

Acute presentation of Sinding-Larsen-Johansson disease simulating patella sleeve fracture: A case report

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Abstract

Objectives: Diagnosis of Sinding-Larsen-Johansson disease may not be an easy task. Several sport-related conditions affect the distal pole of the patella in the adolescent, and treatment varies considerably. The article describes a patient that had radiographic features of Sinding-Larsen-Johansson disease associated with an atypical acute presentation.

Methods: Case report and literature review.

Results: A 10-year-old boy presented with a sudden pain after a noncontact soccer injury. He had tenderness and swelling over the patella. Radiographs showed minimally displaced distal patellar ossicle. Magnetic resonance imaging excluded sleeve cartilaginous injury and documented Sinding-Larsen-Johansson disease. The knee was immobilized briefly. There was complete healing of the injury in 4-week follow-up radiographs.

Conclusion: Emergency physicians, radiologists, and orthopedic surgeons should be aware of the acute presentation of Sinding-Larsen-Johansson disease after knee injuries.

Keywords

Osteochondrosis, Sinding-Larsen-Johansson, sleeve fracture, patella

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Introduction

Sinding-Larsen¹ reported an affection of the distal pole of the patella in two adolescents based on a lecture by Johansson, who was the first to describe the disease; it is believed to be an inflammation that is related to overstrain and repeated injury and, therefore, has a gradual onset of pain. In comparison, a sleeve fracture is a traumatic separation of the distal articular cartilage with or without a bony fragment of the patellar body that is characterized by sudden pain and follows a single injury.² Proximal patellar tendon insertional tendinitis is referred to as Jumper's knee, which may be associated with ossification inside the tendon.³ Because of the absence of a separate ossification center and developmental anomalies in the lower part of the patella,⁴ it is debatable whether or not painful type 1 bipartite patella is a separate entity from Sinding-Larsen-Johansson disease (SLJD).⁵ The said conditions have a common mechanism of injury, which is noncontact traction force during sports activities and occurs around the adolescent growth spurt.

The aim is to report a case of SLJD that presented to the emergency department with sudden pain. This may enlighten clinicians to suspect SLJD in patients that do not have

preexisting chronic symptoms. Such information about the management of this rare acute presentation is not frequently discussed.

Case report

A 10-year-old boy arrived at our emergency department with a right-knee noncontact soccer injury. He plays sports noncompetitively. The child is otherwise healthy. There was no history of pain prior to this injury. He was not able to walk. There was tenderness and swelling over the patella. As far as the extensor mechanism is concerned, there was tenderness, but no gap in palpation of the patella. The patient performed a straight leg raise with an extension lag of 25°. His neurovascular exam was normal. His X-ray radiographs revealed an inferior pole fragment that was minimally displaced with clear sclerotic

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Figure 1. Lateral radiograph at presentation showing inferior pole fragment.

margins indicating a chronic underlying process (Figure 1). To rule out sleeve fracture, magnetic resonant imaging (MRI) was done and showed edema and joint effusion (Figure 2). The MRI did not reveal articular cartilage separation of sleeve fractures. Therefore, a cylindrical cast was applied in slight flexion, and he was allowed to bear weight partially. After 3 days, he was brought back to the clinic, and no further displacement was noted in the radiographs.

Four weeks after the injury, his radiographs showed complete osseous bridging and incorporation of the fragment (Figure 3). The cast was removed and he started physiotherapy 1 week later. At 3 months assessment after the injury, the patient had no pain and was walking with a normal gait. There was no stiffness or extension lag. Muscle girth and strength were symmetric. He resumed playing soccer without limitations.

Discussion

The incidence of SLJD is unknown. The etiology is believed to be overuse. Oohashi et al. reviewed 131 patients with anomalous ossification in the patella, and none of the bipartite or tripartite patella was in the lower pole, which supports the acquired theory of SLJD.⁴ In experienced hands, ultrasonography can replace radiographs in the diagnosis of SLJD.⁶ However, many authors believe that MRI is essential



Figure 2. Sagittal MRI depicting distal pole fragmentation and edema.

to differentiate SLJD from patella sleeve fracture.⁷ The latter has a characteristic disruption of the unossified patellar articular cartilage.⁸

Treatment of SLJD is largely nonsurgical. In the original report, the two patellae healed, one with activity modification and the other one after plaster immobilization.¹ Medlar and lyne documented the self-limiting natural history in 10 knees. Furthermore, they classified the condition in four stages based on the radiographs, stage I when the patella has a normal appearance, stage II if there are irregular calcifications in the distal pole, stage IV-a when the calcifications are coalescing into the distal pole, and stage IV-b is a calcified ossicle distinct from the distal pole, similar to case reported here.⁹ In a study of 14 male patients with SLJD by Morel et al., the pathology was bilateral in four boys, and the authors found the condition in children involved in sporting activities; the mean duration of symptoms was 7 months, and three of the patients presented after a minor local trauma. Four children had X-ray features of Osgood-Schlatter disease, but only one was symptomatic. Three of the patients were treated by immobilization, and the rest had activity modification as the only form of therapy. The authors proposed four radiographic subtypes that have an identical clinical presentation.¹⁰ Moreover, Iwamoto et al. reported that in 7 patients with SLJD, they were all males who are involved in sports between the age of 11 and 13 years and were treated conservatively, one was bilateral, and they returned to their usual activity within 6–14 weeks.¹¹ More recently, López-Alameda et al. reported findings in 14 cases between the age of 8 and 14 years, with only two females, and one was bilateral. All of them were athletes, with soccer being the most popular sport. The duration of symptoms varied between 1



Figure 3. Four-week follow-up lateral radiograph showing complete ossification of the distal patella. Note asymptomatic radiographic feature of Osgood-Schlatter disease.

and 36 months, and there was no mention if any of the patients presented acutely.¹²

Nelissen et al.¹³ reported on a unilateral stage IV-b SLJD in a 12-year-old boy who presented with anterior knee pain after every soccer game, recovered after loading modification, and stretching exercises around sport participation. Tourdias et al.¹⁴ treated an 11-year-old soccer player who presented with gradual onset knee pain and stage II SLJD on the radiographs and received functional treatment before returning to sports at 6 months. Recently, a recalcitrant chronic case was treated with arthroscopic excision in a 29-year-old professional handball player, which resulted in complete resolution of symptoms and return to play.¹⁵

Conclusion

This report emphasizes the importance of including SLJD in the differential diagnosis of sudden onset knee pain after an injury in adolescents. SLJD is a self-limiting disorder that rarely, if ever, requires surgical treatment.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethics approval

Ethical approval to report this case was obtained from Institutional Review Board, King Fahad Medical City (log number 17-074).

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Informed consent

Written informed consent was obtained from the patient and the family for his anonymized information to be published in this article.

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