IMAGING OF ATHLETIC PUBALGIA

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Pubalgia

- Pubalgia or groin pain
- It is not a diagnosis! But a symptom
- Pain of the pubic and/or groin area with no obvious clinical origin

- Common in sports (soccer, running, ….)
- 5% sports injuries; soccer: 15% players
  (58% in medical history)
Pubalgia

- Several causes
- Complex anatomy and bio-mechanics
  - pubic bone and joint,
  - musculo-tendinous insertions (rectus abdominis, adductor longus, gracilis, conjoint tendon)
  - Inguinal ligaments and ring
  - Stabilization of the anterior pelvis
  - Increased mechanical stress, repetitive microtrauma

- Clinical Diagnosis may be difficult
- Imaging techniques can help usefully
Pubalgia

D’après IM Omar et al.
Pubalgia
**Imaging Techniques**

- X-Ray imaging
- Ultrasonography (US)
- Computed Tomography (CT)
- Magnetic Resonance Imaging
X-Ray Imaging

- Digital Radiography
- Pelvis: AP, pubic joint (ap, monopodal r/l), oblique sup/inf
- Pelvis (spine): P
- Pelvis statics,
- pubic joint, instability
- Hip, sacro-iliac joint, soft tissue Ca
X-Ray Imaging

Sacral angle

Pelvic version
Ultrasonography

- High resolution imaging
- Doppler imaging (color / power / energy)
- Specific probe, axial / sagittal / oblique
- Soft tissue, bone surface, joint
- Comparative
- Dynamic evaluation
- Subtle signs
Ultrasonography
Computed Tomography

- Multislice/volumic CT
- Low Dose CT
- Bone, joint assessment +++
- Soft tissue
- Hernia +++ (dynamic, Valsalva)
- Multiplanar reconstructions 2D
- VRT 3D
Computed Tomography
Magnetic Resonance Imaging

- 1.5 T or better 3 T, T1 w, T2 w FS, Diff w
- Specific pelvis coil
- Global pelvis assessment
- High resolution imaging: pubic joint
- Contrast enhanced imaging T1 w FS
- Dynamic assessment
- Bone marrow+++, joint, soft tissues
Magnetic Resonance Imaging
**Pubic Osteo-arthropathy**

- **Arthritis pubis +++**
  - Disc degeneration «secondary cleft sign »
  - 4 grades Brunet classification : articular surface
  - Imaging lesions ≠ clinical findings
  - Asymptomatic imaging findings
  - Associated lesions : tendinopathy, hernia

- **Osteitis pubis ++**
- **Pelvis stress fracture**
- **MRI+++**, Rx, CT
Pubic Osteo-artropathy
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secondary cleft sign
Pubic Osteo-artropathy
Tendinopathy

- Adductor longus +++
- Rectus abdominis (uncommon)
- Enthesopathy and Tendinopathy, muscle changes
- Thickening, inflammatory features and microtears of the tendon
- Neovascularisation uncommon
- Acute avulsion
- US, MRI ++
Tendinopathy
Tendinopathy
Sportsman’s Hernia

- Enlargement of the superficial inguinal ring is common by athletes
- Changes of inguinal ligament/conjoint tendon are subtle even with US (inflammatory tissue, scar tissue)
- Hernias: common by athletes, without complication usually (reducible, fat tissue)
- Inguinal (direct) ++ or crural
- Comparative assessment
- Dynamic evaluation (Valsalva, standing) +++
- Size, pubic distance, neck, hypervascularisation uncommon
- US++, CT, IRM
Sportsman’s Hernia
Sportsman’s Hernia
Sportsman’s Hernia
Sportsman’s Hernia
Other causes

- Stress fracture of the ilio-ischio-pubic bone: MRI+++,
- Ilio-psoas disfunction, rectus femoris injury
- Hockey Goalie-Base-ball Pitcher Syndrome
- Nerve entrapment: ilio-inguinal, obturator
- (Hip joint, SIJ, lumbar spine)
- Septic arthritis
- Tumors (oo), infection, spondylarthropathy sero(-)
Other causes
Other causes
Imaging Strategy

Clinical examination

- X-Ray and US exam

Diagnosis

- Bone/joint/hernia
- No diagnosis/uncertain/precise assessment

CT

MRI

Scintigraphy?

Treatment
Conclusion

- Common symptom in sport Medicine
- Clinical diagnosis may be difficult
- Imaging techniques are useful
- Good knowledge of Anatomy, Physiopathology, sport injury mechanisms
- Good experience (US, MRI)
- Multidisciplinary approach
References


- D Connell. Imaging of Groin Injuries. IOC Sports Injury Meeting. Monaco, April 7-9, 2011

