FOOT INVOLVEMENT
IN PATIENTS WITH PSORIATIC ARTHRITIS: A PILOT STUDY

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Psoriatic Arthritis

Epidemiology
- Prevalence of psoriasis (PsO) varies from 0.09% in Tanzania to 11.4% in Norway
- Compared to a lesser extent of 0.3% in Hong Kong
- Up to 30% of PsO sufferers will develop psoriatic arthritis (PsA) in later life

(WHO, 2016; Yip, 1984; Gladman, 2009)

Background
- A type of systemic inflammatory arthropathies
- Linked to the HLA-B27 genotype
- Associated with skin PsO and other comorbidities including diabetes, obesity and metabolic syndrome

(Ritchlin et al., 2017; Armstrong et al., 2012; Armstrong et al., 2013)
Psoriatic Arthritis

Foot involvement

- Foot involvement is common in PsA, including dystrophic nails, toe dactylitis and Achilles enthesitis
- Arthritis can precede skin rash in 15% of patients
- Early detection is important for prompt intervention

(Ritchlin et al., 2017; Gladman, 2009)

Objectives

- To describe the clinical characteristics of foot pathologies among PsA patients
- To gain a better understanding of their current foot condition
METHODOLOGY

Sampling
- Consecutive sampling at TKOH rheumatology clinics during Jun-Dec 2017

Inclusion criteria
- Aged 18 or above
- Fulfilled the Classification Criteria for Psoriatic Arthritis (CASPAR)
- Able to give written consent

Exclusion criteria
- Either foot amputated

Table 3. Classification Criteria for Psoriatic Arthritis (CASPAR)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Point Value</th>
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</thead>
<tbody>
<tr>
<td>Current psoriasis</td>
<td>2</td>
</tr>
<tr>
<td>Personal history of psoriasis (in the absence of current psoriasis)</td>
<td>1</td>
</tr>
<tr>
<td>Family history of psoriasis (in the absence of current psoriasis or a personal history of psoriasis)</td>
<td>1</td>
</tr>
<tr>
<td>Dactylitis (current or personal history)</td>
<td>1</td>
</tr>
<tr>
<td>Juxta-articular new bone formation</td>
<td>1</td>
</tr>
<tr>
<td>Rheumatoid factor negativity</td>
<td>1</td>
</tr>
<tr>
<td>Psoriatic nail dystrophy (onycholysis, pitting, and/or hyperkeratosis)</td>
<td>1</td>
</tr>
</tbody>
</table>

FOOT POSTURE INDEX

1. Talar head palpation
2. Supra & infra lateral malleolar curvature
3. Inversion/eversion of calcaneus
4. Bulging in talonavicular joint
5. Congruence of the medial longitudinal arch
6. Abduction/adduction of the forefoot on the rearfoot

Reference values
† Normal = 0 to +5
† Pronated/flatfoot = +6 to +9, highly pronated 10+
† Supinated/high arch foot = -1 to -4, highly supinated -5 to -12

(Redmond, 2005)
**DEMOGRAPHIC RESULTS**

**AGE DISTRIBUTION**

Overweight defined as $23 \leq \text{BMI} < 25$; obesity defined as $\text{BMI} \geq 25$ (WHO, 2000)
RESULTS
PREVALENCE OF FOOT PATHOLOGIES

Type of foot pathologies, %

- Callus: 30.8%
- Dystrophic nail: 42.3%
- Flatfeet: 57.7%
- Foot pain: 46.2%
- High arch feet: 7.69%
- Toe dactyliitis: 11.5%
- Toe deformities: 61.5%

- Hallux valgus: 30.8%
- Hammertoe: 19.2%
- Claw toe: 19.2%
# Discussion

<table>
<thead>
<tr>
<th></th>
<th>Present study, %</th>
<th>Previous literatures (Non-PsA population), %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foot pathologies</td>
<td>96.2</td>
<td>64.0 (Chan &amp; Chong, 2002)</td>
</tr>
<tr>
<td>Hallux valgus</td>
<td>30.8</td>
<td>31-37.1 (Dunn et al., 2004; Shibuya et al., 2010; Hannan et al., 2013)</td>
</tr>
<tr>
<td>Lesser toe deformities</td>
<td>38.4</td>
<td>29.6-60 (Dunn et al., 2004; Shibuya et al., 2010; Hannan et al., 2013)</td>
</tr>
<tr>
<td>Foot posture index, mean</td>
<td>5.25</td>
<td>2.4 (Redmond et al., 2008)</td>
</tr>
<tr>
<td>Flatfeet</td>
<td>57.7</td>
<td>2.9-34 (Shibuya et al., 2010; Hannan et al., 2013; Sachithanandam &amp; Joseph, 1995)</td>
</tr>
</tbody>
</table>
DISCUSSION

- Obesity was more frequent in PsA compared with PsO (OR 1.77, p<0.01) (Eder et al., 2017)
- Obesity at age 18 years increases the risk of developing PsA (OR 1.06, p<0.01) (Soltani-Arabshahi et al., 2010)
- Obesity is associated with worse clinical outcomes in inflammatory arthritis (Levitsky et al., 2017)
- 46.2% were found to be obese in present study

- Obese subjects had lower plantar arch height (p<0.05) (Mickle et al., 2006)
- Obese children were 2.66 times more likely to have flatfeet (Chang et al., 2010)

- 57.7% subjects with PsA had flatfeet in present study
- Very limited literature available on the prevalence of flatfeet among PsA patient
DISCUSSION

Limitations
† Small sample size (n=26)
† High non-response rate (>80%)
† No comparison with healthy individuals

Improvements
† Enroll more clinical sites
† Establish multidisciplinary clinic for joint assessment
† Conduct inter-rate reliability test
† Plan for case-control study
DISCUSSION

Implications
- Podiatrists’ involvement in foot pain and deformity management was often overlooked (Carter et al., 2016)
- Podiatrist-to-population ratio in Hong Kong=1:140000, compared to 1:4600 in the UK
- Podiatric scope of practice includes high risk foot ax, foot ulcer mx, biomechanical ax, foot orthoses mx etc.
- UK guidelines strongly advocate referral to podiatrist for foot disorder management (Arthritis and Musculoskeletal Alliance, 2004; Scottish Intercollegiate Guideline Network, 2000)
CONCLUSION

- Prevalence of foot pathologies was high among patients with PsA (96.2%)
- Toe deformities (61.5%) and flatfeet (57.7%) were the most common types
- Podiatrists’ input was often overlooked
- Early intervention for existing foot problems can improve long term outcomes
- Multidisciplinary approach should be encouraged
REFERENCE


End of Presentation

Thank you!