Stress Reactions and Fractures

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1 Stress injuries

Stress injuries encompass a wide variety of injuries from inflammation to full cortical breaks[1]:

Stress injuries are a common type of "overuse injury" in athletic populations[1]

Occur due to repetitive submaximal loading on a bone over time[1]

2 Risk factors

- Athletes are at higher risk of stress injuries[1]. Especially sports that combine running or jumping with high volume or intensity[1].
- LE injuries occur more often than UE[1]

3 Upper Extremity injuries

UE Injuries are much less common than LE stress injuries[1]. Regardless, when a stress injury occurs in the UE, it generally occurs in the ulna[1].

4 Trunk stress fractures

- Rib Stress fracture

5 Pelvis

Stress fx of the pelvis are difficult to diagnose since these present similar to other causes of groin and hip pain (i.e. adductor strain, osteitis pubis, or sacroiliitis)[1]

The most common location is the ischiopubic ramus and sacrum[1]. - The most common cause is running[1]

6 Lower Extremity Stress Fx

6.1 Femoral neck

Femoral neck stress fractures alone make up ~11% of stress injuries in athletes[1]

6.1.1 Subjective

Generally, patients complain of hip or groin pain which is aggravated with weight bearing and range of motion (especially internal rotation)[1]

6.1.2 Types

There are 2 types of femoral neck stress fractures: tension-type (or distraction) fractures and compression-type fractures[1]

Tension-type femoral neck stress fractures[1]

- (AKA distraction type)[1]
- Involve the superior-lateral aspect of the neck[1]

> **!** Important
>
> Tension type stress fractures Have the highest risk for complete fracture[1]
> Thus, early detection is very important[1]

Compression-type fractures

- Population
  - Commonly observed in younger athletes[1]
  - Common in runners[1]
- Involves the inferior-medial femoral neck[1]
- Rehabilitation: non-surgical management can be attempted if there is no visible fracture line[1]

6.2 Femoral shaft

Femoral shaft stress fractures are very common, especially in the military[1].

6.2.1 Subjective

Generally, patients complain of leg pain that is poorly localized and insidious[1]

6.2.2 DDX

This pathology is often misdiagnosed as muscle injury[1].

6.2.3 Testing

- An exam is often nonfocal[1]
- The "fulcrum test" can be helpful to localize symptoms and rule-in a femoral shaft stress fx[1]

6.2.4 Rehab

If imaging does not indicate a cortical break, non-surgical rehab can be attempted[1]

1. Kiel J, Kaiser K. Stress Reaction and Fractures. In: *StatPearls*. StatPearls Publishing; 2023. Accessed August 30, 2023. http://www.ncbi.nlm.nih.gov/books/NBK507835/