A 12-YEAR-OLD male child had a history of swelling in the left knee joint since age 4 years. There was no pain or other constitutional symptoms. On physical examination the swelling was soft and boggy. There was no tenderness and the movements were not painful or restricted. Results of routine blood investigations were within normal limits. Aspiration of the knee joint did not reveal any fluid. X-ray films revealed synovial thickening. Arthrotomy with subtotal synovectomy resulted in exuberant grapelike, soft, fleshy synovium (Figure 1, Figure 2, and Figure 3). About 100 g of tissue was received for pathologic examination.

From the Department of Histopathology (Drs Kakkar and Vasishta) and the Anand Orthopaedic Centre (Mr Anand), Postgraduate Institute of Medical Education and Research, Chandigarh, India.
Diagnosis and Discussion

Synovial Lipomatosis

Figure 1. A microscopic section shows an exuberant villous proliferation (hematoxylin-eosin, original magnification ×55).

Figure 2. Each villous section is lined by synovial cells with complete replacement of the subsynovial tissue by mature fat cells (hematoxylin-eosin, original magnification ×140).

Figure 3. At higher magnification there is hyperplasia of the synovial cells forming small nodules beneath the synovial lining (hematoxylin-eosin, original magnification ×280).

Villous lipomatous proliferation of the synovial membrane is a rare condition that usually occurs in the knee, although it has been reported in other joints such as the wrist and ankle. The disease has been reported to be developmental, traumatic, inflammatory, or neoplastic in origin but its true cause remains unknown. This disorder is characterized by a slow painless swelling of the knee over many years with intermittent effusion. Laboratory test results, including erythrocyte sedimentation rate and serological tests for rheumatoid factor and blood uric acids, are all normal. Joint aspiration is negative for crystals and cells and the cultures (aerobic, anaerobic, and tubercular) are sterile. Pathologically, the condition is characterized by marked villous proliferation of the synovial membrane. There is mild hyperplasia of the synovial lining cells and complete replacement of the subsynovial tissue by mature fat cells that extend into the proliferative villous projections. Long-standing synovial thickening and effusions, which are probably caused by repeated mechanical injury to the proliferated villi, eventually lead to osteoarthritis. It has been reported in detail in 5 isolated case reports and 1 series of 5 cases. The 5 cases of Hallel et al had a mean age of 56 years (age range, 39-66 years) and were all male. The duration of symptoms ranged from 5 to 25 years and the knee was the site of involvement for all. The severity of osteoarthritic changes in the knee correlated with the duration of the synovial disease. Synovectomy was done in all cases and 4 cases were followed up for 3, 8, 10, and 11 years. There was no recurrence of synovial thickening or effusion.

The differential diagnosis for villous synovial lipomatosis should encompass all conditions that cause painless effusion and synovial thickening without systemic involvement. These are synovial chondromatosis, pigmented villonodular synovitis, and synovial hemangiomatosis. The microscopic and macroscopic findings of these conditions are typical and, together with the clinical characteristics, should facilitate an accurate diagnosis.

This condition has been reported as lipoma arborescens; however, this term is misleading because lipoma implies a tumorous etiology. Hallel et al in their 5 cases have used the term villous lipomatous proliferation of the synovial membrane. We suggest synovial lipomatosis for this rare condition.

Accepted for publication August 24, 1998.

Reprints: R. K. Vasishta, MD, MRCPath, Department of Histopathology, Postgraduate Institute of Medical Education and Research, Chandigarh 160012, India.

REFERENCES