

Sinding-Larsen Johansson disease

What is Sinding-Larsen Johansson disease?^[1]

Sinding-Larsen Johansson disease, first described in 1921, is one of the osteochondroses. It can be a cause of anterior knee pain. It is usually seen in boys aged 12-14; in girls it occurs less often and at a younger age. Pain is usually related to activity and is typically over the inferior pole of the patella. The incidence of Sinding-Larsen Johansson disease is unknown.

Sinding-Larsen first reported an affection of the distal pole of the patella in two adolescents. It is believed to be an inflammation that is related to overstrain and repeated injury and, therefore, has a gradual onset of pain.

There is a separate article giving an overview of the [Osteochondroses](#).

Pathophysiology

Osteochondroses all involve a defect in ossification. Sinding-Larsen-Johansson syndrome has a pathogenesis similar to that of [Osgood-Schlatter disease](#) and is the result of excessive force exerted by the patellar tendon on the lower pole of the patella.^[2]

It is essentially a chronic stress injury with overuse of the patella-patellar tendon junction. Similar symptoms have been reported to occur proximally, at the junction of the quadriceps tendon and the patella.^[3]

At the distal end of the patellar tendon, Osgood-Schlatter disease may produce similar exercise-related pain.

Sinding-Larsen Johansson disease symptoms (presentation)

- Activity-related anterior knee pain.

- On examination there is tenderness at the inferior pole of the patella.

Differential diagnosis

- Avulsion fractures of the patella.
- Stress fracture of the patella.
- Bipartite patella (type I).
- [Osgood-Schlatter disease](#).
- Jumper's knee is considered in young adults when tendinosis occurs at the tendon-bone interface at the lower pole of the patella after the skeleton has matured; Sinding-Larsen Johansson disease is the adolescent equivalent of jumper's knee.^[4]

See also the articles on [Knee Pain](#) and [Anterior Knee Pain](#).

Investigations

- Knee X-ray: may be normal but can show calcification in the patellar tendon at the lower pole of the patella. This heals leaving an elongation of the patella that is often found in footballers.^[4]
- Ultrasound is the examination of choice when imaging is required.^[5] It can depict all manifestations of the syndrome, including swelling of the cartilage, tendon thickening, fragmentation of the lower pole of the patella and bursitis.^[2]
- MRI scan may show bone marrow oedema in the patella.^[6] MRI may be required to exclude other differential diagnoses.^[1]

Sinding-Larsen Johansson disease treatment

- In the acute painful phase, therapy is mainly rest and reducing activity to a level at which symptoms become manageable. This usually means abstaining from sports activity for at least 1–2 months, particularly football and running. Swimming and other sports which exert less pressure on the quadriceps femoris muscle may be tolerated. Physiotherapy, including quadriceps strengthening exercises, may be needed.
- Surgery is not usually needed.^[1]

Prognosis

- As the skeleton matures, symptoms usually improve and, in this way, it is regarded as a self-limiting process. However, symptoms may be present for at least a year.
- A case report has presented a case of a pathological patellar fracture through the site of an old Sinding-Larsen Johansson lesion. [7]

Further reading

- [Knee pain - assessment](#); NICE CKS, Aug 2022 (UK access only)
- [Suzue N, Matsuura T, Iwame T, et al](#); State-of-the-art ultrasonographic findings in lower extremity sports injuries. *J Med Invest.* 2015;62(3-4):109-13. doi: 10.2152/jmi.62.109.

References

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3. [Tyler W, McCarthy EF](#); Osteochondrosis of the superior pole of the patella: two cases with histologic correlation. *Iowa Orthop J.* 2002;22:86-9.
4. [Jackson AM](#); Anterior knee pain. *J Bone Joint Surg Br.* 2001 Sep;83(7):937-48.
5. [Peace KA, Lee JC, Healy J](#); Imaging the infrapatellar tendon in the elite athlete. *Clin Radiol.* 2006 Jul;61(7):570-8.
6. [Tuong B, White J, Louis L, et al](#); Get a kick out of this: the spectrum of knee extensor mechanism injuries. *Br J Sports Med.* 2011 Feb;45(2):140-6. doi: 10.1136/bjism.2010.076695. Epub 2010 Oct 21.
7. [Freedman DM, Kono M, Johnson EE](#); Pathologic patellar fracture at the site of an old Sinding-Larsen-Johansson lesion: a case report of a 33-year-old male. *J Orthop Trauma.* 2005 Sep;19(8):582-5.

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