Case Report:  
Sinding-Larsen-Johansson Disease

Axel Goldmann, M.D.  
Orthopedic Center Erlangen, Germany

Patient history
An 11-year-old female patient presented with pain in the left knee during extension and flexion manoeuvres of the knee following horseback exercises (maximum extension and abduction of the left lower extremity). Based on physical examination, a partial rupture of the left patellar ligament was suspected. No direct trauma to the patella was reported and mobility of the whole extremity as well as the knee was preserved. The patient was referred to MRI to confirm further evaluate the finding. No X-ray examination was conducted.

Material and methods
MRI of the knee was conducted at 1.5 Tesla (MAGNETOM Espree; open bore system) in combination with a transmit/receive knee coil. To reduce total imaging time, the imaging protocol consisted of proton density-weighted sequences only. Sequence details were:

- Transversal PD-weighted TSE with spectral fat saturation:
  TR / TE = 2000 / 48 ms, SL = 4 mm, FOV = 160 mm², matrix = 320 px², number of slices n = 19, averages n = 1, acquisition time = 2:26 min:s

- Coronal PD-weighted TSE with spectral fat saturation:
  TR / TE = 2000 / 48 ms, SL = 4 mm, FOV = 180 mm², matrix = 384 px², number of slices n = 16, averages n = 1, acquisition time = 2:46 min:s

1 Sagittal PD-weighted TSE of the left knee of an 11-year-old girl.
Sagittal PD-weighted TSE with spectral fat saturation:
TR / TE = 2250 / 39 ms, SL = 3.5 mm, FOV = 189 mm², matrix = 326 x 384 px², number of slices n = 19, averages n = 1, acquisition time = 2:53 min:s

Sagittal PD-weighted TSE:
TR / TE = 2180 / 46 ms, SL = 3.5 mm, FOV = 189 mm², matrix = 358 x 448 px², number of slices n = 15, averages n = 1, acquisition time = 2:18 min:s

Imaging findings
Sagittal PD-weighted MRI shows an irregular formation of the bone of the lower patellar pole; an irregular line giving the impression of a ‘fracture line’ is also shown (compare arrows in Fig. 1) and consequently, irregular shape and appearance of the lower patella is demonstrated. In addition, edema of the lower pole of the patella and therefore edema of the insertion of the patellar tendon is demonstrated in all fat saturated sequences (Fig. 2) All other findings were normal and age-related.

Discussion
Due to the nature of the event (no direct trauma), the age of the patient and the imaging findings, MRI has to be interpreted as demonstrating a case of Sinding-Larsen-Johansson disease (SLJD). In 1921 and 1922 the Swedish doctor Sven Christian Johansson and his Norwegian colleague Christian M. F. Sinding-Larsen independently published the first case studies on this overuse injury. SLJD is a painful inflammation of the patellar ligament at the tip of the patella, where the tendon from the tibia attaches. Symptoms are swelling or tenderness at the base of the patella. The condition occurs in active teens who participate in sports that involve running, twisting, and jumping, such as basketball, football, volleyball, soccer, tennis, figure skating, gymnastics or – in our case – exercises on horseback. SLJD belongs to osteonecrosis, since parts of the patella can become necrotic. The prognosis is good and SLJD is considered to be a self-limiting disease, however (conservative) treatment is longterm. In the presented case, the patient was advised to stop horseback exercises and related training for at least half a year.

References