Dashboard (in the) knee

MS Patel, AA Qureshi, TP Green

ABSTRACT

We present the case of a 19-year-old individual presenting to an orthopaedic outpatient clinic several months following a dashboard knee injury during a road traffic accident with intermittent mechanical symptoms. Despite unremarkable examination findings and normal magnetic resonance imaging, the patient was identified subsequently as having an intra-articular plastic foreign body consistent with a piece of dashboard on arthroscopic knee assessment, the retrieval of which resulted in a complete resolution of symptoms.

KEYWORDS

Knee – Dashboard – Foreign body

Accepted 28 September 2014; published online XXX

CORRESPONDENCE TO

Mohammed Patel, E: shaqs@doctors.org.uk

The knee is the most common site for ‘loose bodies’. These may originate endogenously from fractured bone fragments or torn cartilage pieces, or they may arise as exogenous foreign bodies that enter the joint at the time of surgery or through penetrating trauma. Metal shrapnel, bullets and glass shards have all been reported as foreign bodies in the knee.^{1–5} Clinical suspicion and radiographic confirmation aid diagnosis in such cases. Dashboard knee injuries are a fairly common mechanism of trauma in seat-belted passengers involved in road traffic accidents.^{4,5} They can cause a syndrome of knee pain arising from a spectrum of pathology including prepatellar soft tissue lacerations and bruising to meniscal and ligament injuries as well as fractures. Knee symptoms in this syndrome do not classically lend themselves to a clinical suspicion of a foreign body in the knee causing mechanical symptoms.

Case History

A 19-year-old man was referred to the orthopaedic outpatient clinic with a history of several months of left knee symptoms following a road traffic accident in which he sustained a blow to the anterior aspect of his knee from striking the dashboard. He was seen initially in the emergency department, where he had a small laceration to the anterior aspect of his knee, which, following normal clinical assessment and plain radiography, was sutured. He was subsequently discharged.

Since then, the patient had experienced episodic symptoms of locking and pain separated by variable symptom free intervals ranging from minutes to days. Examination was fairly unremarkable with a notable absence of an effusion and instability or meniscal symptoms on clinical testing. Superolateral corner tenderness of the patella was the only positive finding.

Investigations

Radiography at the initial presentation following injury was reported as normal. Magnetic resonance imaging (MRI) following the patient’s presentation to the orthopaedic clinic did not reveal any structural abnormality such as bone odema, loose bodies, chondropathy or a meniscal tear, which may have accounted for his symptoms. A diagnostic knee injection using 10ml of 0.5% bupivacaine and 40mg depomedrone also failed to improve his symptoms.

Differential diagnosis

A ‘dashboard knee’ syndrome is associated with anterior knee pain at the site of direct blunt trauma, often accompanied by an absence of any intra-articular pathology.⁵ However, the clinical history was strongly suggestive of a mechanical cause such as a meniscal tear or a loose body despite the absence of radiographic evidence.

Treatment

In order to fully elucidate any potential structural cause of knee pain, arthroscopic assessment under general anaesthesia was undertaken. Inspection of the lateral compartment of the knee revealed a small black foreign body (Fig 1), which was retrieved and found to be a piece of plastic consistent with a broken piece of dashboard that would have entered the knee at the time of injury. The remaining arthroscopic examination was normal.

Outcome and follow-up

The patient recovered uneventfully with complete resolution of his preoperative symptoms at follow-up review six weeks later. He was referred again for an orthopaedic outpatient assessment seven years later with recurrent left knee symptoms and found to have a large ‘bucket handle’ tear of the medial meniscus, which was resected.

Discussion

Eponymous syndromes rarely assume literal manifestations. In addition to the novelty value, there are several important learning points in this case. The knee joint is one of the largest joints that is directly accessible for clinical examination in contrast to other joints as these are either heavily invested in muscle (eg the hip joint) or the bony anatomy does not yield easy access (eg the elbow joint). Consequently, the suspicion of penetrating trauma with a potential intra-articular foreign body must always be maintained in a patient who presents with a laceration following direct trauma to the knee.

Persistent knee symptoms may be attributable to soft tissue bruising and the resulting sensitisation of the prepatellar nerves following blunt trauma such as a fall on to the knee or injuries sustained by restrained passengers in head-on collisions as part of the dashboard syndrome.^{6,7} However, a specific clinical emphasis on elucidating the nature of the knee complaint should enable the diagnostician to distinguish between symptoms suggesting a mechanical cause and a 'neurogenic' pain picture. As in this case, it must be borne in mind that small foreign bodies manufactured from modern composite materials may evade detection on both conventional radiography and MRI. It is unknown whether the foreign body initiated the genesis of the later presenting medial meniscal tear although the seven-year symptom free interval between the two presentations does not support such a causal relationship.

Learning points

- > A laceration related to the knee joint following blunt trauma should always raise the suspicion of a penetrating injury and potential intra-articular foreign body.
- > Imaging studies may miss foreign bodies in the knee.
- > A strong clinical emphasis on establishing the mechanical nature of symptoms is sufficient to merit arthroscopic assessment if symptoms persist despite normal imaging studies.

References

1. Haspl M, Bojani I, Peina M. Arthroscopic retrieval of metal foreign bodies from the knee joint after war wounds. *Injury* 1996; **27**: 177–179.
2. Sansone V, Mora L, de Spirito D. Arthroscopic retrieval of an unusual foreign body of the knee. *Arthroscopy* 2002; **18**: E6.
3. Yeung Y, Wong JK, Yip DK, Kong JK. A broken sewing needle in the knee of a 4-year-old child: is it really inside the knee? *Arthroscopy* 2003; **19**: E18–E20.
4. Nagel DA, Burton DS, Manning J. The dashboard knee injury. *Clin Orthop Relat Res* 1977; **126**: 203–208.
5. Price AJ, Jones J, Allum R. Chronic traumatic anterior knee pain. *Injury* 2000; **31**: 373–378.
6. Tennent TD, Birch NC, Holmes MJ *et al*. Knee pain and the infrapatellar branch of the saphenous nerve. *J R Soc Med* 1998; **91**: 573–575.
7. Detenbeck LC. Infrapatellar traumatic neuroma resulting from dashboard injury. *J Bone Joint Surg Am* 1972; **54**: 170–172.