TOPOGRAPHIC PAIN MAPPING V RADIOLOGICAL INTER-OBSERVER VARIATION IN ANKLE ARTHRITIS

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Topographic Pain Mapping versus Radiological Inter-observer Variation in Ankle Arthritis

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Our disclosures are in the final AOFAS Mobile App

We have no potential conflicts with this presentation
TOPOGRAPHICAL PAIN MAPPING

“A diagram or collection of data showing the spatial distribution of something, or the relative position of its components”

- Durer (16th Century)\(^1,\, 2\)
- Popularised during 20th century
  - Palmer (1949)\(^3\)
  - Melzack (1975): McGill Pain Questionnaire\(^4\)
- Increasing role in pain evaluation
  - Spinal/sacroiliac pain \(^5,\, 6,\, 7\)
  - Pelvic pain (gynaecology)
1. TOPOGRAPHIC PAIN MAPPING

- Patient directed
- Invited to identify maximum 3 painful areas per foot/ankle
- VAS assigned to each area by patient & ranked in order of symptom severity
- Photographic records made

• Classified into 5 symptomatic areas:
  • M - Anterio-medial
  • C - Anterior-central
  • L - Antero-lateral
  • ST - Lateral (peroneal/subtalar)
  • TP - Medial (tib post)
2. RADILOGICAL EVALUATION

- Assessors blinded for details of presentation & clinical assessments

- Reviewed available radiology (minimum XR & MRI)

- Estimate patient reported VAS for each region on basis of radiologically evident pathology

- Three independent assessors (consultant & two orthopaedic trainees)

- Correlated between assessors, and to patient’s pain mapping
STUDY GROUP

- Study size: 10
- Mean age: 57.6 years [range 36-59]
- Gender: Male - 8, Female - 2
- Diagnosis: Osteoarthritis - 8, Post-traumatic arthritis - 2
- Laterality: Right 8, Left 2
RESULTS

- All data groups designed via letter & number
  - **Letter ~ symptomatic region:**
    - M  Antero-medial
    - C  Anterior (central)
    - L  Anterolateral
    - ST Subtalar/peroneal
    - TP Tib Post
  - **Number ~ assessor**
    - 1  Trainee
    - 2  Consultant
    - 3  Patient

- **Statistical Analysis**
  - Inter-rater correlation co-efficient
  - Spearman’s Rho Test, Kendall Tau
  - *P value < 0.05 significance*
ANTERIOR ANKLE SYMPTOM CORRELATION

- Strong inter-observer correlation of anterior ankle pain in ankle arthritis
  - Antero-lateral 0.751 (p=0.012)
  - Central 0.912 (p=<0.001)

- Strong correlation with patient topographic pain mapping
  - Central consultant-patient 0.920 (p=<0.001)
  - Central trainee-patient 0.982 (p=<0.001)
MEDIAL & LATERAL ANKLE SYMPTOM CORRELATION

- Very poor correlation with patient pain mapping
  - Trainee-Patient Correlation 0.232 (p=0.74)
  - Consultant-Patient Correlation 0.11 (p=0.76)
- Radiological assessment consistently over-estimates symptom severity

**Correlation is significant at the 0.01 level (2-tailed).**
SUMMARY

- Radiological Inter-observer Correlation
  - Significant correlation between trainee and consultant for all anterior pathology (M, C & L)

- Patient Topographic Pain Mapping Correlation
  - Both trainee and Consultant correlate well with patient reported anterior symptoms
  - Little/no correlation of TP & ST pain
CONCLUSION

Patients presenting with ankle arthritis do not report co-existing symptoms and pathology which are evident radiologically in subtalar, peroneal & tibialis posterior areas.

We recommend pre-operative MRI to identify soft tissue pathology masked by the pain of ankle arthritis.
REFERENCES