Examining the Correlation between Quantitative Sensory Testing (QST) and Pain Pressure Threshold (PPT)

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Introduction

- Myofascial pain syndrome (MPS) is a disorder in which pressure on certain points in the muscle (trigger points), that are sensitive, elicits pain in areas that should not be affected.
- Further, MPS is a musculoskeletal pain condition involving tenderness in the muscles and a painful nodule in a taut band of muscle.
- The cause of MPS remains unknown, however, it is common, chronic in most cases and can often be improved with treatment.
- The ability to measure pain continues to be a challenge for researchers.

Objective

The purpose of this study was to determine if significant correlations exist between Quantitative Sensory Testing and Pain Pressure Threshold. Further, this permits an understanding between pain from mechanical pressure and pain from a weighted pinprick.

Methods

- 16 patients complaining of pain participated.
- Weighted pinpricks, ranging from 8-512 mN were applied for 10 consecutive pricks and patients vocalized the amount of pain they felt on a scale of 1-10.
- All patients experienced the quantitative sensory testing however, patients 4, 7, and 9 were not able to complete the testing. Patients 1 and 2 also had missing data. Those with missing data were still included, but averages were not calculated for the respective force.
- To determine a patient’s pain pressure threshold, an algometer was utilized on the site at which a myofascial trigger point (MTrP) was present. All patients were at site 2 or 3.
- Pain was recorded through a vocal response and the number displayed was recorded.
- Averages for QST were calculated as well as the slope value by creating a scatterplot and developing a line of best fit in Microsoft Excel.

Results

- According to Table 2, there is an inverse relationship between the peak value of pain intensity and the PPT at the MTrP site. For some patients, a QST response is higher than the PPT and for others, a PPT response is higher than QST.
- There is a positive correlation between the force applied (mN) and the average patient response, represented by the slope values in Table 1.
- Figure 3 represents a patient who had more drastic changes in reported pain per pinprick, whereas Figure 4 represents more consistency. This demonstrates that not all patients adapted to pain at a specific force.
- About 81% of the patients had very observable fluctuations in the amount of pain they vocalized.
- 13 out of the 16 patients completed the QST.

Conclusion

According to the results, the QST and PPT demonstrate an inverse correlation. When an individual’s PPT is high, more pressure needs to be applied in order to elicit pain. As a result, the peak value of pain is lower. Overall, there is certainly more research that needs to be conducted, especially due to the low sample size.