

"Quantitative Sensory Testing Demonstrates Similar Patterns of Pain Sensitization between Rheumatoid Arthritis Patients and Their Unaffected First Degree Relatives"

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Background

- Pain sensitization has been associated with high disease activity measures in RA patients¹.
- Pain is a prevalent symptom in our large cohort of first degree relatives (FDR) of Indigenous North American (INA) RA patients².

Objective

- To determine whether pain sensitization differs between unaffected FDR and RA patients and whether this corresponds to subjective pain experiences.

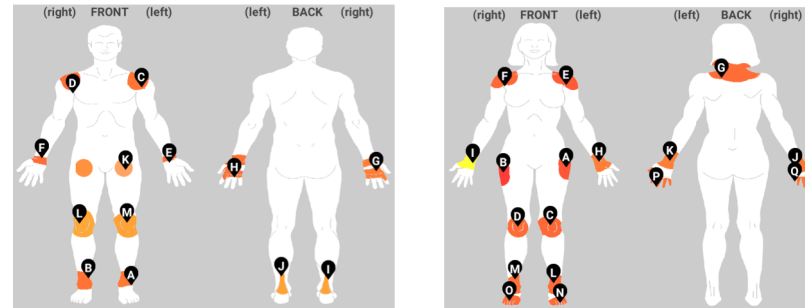
Methods

- Subjective Pain captured using electronic pain mapping tool allowing participants to mark their pain sites on a touch electronic homunculus.
 - Non-parametric ranking of pain maps done by 2 independent reviewers then reconciled.
- Quantitative Sensory Testing (QST) was performed on 14 FDR and 14 RA patients.
- Pain Pressure Threshold (PPT)
 - Performed at bilateral thumbnails, wrists, knees and trapezius muscles to a maximum 5kg of force.
 - Mean force for each site calculated.
 - Representative of peripheral sensation.
- Temporal Summation (TS)
 - Performed at left wrist and forearm.
 - Mean difference for each site calculated.
 - Representative of central sensitization.
- VAS and 68 joint count recorded for each subject

Results

- 28 subjects
 - 14 FDR, 14 RA
- Subjective Pain
 - 71% FDR (n=10) 29% RA (n=4) lowest pain areas
 - 29% FDR (n=4); 71% RA (n=10) highest pain areas

Figure 1. Subjective pain maps of male and female participants.



- QST
 - No significant difference in PPT or TS between FDR and RA
 - 46% (n=13) of subjects reported opiate use
 - n=5 FDR; n=8 RA
 - Use of opiates did not impact PPT measures

Table 2. Mean PPT FDR vs RA.

	Mean kgf (± SD) FDR	Mean kgf (± SD) RA	p ≤ 0.05
Thumbnail	3.27 (±1.3)	3.20 (± 1.3)	0.84
Wrist	2.96 (±1.3)	2.49 (±1.3)	0.36
Knee	3.60 (±1.1)	4.06 (±1.3)	0.39
Trapezius	2.61 (±1.5)	2.10 (±1.2)	0.36

Table 1. Pain Map Rank Order.

RANK
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
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23
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25
26
27
28

Legend: FDR
 RA

Results

- VAS and TJC
 - 4 FDR with at least 1 swollen joint
 - 1 RA patient with 0 swollen joints
 - Minimum TJC for FDR = 0; RA = 3
 - Weak correlation between pain maps and VAS (rho = 0.37, p=0.067)

Conclusions

- Despite higher rates of subjective pain in multiple joint and non-joint areas in RA patients, QST measures did not show any differences between the RA patients and their unaffected FDR.
- This raises the question of an underlying process driving pain sensitization in FDR.
- Prevalent opiate use in this population, although a potential confounder, did not seem to impact on either the subjective pain experience or on QST measures.
- The biological and psychosocial factors impacting on the pain experience in INA People are not well understood and require further study using culturally sensitive approaches.

References

- ¹ Lee, Y. C. et al. (2018). Association Between Pain Sensitization and Disease Activity in Patients With Rheumatoid Arthritis: A Cross-Sectional Study. *Arthritis Care & Research*, 70(2), 197-204.
- ²Smolik, I. et al. (2013). First-degree relatives of patients with rheumatoid arthritis exhibit high prevalence of joint symptoms. *J. Rheumatol*, 40(6), 818-24.