Case #51

NAME Educational Activities Committee

Case provided by:

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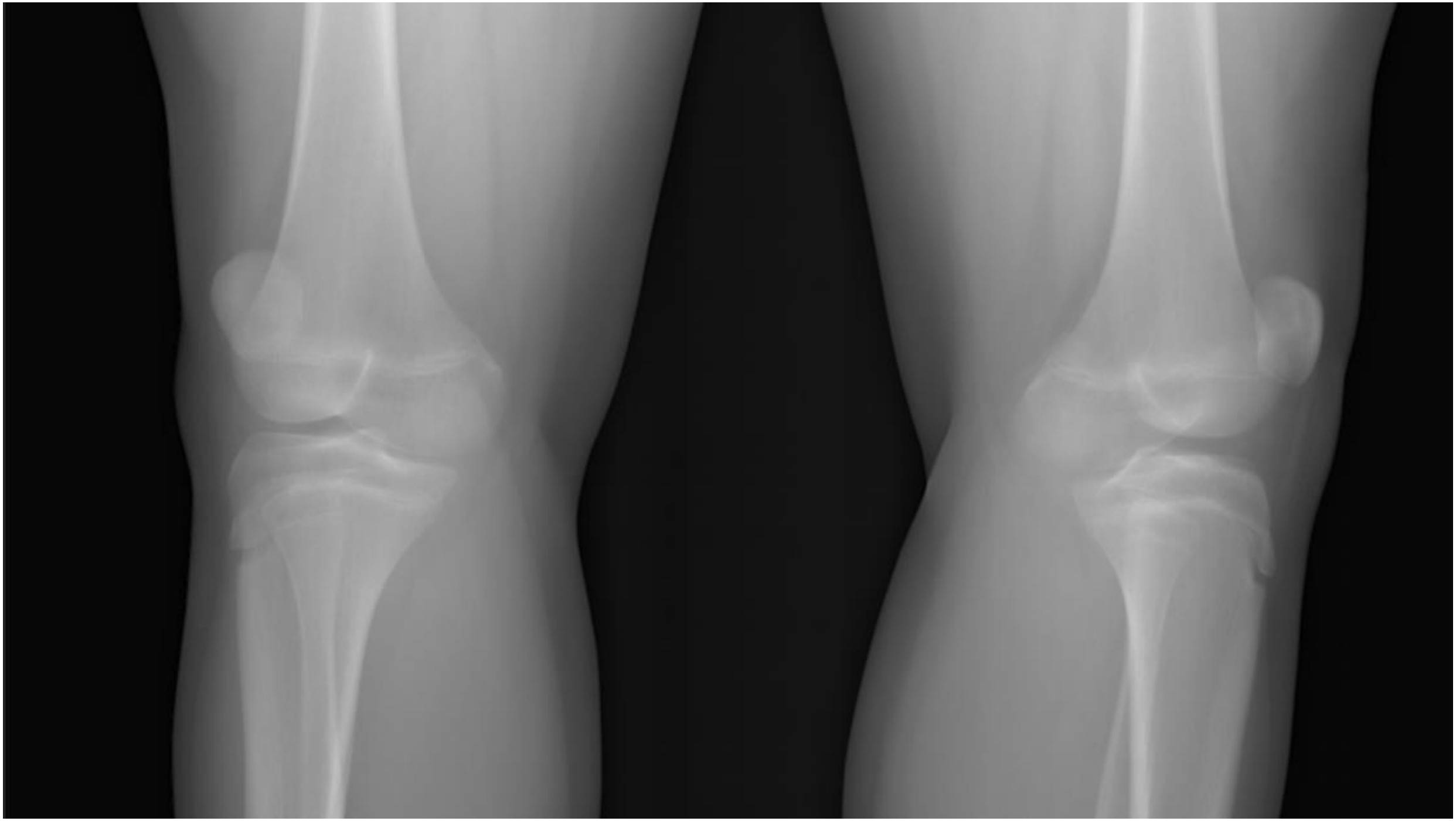


1. The decedent is a 16-year-old male pedestrian struck by a motor vehicle. What is the most likely etiology of the radiographic findings?

