Patient Reported Outcomes and FAI Syndrome in US Women’s Professional Soccer

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Introduction

- Femoroacetabular (FAI) Syndrome is a motion-related clinical disorder with a triad (Warwick Agreement) of:
  - Symptoms
  - Clinical signs
  - Imaging
- There is a significant difference in prevalence and threshold of cam morphology between males and females
  - Athletes
  - Soccer / futbol
- FAI Syndrome may limit professional soccer participation

Purposes

- To determine normative data of multiple general health-, activity-, hip and groin-, and depression-specific patient-reported outcome (PRO) scores in a US women’s professional soccer club
- To determine if any PRO’s were predictive of a positive anterior impingement test

Hypotheses

- PRO scores on multiple general health-, activity-, hip and groin-, and depression-specific PRO questionnaires would be >90% in a US women’s professional soccer club
- The HAGOS and iHOT-12 PRO’s would be significantly predictive of a positive anterior impingement test

Methods

- Cross-sectional, diagnostic investigation
- Single, professional (NWSL) women's soccer team in major metropolitan city
- Pre-season pre-participation physical examination
- All players eligible (>18 years of age)
- Excluded: any hip with prior surgery
- Symptoms:
  - Assessed via PRO’s
  - SF-12 (MCS, PCS)
  - Tegner activity
  - iHOT-12, HAGOS, NAHS
- Physical examination:
  - Range of motion
  - Impingement testing
    - Anterior
    - Subspine
    - Lateral
    - Posterior
      - Left / right hips analyzed individually
- Imaging:
  - Standing AP pelvis
  - False profile
  - Dunn 45°

Results

- 24 athletes (48 hips) (25.4 +/- 3.0 years of age)
  - 2.8 +/- 2.2 years professional experience
  - Tegner: 9.9 +/- 0.3
  - SF-12 PCS: 52.9 +/- 7.4
  - SF-12 MCS: 45.3 +/- 7.0
  - iHOT: 96.6 +/- 5.4%
  - NAHS: 97.9 +/- 4.9
  - Zung: 27.6 +/- 5.9
  - HAGOS:
    - Symptoms: 90.5 +/- 10.5
    - Pain: 97.8 +/- 3.4
    - ADL’s: 99.4 +/- 2.2
    - Sports: 97.1 +/- 4.2
    - Physical activity: 97.9 +/- 7.1
    - Quality of life: 95.8 +/- 8.7
  - 16/48 hips (33%) had positive anterior impingement test
  - Range of motion:
    - Flexion 128°, abduction 71°, IR 28°, ER 38°, IR+ER 66°
  - Radiographic prevalence:
    - Cam morphology: 54%
      - Mean alpha angle: 57.8 +/- 7.8° (Dunn 45°)
    - Pincer morphology: 53%
    - Mean LCA: 23.5 +/- 5.0°; Mean ACEA 28.6 +/- 4.0°
    - Dysplasia: 23%; Borderline dysplasia: 50%
    - Toni 0: 96%
  - Regression model:
    - Left hip:
      - iHOT-12 correctly predicted 71% of positive anterior impingement test \( \chi^2(5.21), p=0.02 \)
      - SF-12 MCS, PCS correctly predicted 83% of positive anterior impingement test \( \chi^2(11.2), p=0.005 \)
      - Zung score correctly predicted 83% of positive anterior impingement test \( \chi^2(4.11), p=0.04 \)
    - Right hip:
      - iHOT-12 correctly predicted 79% of positive anterior impingement test \( \chi^2(9.11), p=0.003 \)

Conclusions

- Multiple general health-, activity-, hip and groin-, and depression-specific PRO’s collected, reported
- iHOT-12 correctly predicted positive anterior impingement test in three out of four hips
- One out of three hips had positive anterior impingement
- High prevalence of cam (54%), pincer (52%), and dysplastic morphologies (23%)

Statistical analysis

- Descriptive
- Kolmogorov-Smirnov
- Correlation (Pearson, Spearman)
- Range of motion
- Radiographic parameters
  - Femoral
  - Acetabular
- Binary logistic regression
  - Effects of each PRO questionnaire and prediction of positive anterior impingement test

References