

- Gilbert M, Robinson A, Baez A, Gupta S, Glabman S, Haimov M. Carpal tunnel syndrome in patients who are receiving long-term renal hemodialysis. *J Bone Joint Surg (Br)* 1988; 70: 1145-53.
- Konishiike T, Hashizume H, Nishida K, Inoue H, Moriwaki K. Cubital tunnel syndrome in a patient in long-term haemodialysis. *J Hand Surg (Br)* 1994; 19: 636-7.
- Majeed S A. Chronic recurrent multifocal osteomyelitis associated with tumoral calcinosis. *J Bone Joint Surg (Br)* 1994; 76: 325-7.
- Noyez J F, Murphree S M, Chen K. Tumoral calcinosis: A clinical report of eleven cases. *Acta Orthop Belg* 1993; 59: 249-54.
- Steinbach L S, Johnston J O, Tepper E F, Honda G D, Martel W. Tumoral calcinosis: radiologic-pathologic correlation. *Skeletal Radiol* 1995; 24: 573-8.
- Thurman R T, Jindal P, Wolff T W. Ulnar nerve compression in Guyon's canal caused by calcinosis in scleroderma. *J Hand Surg (Am)* 1991; 16: 739-41.
- Weiber H, Linell F. Tumoral calcinosis causing acute carpal tunnel syndrome. *Scand J Plast Reconstr Surg* 1987; 21: 229-30.
- Zins B, Zingraff J, Basile C, Petitclerc T, Urena P, Bardin T, Drüeke T. Tumoral calcifications in hemodialysis patients: Possible role of aluminum intoxication. *Nephron* 1992; 60: 260-7.

Lipoma arborescens with osteochondral metaplasia—a case mimicking synovial osteochondromatosis in a lateral knee bursa

Akira Kurihashi¹, Takehiko Yamaguchi², Kazuya Tamai¹ and Koichi Saotome¹

Departments of ¹Orthopedics and ²Pathology, Dokkyo University School of Medicine, Mibu, Tochigi 321-02, Japan
Tel +81 282-87 2161. Fax -86 5422
Submitted 96-09-03. Accepted 96-12-28

A 52-year-old woman for 4 years had noted a slowly growing swelling of the right knee. There was no history of trauma. Physical examination revealed a firm, fixed, tender mass, measuring 6 × 7 cm over the lateral part of the knee. Knee motion was normal without crepitus. Routine laboratory studies were normal. Serological tests for rheumatoid factor were negative. Needle aspiration of the lesion yielded sterile, clear, yellow fluid.

Radiography showed a calcified soft tissue mass lateral to the knee, but no arthrosis. MRI revealed a well-defined cystic lesion which contained a villous fatty area interspersed with fluid. Chondromatous

changes showing intermediate signal intensity on both T1 and T2 weighted images were seen in the fatty tissue (Figure 1). Arthrography showed no communication with the mass. Arthroscopy revealed no intraarticular abnormalities.

At operation, the mass was found under the iliotibial tract. It extended posteriorly between the fibular collateral ligament and the popliteus muscle. No communication with the knee joint or the proximal tibiofibular joint could be found. The patient had no recurrence 4 years after the marginal excision.

The excised specimen was a fluid-filled cystic synovial lesion with 5 loose bodies. The luminal surface



Figure 1. A. Extraarticular radiolucent mass with calcified nodules.

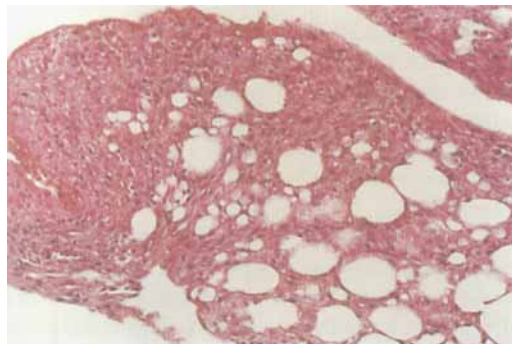
B. Transverse T1 weighted MR image of a distended lateral knee bursa shows villous synovial proliferation with tissue identical to subcutaneous fat in signal intensity, interspersed with fluid. Cartilaginous islands are embedded in the fatty tissue.

of the lesion was yellow and had a villonodular configuration. A few osteochondral nodules were attached to the luminal surface.

