The Weekly Probe

17th November 2016 Volume 13 Issue 38

Accurate info on Firstnet - Last week we mentioned the recording of accurate delay information through the “key” icon. Andrew and Leanne have pointed out that there has been some inconsistency in the recording of the **Depart Ready** times.

The definition of Depart Ready is when the patients care is completed from an ED MO perspective

and we are finished with their care & they are stable enough to leave ED i.e. the ED MO has review

and referred onto the inpatient team and maybe awaiting a review.

If the patient is clinically stable and could go to an inpatient bed i.e. clear diagnosis and team have or

will be accepting care, then they are depart ready from the ED Teams perspective.

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We are then able to measure the time from when they are considered depart ready and when they actually leave the ED in real time “Departure Time”. This also helps with understanding the time delays for leaving ED which are particularly less on weekends and longer in business hours.

THIS WEEK

LAST WEEK’S CASE- LIPOHAEMARTHROSIS

A 65yo man presents with knee swelling post trauma and the Xray shows an effusion only. The knee is aspirated. Below is the aspirated blood. What does it show and what does this indicate?

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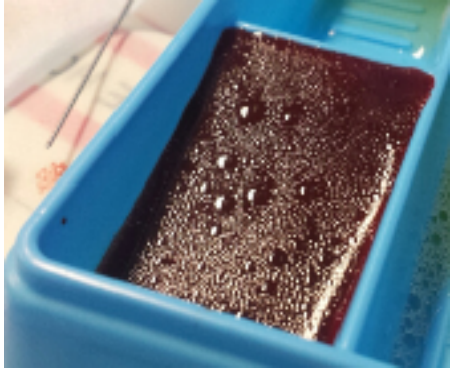

The picture shows fat globules on the bloods aspirated from the joint.

Occasionally we can see a significant lipohaemarthrosis on plain X-rays when there is a fluid level in a joint (2 liquids of different densities ie fat sitting on blood)

However whether there is a small or a large amount of fat, it is indicative of the same pathology – there must be a communication between the bone marrow and the joint ie a fracture. The most common joint to see this in is the knee (though it is not exclusive to the knee) where the fat is indicative of either a :

- tibial plateau #
- Cruciate lig injury (esp ACL)
- Patella #
- Femoral condyle (both the case presented and the plain Xray (different patient – 18yo with avulsion # from medial femoral condyle)

THP – aspiration can be therapeutic (less swelling and pain) and diagnostic – if you see fat globules then consider organising a CT .

Avulsion Fractures around the pelvis

As an extension of one of the cases presented above-

15yo boy presents with left hip pain after falling while playing soccer, sorry football.

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Xray shows avulsion of antero-inferior iliac spine (AIIS)

In a similar presentation, a 15yo male presents with right groin pain after falling in soccer game. Tender deep in groin – medial upper thigh - Xray on below

Lesser trochanter

Avulsion fractures result from violent muscle contracture during eccentric loading. Unlike muscle strains, in which the injury occurs at the musculotendinous junction, the injury occurs at the site of origin or insertion of the muscle. In kids the weakest part of their bone is the growth plate so the point of failure usually occurs at the physis rather than the tendon-bone interface. As in both these cases , the injury generally occurs in young males with increased androgen activity leads to relatively stronger muscles with weak physeal attachments that lead to avulsion fractures.
In the pelvis, avulsion injuries primarily occur at seven sites.

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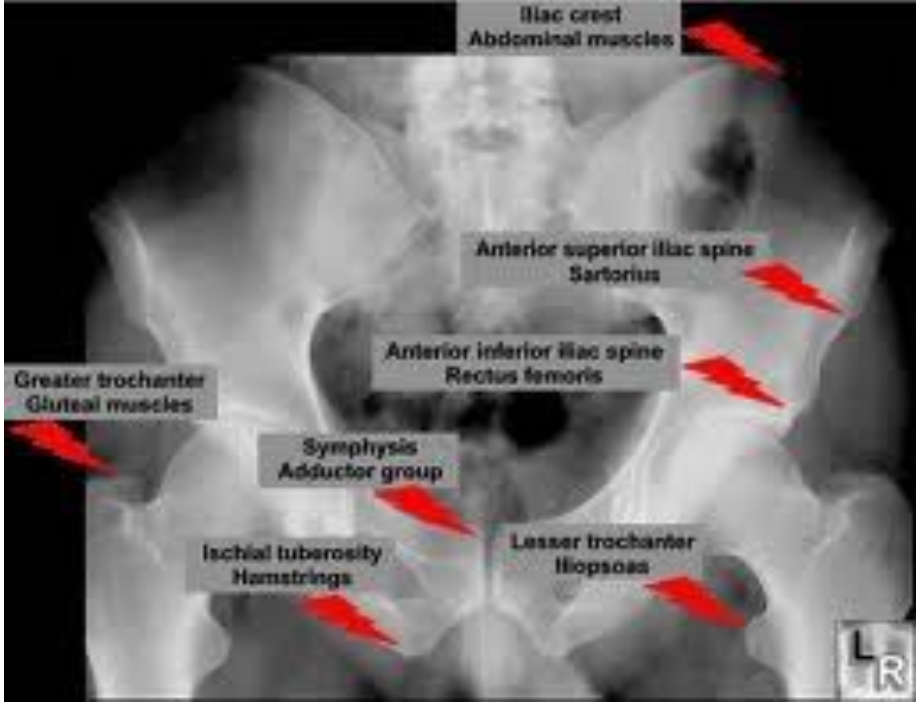

