Rice Bodies Imaging in Juvenile Idiopathic Arthritis

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A 3.5-year-old girl was referred to the Pediatric Rheumatology Unit of our institution for a persistently swollen left knee over the previous 5 months. Her history was negative for trauma, fever, systemic symptoms, and previous infections. On examination the joint was mildly warm to touch and moderately swollen, with no functional impairment and no pain on passive and active movement. Complete blood count, erythrocyte sedimentation rate, C-reactive protein, blood chemistry, protein electrophoresis, and urinalysis were within normal limits. Concomitant or recent viral or bacterial infections were excluded. Antinuclear antibody test on HEp-2 cells was positive > 1:80, with speckled pattern. Ophthalmological slit-lamp examination was negative.

Knee radiographs showed soft tissue swelling and opacity, with no bone erosions (Figure 1). Ultrasonography revealed a moderate amount of fluid filling the joint space and extending into the suprapatellar bursa, with heterogeneous aspect (Figure 2). Magnetic resonance image (MRI) showed abundant fluid collection in the knee joint and in the suprapatellar bursa. The fluid had a high signal intensity and non-homogeneous appearance and contained floating bodies of low signal intensity (Figure 3). After gadolinium enhancement the synovium appeared thickened throughout the joint.

A diagnosis of monoarticular juvenile idiopathic arthritis (JIA) was made. She underwent arthrocentesis with aspiration of yellow creamy synovial fluid (SF) containing many intraarticular bodies; the joint was then injected with triamcinolone hexacetonide 1 mg/kg. The synovial leukocyte count was 4700/mm^3 with prevalence of mononuclear cells (monocytes 46%, lymphocytes 48%). The pathology of the bodies showed mononuclear cell aggregates and coarse strands of fibrin. Six months after the procedure, the knee

Figure 1. Left knee radiograph, lateral view, showing soft tissue swelling and opacity in the suprapatellar bursa and in the popliteal space (arrows).

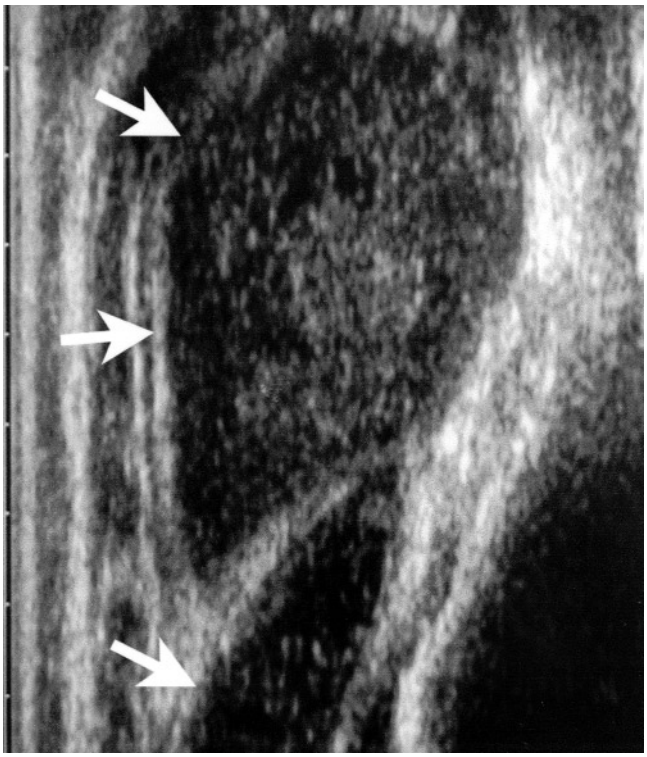

Figure 2. Longitudinal ultrasonography showing heterogeneous fluid collection in the suprapatellar bursa (upper arrows) and a thickened synovial membrane plica (lower arrow).

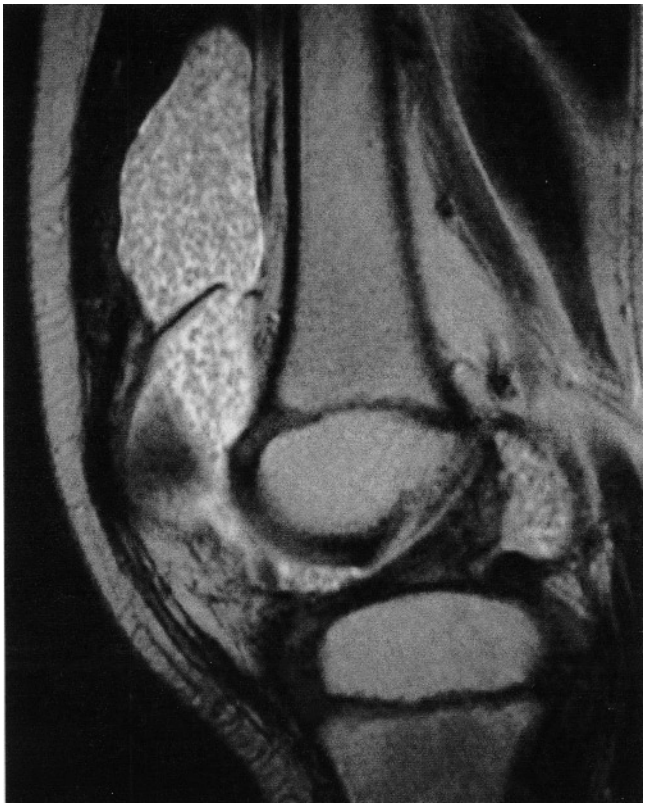

Figure 3. Sagittal T2-weighted MRI showing joint distension by high signal intensity fluid. Note the low signal intensity bodies in the fluid.

examination was normal and the MRI showed only a very small amount of fluid in the joint.

Visible rice bodies have been reported in inflammatory SF, particularly in adult rheumatoid arthritis (RA). They have also been described in tuberculous arthritis and septic arthritis. In JIA they have been described only in isolated case reports[1,2].

According to hypotheses regarding their origin, they could be the result of synovial proliferation and degeneration[3], or the products of synovial microinfarcts fallen into the joint space and covered by fibrin layers[4]. A clear relationship between the presence of rice bodies and the severity of arthritis has never been demonstrated. In our patient the presence of mononuclear cell aggregates, previously described as the main component of the rice bodies in JIA[1], could explain the relatively low leukocyte count in the SF. In our patient SF aspiration followed by joint injection with long-acting steroids led to normalization of the clinical features and to MRI findings, confirming the value of this procedure in the treatment of pauciarticular JIA[5].

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