mass immediately adjacent to the lateral aspect of the patella (*arrow*). This case (no. 4) showed snapping of the knee as the joint flexed at about 15°

Fig. 4. Computed tomograph with air arthrograph demonstrating an intra-articular nodular mass located further away from the lateral margin of the patella. This case (no. 1) had snapping as the knee joints flexed at about 50° to 60°

initially reported the clinical features of intra-articular rheumatoid nodules of sufficient size to cause mechanical symptoms, but the literature on these rheumatoid nodules is extremely scanty [2, 3, 6, 7, 8].

Intra-articular nodules described in the literature have been exclusively located in the anterolateral aspect of the knee joint with one exception. Tak-Diamant et al. [7] reported 7 nodules, 6 on the lateral side of the patella and 1 on its medial side.

All the cases reported in the literature showed snapping of the nodules at positions ranging from full extension to 30° of knee flexion. However, in our study, snapping was noticed as the patients flexed their knees at about 60° in 3 of 11 knee joints. The difference was found to depend upon the different location of the mass in relation to the patella as revealed by computed tomography with air arthrography.

The aetiology of the intra-articular rheumatoid nodule is unknown, although subcutaneous rheumatoid nodules develop at sites frequently exposed to shear and to compressive stresses [4]. Huang et al. [2] described an intra-articular nodule in the knee associated with recurrent subluxation of the patella. One of our 8 patients also showed bilateral subluxation of the patellofemoral joints on radiographs.

Not all of the excised solitary intra-articular nodular masses demonstrated typical features of rheumatoid nodules on histopathological examination. Okitu et al. [6] reported that 3 of 9

intra-articular masses were not typical of rheumatoid nodules. This study also revealed 2 variants of the condition. One patient with subcutaneous nodule formation showed a typical rheumatoid nodular mass in the right knee, and mainly myxomatous degeneration in a lesion in the left side.

Intra-articular nodular masses in rheumatoid arthritis can present with painful snapping in the anterolateral aspect of the knee. Histopathological examination is necessary to confirm that the solitary intra-articular nodular mass is typical of the rheumatoid process.

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