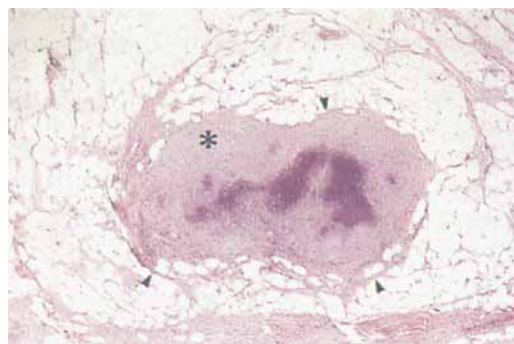
Histological examination showed diffuse proliferation of the subsynovial fat cells. There were many osteochondral nodules in the fat tissue. Most of them consisted of hyaline cartilage with a myxoid matrix covered by a thin fibrous membrane, associated occa-



Figure 2. A. Gross photograph of the luminal surface of the excised bursa showing fatty synovial proliferation with villonodular configuration. There are 5 loose bodies and a few polypoid osteochondral nodules arising from the synovium.



B. Photomicrograph of a villus reveals fatty infiltration deep to the thickened synovial membrane, HE, x100.



C. An island of cartilage embedded in the subsynovial fat tissue. This consists of abundant myxoid matrix (asterisk), and is surrounded by a thin fibrous membrane (arrowheads), HE, x10.

sionally with enchondral ossification (Figure 2). A couple of nodules consisted of only bony trabeculae and fibrous tissue. The gross and microscopic findings were consistent with osteochondral metaplasia in lipoma arborescens arising within a bursa under the iliotibial tract and/or a bursa between the fibular collateral ligament and the popliteus tendon.

Discussion

Lipoma arborescens is a rare synovial lesion characterized by hyperplasia of the subsynovial fat and a macroscopic villous appearance (Hallel et al. 1988). It typically affects the knee—in particular, the suprapatellar pouch, and presents as a slowly growing mass accompanied by persistent effusion (Edamitsu et al. 1993). MRI is diagnostic and shows a villous fatty mass interspersed with synovial fluid (Reicher 1993, Feller et al. 1994).

Lipoma arborescens occurring in a bursa is exceptional. Only 2 cases have been reported, both in the subdeltoid bursa (Dawson et al. 1995, Laorr et al. 1995).

Our case resembled a primary bursal synovial osteochondromatosis. The following features supported the diagnosis of lipoma arborescens, rather than synovial chondromatosis: fatty villi interspersed with effusion on MRI, macroscopic fatty synovial proliferation with villous configuration and the histological evidence of diffuse subsynovial fat. Osteochondral islands in a lipomatous lesion have been described as metaplastic changes (Allen 1981, Hayden and Abellera 1989, Katzer 1989, Rodriguez-Peralto et al. 1994).

References

- Allen P W. Benign mixed mesenchymal tumors featuring adipose tissue and at least one other mesodermal component. In: Tumors and proliferations of adipose tissue (Ed. Allen P W). Masson, New York 1981; 3: 13-74.
- Dawson J S, Dowling F, Preston B J, Neumann L. Case report: lipoma arborescens of the sub-deltoid bursa. *Br J Radiol* 1995; 68 (806): 197-9.
- Edamitsu S, Mizuta H, Kubota K, Matsukawa A, Takagi K. Lipoma arborescens with hemarthrosis of the knee. A case report. *Acta Orthop Scand* 1993; 64 (5): 601-2.
- Feller J F, Rishi M, Hughes E C. Lipoma arborescens of the knee: MR demonstration. *AJR* 1994; 163 (1): 162-4.
- Hallel T, Lew S, Bansal M. Villous lipomatous proliferation of the synovial membrane (lipoma arborescens). *J Bone Joint Surg (Am)* 1988; 70 (2): 264-70.
- Hayden J W, Abellera R M. Tenosynovial lipochondromatosis of the flexor hallucis, common toe flexor and posterior tibial tendons. *Clin Orthop* 1989; 245: 220-2.