1) The ischial tuberosity is the most common site. It is the insertion site of the hamstring muscle group, and avulsions usually occur before closure of the apophysis- caused by extreme active contraction of the hamstrings eg sprinters. Patients typically present with pain in the buttock region, an antalgic gait, or inability to walk. In acute cases, a nondisplaced avulsion of the ischial tuberosity appears as a curved, sharply marginated piece of bone adjacent to its origin (ischial epiphysiolysis). Patients with injuries of this type tend to respond well to conservative treatment such as several days of bed rest, restricted activity, and a return to normal activity over the next 6–12 weeks. If the fragment is displaced more than 2 cm, however, fibrous union may occur, resulting in extended disability. Development of sciatica may be related to irritation of the sciatic nerve either when exuberant callus formation occurs during healing or when the avulsed fragment directly impinges on the nerve. At radiography, healing avulsions can have an aggressive appearance, including lysis and destruction. These changes can mimic those seen with osteomyelitis or Ewing sarcoma. Chronic avulsion injuries frequently result in prominent bone formation.

2) anterior superior iliac spine (ASIS) (picture above on left), which is the attachment site for the sartorius muscle and the tensor muscle of the fascia lata. This type of injury occurs in sprinters during forceful extension at the hip . Patients present with pain just below the most anterior aspect of the iliac crest. Patients have pain with resisted flexion, abduction, and external rotation of the hip. Sometimes the avulsion fragment can be palpated. Such injuries usually heal quickly – see below.

3) anterior inferior iliac spine (AIIS) - less common than that of the anterior superior iliac spine- origin of the straight head of the rectus femoris muscle. May be caused by forceful extension at the hip esp straight leg kicking. The anterior inferior iliac spine ossifies earlier than the anterior superior iliac spine (12-15yo) , and fractures usually occur in a slightly younger population. Avulsion of the ASIS can simulate this injury if the fragment is retracted inferior to the level of the anterior inferior iliac spine. Get a contralateral Xray to confirm avulsion injury and rule out os acetabulum, a nonpathologic ossicle that can occur in the same area. Avulsions of both the anterior superior and anterior inferior iliac spines tend to be less symptomatic and disabling than avulsions of the ischial tuberosity, and recovery time is relatively short. Injuries of the iliac spine are first treated with bed rest with the hips and knees flexed, then with progressive ambulation. Full athletic potential is regained in about 5–6 weeks. Treatment as below.

4) The symphysis pubis and inferior pubic ramus are the origin for the long adductor, short adductor, and gracilis muscles. Avulsion injuries here are virtually always due to chronic overuse, although they are occasionally acute in athletes such as soccer players, in whom there is forceful contraction against resistance when, for example, two players kick the ball simultaneously. Discrete bone fragments are not seen in these injuries, in contrast to injuries at other sites in the pelvis. Pain is localized to the groin. It is difficult to discern exactly which muscle is involved at clinical examination or radiography. MR imaging might aid in identification of the specific muscle involved but is not indicated for treatment. Furthermore, its use is usually not justified because of the expense involved. Chronic or overuse avulsion injury at the pubis leads to rarefaction or lysis and may be confused with infection or Ewing sarcoma. Such avulsions are usually unilateral and may be associated with a soft-tissue mass in the upper medial thigh and with a patient history and physical examination findings

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that support the diagnosis. Treatment is conservative and includes rest and decreased weight bearing for several weeks.

5) Iliac crest avulsion at the insertion of the abdominal musculature- uncommon. The acute form of this injury is associated with abrupt directional changes during motion or with repetitive microtrauma as seen in long-distance runners. Radiographs may show asymmetry of the iliac crest apophyses. Treatment should be conservative, and an excellent outcome may be expected. More common is a iliac apophysitis, an overuse injury. Patients complain of pain along the iliac crest, which is tender to palpation. There is no specific injury, and patients describe a gradual onset of symptoms. Plain radiographs are often normal.