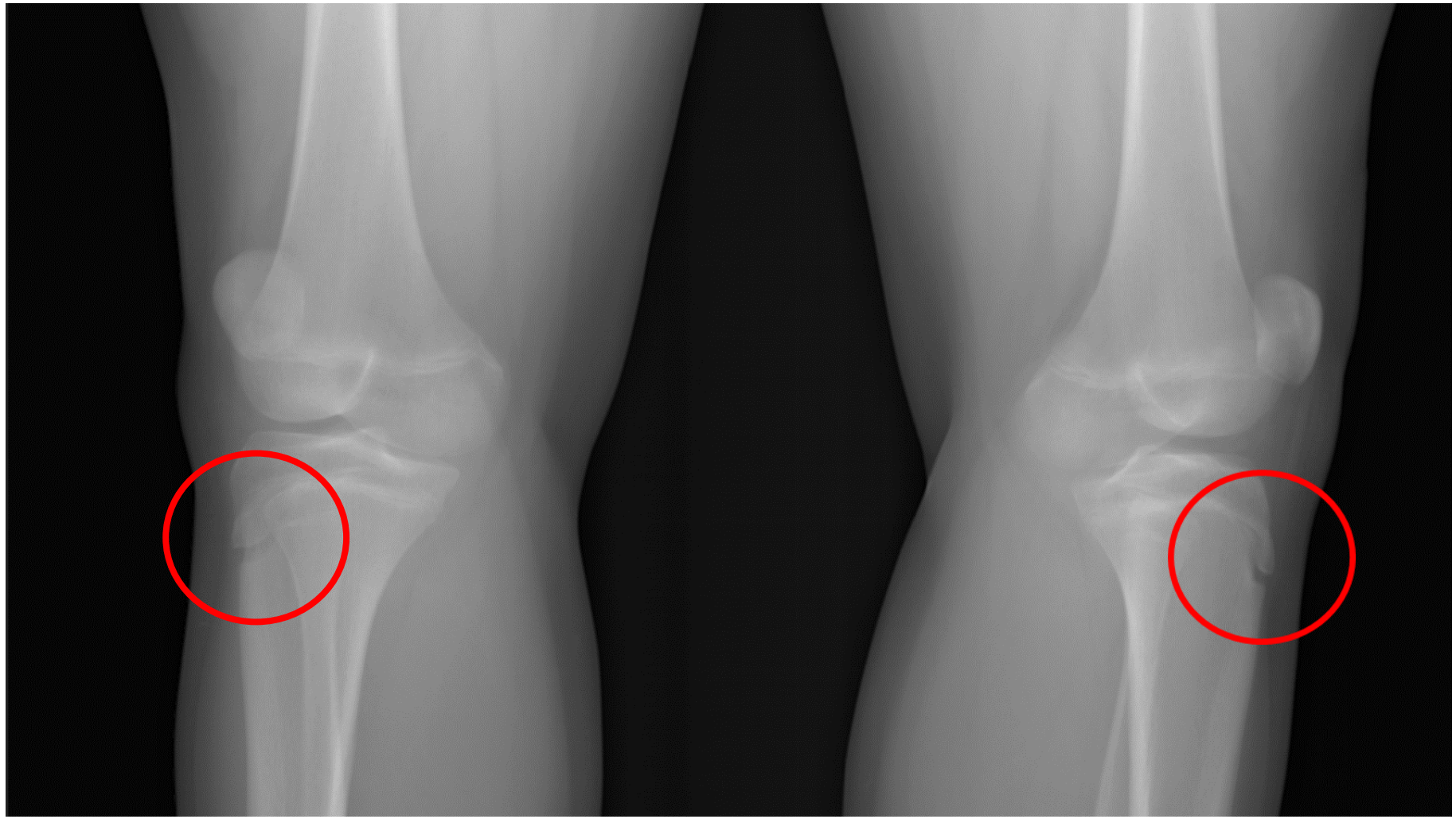
- ◯ Artifact
- ◯ Acute traumatic injury
- ◯ Repetitive stress injury
- ◯ Iatrogenic
- ◯ Bone tumor

Answer...

C. Repetitive stress injury – (CORRECT ANSWER, 30.5 % of responses)

This is an example of **Osgood-Schlatter disease (OSD)**, also known as osteochondrosis, tibial tubercle apophysitis, or traction apophysitis of the tibial tubercle. Clinical presentation is typically atraumatic, with insidious onset of anterior knee pain and tenderness at the patellar tendon insertion site at the tibial tuberosity. The condition is self-limited and occurs secondary to repetitive strain and microtrauma from the force applied by the strong patellar tendon at its insertion into the relatively soft apophysis of the tibial tubercle during extensor mechanism stress activities, such as jumping and sprinting, which makes OSD a common cause of anterior knee pain in the skeletally immature athletic population.

Classic radiographic findings in OSD include an elevated tibial tubercle with soft tissue swelling, fragmentation of the apophysis, or calcification in the distal patellar tendon. These findings can be seen as normal variants and do not always represent pathology, so clinical correlation is of utmost importance.



A. Artifact (16.41 % of responses)

X-ray artifacts can present in a variety of ways including abnormal shadows noted on a radiograph. The most common artifacts are due to motion (hopefully not in postmortem imaging!), image compositing (superimposition of two structures from different locations due to double exposure of same film/plate), grid cut-off, radiopaque objects on/external to the patient, and debris in the housing. The jagged edged, curvilinear appearance of bilateral lateral tibial lucencies is more compatible with true injury than artifact.