Katzner B. Histopathology of rare chondroosteoblastic metaplasia in benign lipomas. *Path Res Pract* 1989; 184 (4): 437–43.

Laorr A, Peterfy C G, Tirman P F J, Rabassa AE. Lipoma arborescens of the shoulder: magnetic resonance imaging findings. *Can Assoc Radiol J* 1995; 46 (4): 311–3.

Reicher M A. The spectrum of knee joint disorders. In: *MRI of the knee*. 2nd ed. (Eds. Mink J, Reicher M A, Crues J V, Deutsch A L). Raven Press, New York 1993: 333–99.

Rodriguez-Peralto J L, Lopez-Barea F, Gonzalez-Lopez J, Lamas-Lorenzo M. Case report 821: Parosteal ossifying lipoma of femur. *Skeletal Radiol* 1994; 23 (1): 67–9.

Candida arthritis after total knee arthroplasty—a case of successful treatment without prosthesis removal

Naoki Fukasawa and Kenji Shirakura

Department of Orthopedic Surgery, Gunma University School of Medicine, 3-39-22 Showa, Maebashi, Gunma, 371, Japan
Tel +81 272 20-8269. Fax -8275
Submitted 96-11-06. Accepted 97-01-20

In January 1995, an 80-year-old woman underwent replacement of her left knee because of arthrosis. Postoperatively, she complained of night pain, mild swelling and increased skin temperature around the joint. Arthrocentesis revealed a few yeast colonies, subsequently identified as *Candida parapsilosis*. The finding was regarded as a contamination and during the following weeks the patient improved.

In March 1995, the left knee again became warm and painful. Repeated punctures revealed growth of *C. parapsilosis*. The white blood cell count was 5100 per mm³ and the ESR 36 mm/h. In April 1995, joint débridement was performed. No prosthetic loosening was seen. In cultures obtained from the synovial membrane, there was again growth of *C. parapsilosis*. A closed system with dual tubes was inserted in the knee joint and suction-irrigation with 3 L/day isotonic sodium chloride solution containing 200 mg fluconazole was instituted.

After 2 weeks, the outflow was cultured because the knee was found to be swollen and tender. The cultures were positive for *Pseudomonas aeruginosa*. After the irrigation, daily aspirations, local washing with 100 times dilution of povidone-iodine and intraarticular injections of dibekacin (100 mg/day) was started. The patient was also treated with intravenous administration of ceftazidime (2 g/day) and clindamycin (1.2 g/day), and fluconazole (200 mg/day) was given orally. This treatment was continued for 3 weeks. Thereafter, oral fluconazole (200 mg/day) and norfloxacin (300 mg/day) were given for 1 year.

At examination 2 years after start of the drug therapy, knee flexion was 90°. The skin temperature over the joint was normal and there was no tenderness or swelling, and the infection was regarded as healed.

Discussion

Candida prosthetic arthritis is indeed rare, with only 25 previous cases (MacGregor et al. 1979, Goodman et al. 1983, Lichtman 1983, Morley and Patterson 1983, Younkin et al. 1984, Lim and Stern 1986, Iskander and Khan 1988, Koch 1988, Lambertus et al. 1988, Levine et al. 1988, Darouiche et al. 1989, Evans and Nelson 1990, Paul et al. 1992, Tunkel et al. 1993, White and Goetz 1995, Cardinal et al. 1996) reported in the literature in English. Resection arthroplasty and débridement were considered necessary for cure (MacGregor et al. 1979, Younkin et al. 1984, Lim and Stern 1986).

In 1993, Tunkel et al. described healing of a *C. parapsilosis* infection of a prosthetic knee joint with oral fluconazole without removal of the prosthesis. The patient was infected with HIV and had had several episodes of bacterial arthritis, with *Staphylococcus hominis* in the same joint. On the other hand, White and Goetz (1995) were unable to cure a *C. parapsilosis* infection of a prosthetic knee joint with fluconazole, despite the apparent *in vitro* susceptibility of the organism.

To our knowledge, our patient is the first nonimmunocompromised case who has been cured without removal of the implant.

Despite adequate fluconazole concentrations in the joint fluid, joint débridement may be necessary for successful treatment, if a long time has passed since the onset.