

Adolescent MRI sports related injuries

Many injuries in young people are the same as in adults. However there are some unique features which alter the clinical presentation and imaging appearances. They are:

1. Epiphyseal growth plates
2. Malleable bones
3. Osteochondritis dessicans
4. Apophyseal attachments of tendons
5. Congenital abnormalities
6. Childhood tumours
7. The fearless nature of young people

This presentation will illustrate the range of abnormalities and presentations that result from these differences.

The Salter Harris classification of fractures, greenstick injuries and apophyseal injuries will be covered. Congenital abnormality, including patella mal tracking will be discussed. Particular reference will be made to the way in which tumours are more aggressive, as these may present as a sporting injury.

Of particular importance is the difference in the strength of the apophysis in the adolescent and adult. In the older patient tendons rupture, whilst in the younger the apophysis will avulse. This injury is quite often missed by attending clinicians and radiologists. Sometimes the injury pattern suggests a diagnosis. For example in patella dislocation or the unusual presentation of a torn meniscus in a young person, which may indicate an underlying congenital abnormality of the meniscus itself.

A comparison of an ultrasound examination with MR will be discussed. In short an ultrasound has particular advantages, as it is easy to perform and allows a dynamic assessment. However, the overview provided by MR and its ability to show bone oedema is particularly important.

Injuries to the neck are potentially particularly devastating. In contact sports the neck is especially at risk. Trauma to the cervical spine and brachial plexus will be discussed.

The particular nature of thoracic and lumbar spine injuries occurring in young people will be described. This with particular reference to the ring apophysis and adolescent disc herniation. Spondylolisthesis as a result of traumatic injury to the pars interarticularis is normally the consequence of overuse. Early recognition of this abnormality in the imaging can lead to a reduction in the incidence of this condition in the older population.

It will be concluded that sporting injuries in adolescents are different to those in adults. Clinicians and imagers should be aware of the difficulty making diagnosis on an avulsion of the apophysis, diseases that may mimic trauma due to sporting activity and that back pain is a very rare symptom in adolescence and should be taken seriously.