Effect of MELT method on thoracolumbar connective tissue

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BACKGROUND: Altered connective tissue structure in the lumbar spine was seen in subjects with chronic or recurrent low back pain (LBP) [1]. Myofascial Energetic Length Technique (MELT) is a hands-off technique that is said to rehydrate connective tissue and reverse the effects of chronic inflammation [2]. The objective of this study is to determine how the thickness of connective tissue and other biomechanical properties of subcutaneous muscle tissue may change in subjects with chronic LBP as a result of MELT.
METHODS: Ultrasound images of the low back were taken with Terason T3000 at 2 cm lateral to the midpoint of L2-3 spinous process. The thickness of the thoracolumbar fascia was calculated in MATLAB using the algorithm developed by Langevin et al.[1]. A hand-held digital palpation device, MyotonPRO [3] [4], was used to measure the biomechanical properties at 2 cm lateral to the midpoint of L2-3 spinous process, 2 cm lateral to T9-10 and 2 cm lateral to S2-3. We also conducted forward bending tests, with subjects performing trunk flexion reaching down to the floor. After informed consent, in a single session, baseline measures on right and left sides were taken in 7 subjects with chronic low back pain, VAS pain scale 2 to 6. Subjects then received MELT treatment for 30 minutes, and following a 5-minute break, repeat measures were taken.
RESULTS: Results are presented for the first 7 subjects after MELT. There was a 20% decrease ($p=0.35$) in perimuscular connective tissue thickness on the right side L2 paraspinal muscles. Average stiffness on the left side of the 3 regions decreased by 2% ($p=0.60$) in S2-3, by 3% ($p=0.37$) in L2-3 regions, and by 7% ($p=0.32$) in T9-10. There was an increase in the average mechanical stress relaxation time for the S2-3 region of 8% ($p=0.045$). Forward flexion increased from -9.1 ± 3.8 inches to -7.6 ± 2.2 inches ($p=0.15$). VAS pain score decreased from 4.6 (range 2-6) to 1 (range 1-1) ($p=0.02$, Wilcoxon sign rank test).
CONCLUSION: We found a trend toward decrease in subjects' perimuscular connective tissue thickness and reduction of stiffness and increase of relaxation in paraspinal tissues immediately after MELT. The study will continue with a larger sample size and normal controls. Sample size calculations indicate that about 50 LBP subjects will be needed.
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