6) Avulsion of the lesser trochanter at the insertion of the iliopsoas muscles may occur in young athletes but is “rare” (see picture above) . Although not as common as other avulsions in the pelvis, it causes considerable pain and decreased function. Patients respond well to conservative therapy- in adults look out for metastatic disease. The lesser trochanter undergoes ossification at about the age of 18 years.

7) The greater trochanter is the attachment site for the hip rotators, including the middle and least gluteal, internal obturator, gemellus, and piriform muscles. Avulsion of the greater trochanter occurs when there is a sudden directional change. At radiography, the greater trochanter is displaced from its origin. Sometimes displacement is minimal, which makes visualization difficult.

Treatment - best done through conservative measures. Surgical treatment has not been proved to provide superior results. Metzmaker and Pappas have proposes a five-stage treatment program for avulsion fractures. The first stage (one we advise) involves resting the involved muscle with proper positioning, ice, and analgesics. This stage is started immediately and lasts 1 to 7 days. Refer the patient off to physio for ongoing care including the second stage which involves the initiation of physical therapy, including hip range of motion exercises, ultrasound, and electrotherapy.

During the second stage, 7 to 20 days, isometric, stretching, and Thera-Band exercises for hip joint muscles and light endurance exercises (jogging) are used. The third phase is initiated when full motion has returned. During the third phase, a guided resistance exercise program is added to the treatment. The fourth phase involves the introduction of integration of stretching, strengthening, and patterned motions and is initiated when the patient has full range of motion and 50% of his or her strength. The fifth phase is the return to competitive activity and is gradually instituted. The entire process may take as long as 6 to 10 weeks.

Consider orthopaedic referral for elite sports people, if there are associated injuries such as disturbance of the sciatic nerve, if there is a large displaced avulsion fragment (ischial tuberosity > 2cm / greater trochanter > 1 cm), if there is persistent pain with non-union and in athletes who are unable to regain full function.

Refs Imaging Features of Avulsion Injuries, Stevens MA et al Radiographics May 1999 / DeLee and Drez’s Orthopaedic Sports medicine / Green & Swiontkowski: Skeletal Trauma in Children

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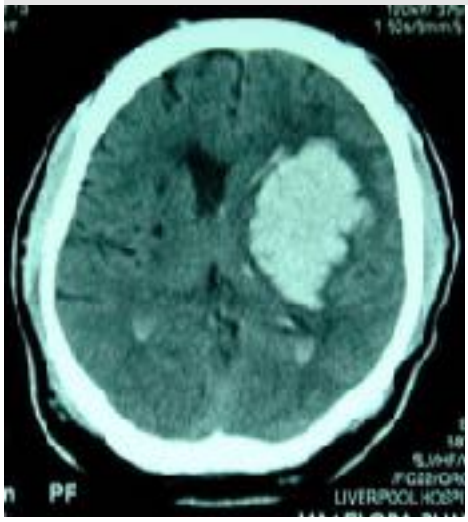
NEXT WEEK'S CASE



A 65yo man presents with right sided weakness – GCS 14 – BP 180/115 Surprise, surprise there is no beds so he needs to stay in the ED. What issues do you need to focus on –what is your plan?

JOKE / QUOTE OF THE WEEK

Triage of the week – " BIBA WITH POLICE UNDER SECTION 22 AFTER SHE HAD SOME ISSUES WITH CENTRELINK AND CHILD SUPPORT. PT MADE A COMMENT THAT EVERYTIME SHE DEALS WITH THESE ORGANISATIONS SHE FEELS LIKE KILLING HERSELF. "

I know how the patient feels – Optus, St George Bank etc etc

Woman sitting at home on the veranda with her husband and she says; "I love you."

He asks; "Is that you or the wine talking?"

She replies; "It's me ..... talking to the wine.

Please forward any funny and litigious quotes you may hear on the floor (happy to publish names if you want)

THE WEEK AHEAD

Tuesdays - 14:30 – 15:30 Intern & JMO teaching -Thomas & Rachel Moore
Wednesday- 0800-0900 Critical Care Journal Club. ICU Conf Room / 14:30 – 15:30 Intern & JMO teaching -Thomas & Rachel Moore
Thursday 0730-0800 Trauma Audit. Education Centre / 0800-0830 MET Review Education centre / 1300-1400 Medical Grand Rounds. Auditorium.

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