B. Acute traumatic injury (40.73 % of responses)

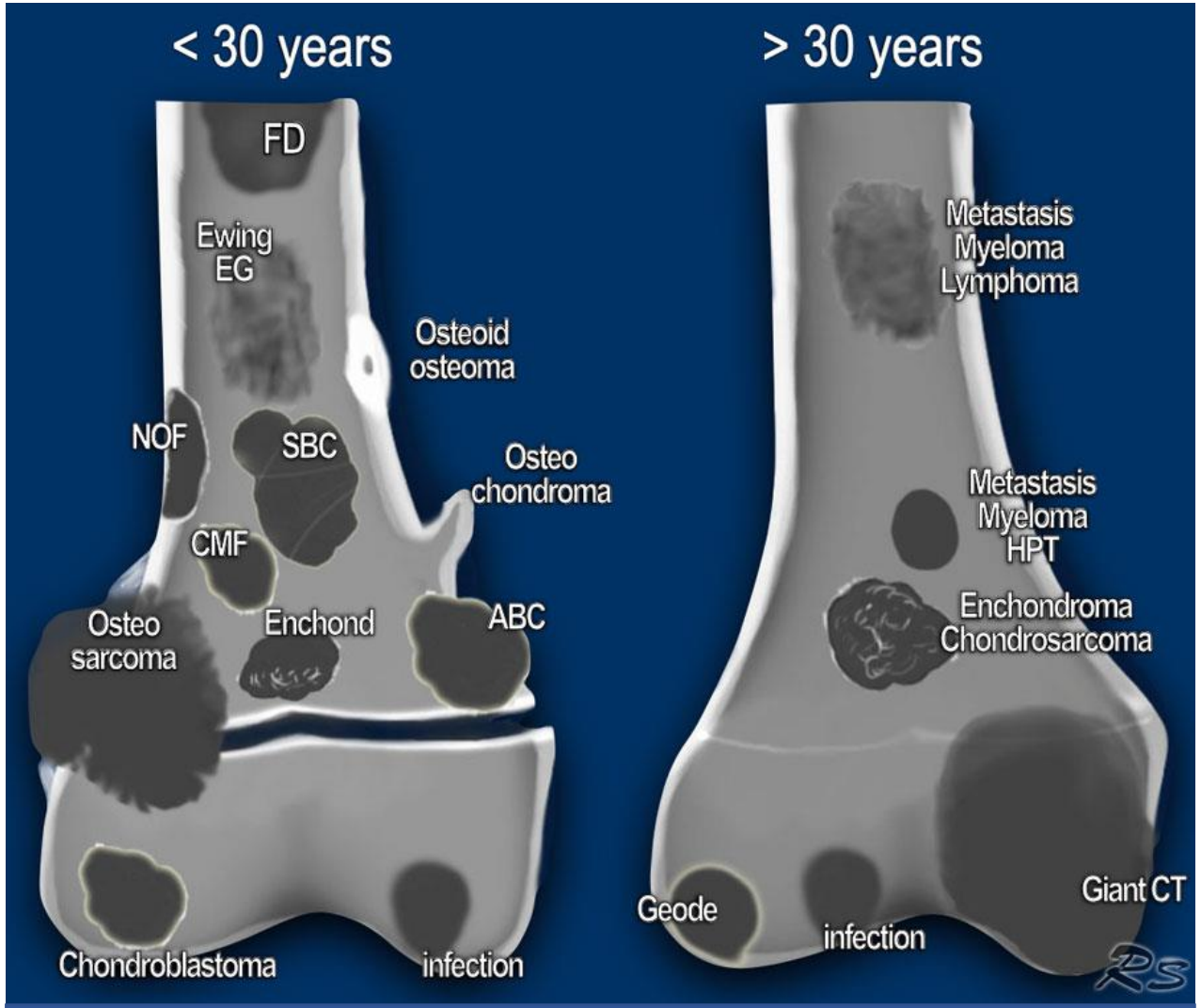
While statistics indicate that head injury is the leading cause of fatalities among pedestrians, the most common injury is to the leg. The collision usually begins with initial contact at the lower limb by the bumper, which may result in a variety of injuries to the lower extremity including fractures, lacerations, avulsions, and occasionally, hip dislocations. While the clinical history is concerning for “bumper fractures,” the radiographic findings are most consistent with Osgood-Schlatter disease.

D. Iatrogenic (9.72 % of responses)

Intraosseous devices are typically placed in the medullary cavity of long bones, with their tips placed in the bone matrix. On x-ray, these devices are typically radiopaque (not lucent).

E. Bone tumor (3.09 % of responses)

The differential diagnosis of bone tumors mostly depends on review of conventional radiographs and the age of the patient (see diagram). The location of the patellae in the radiograph could be concerning for a metaphyseal bone tumor; however, the pathology in this image is the bilateral fragmentation of tibial tubercles and not a mass forming lesion



ABC = Aneurysmal bone cyst
CMF = Chondromyxoid fibroma
EG = Eosinophilic Granuloma
GCT = Giant cell tumour
FD = Fibrous dysplasia
HPT = Hyperparathyroidism with Brown tumor
NOF = Non-Ossifying Fibroma
SBC = Simple Bone Cyst

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