

ESWT in calcific tendonitis of the rotator cuff: 100 patients treated with the same piezoelectric generator but different focal dimensions

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Device and producing company:

Piezuson 300, Wolf

Introduction:

Through our work we want to evaluate the effect of ESWT using different focal dimensions but the same protocol (number of shock waves and density energy as mJ/mm^2) and using the same piezoelectric therapy unit.

Methods:

Piezuson 300 has an in-line ultrasound location system and a focused piezoelectric generator with the option of choosing between 3 different focal dimensions: in particular we used the smallest focus (F 1) and the largest focus (F3) We had 2 groups of patients treated in subsequent periods: each patient received 4 applications (2000 shock waves/session, the frequency was 6 Hz). GROUP A: 50 patients, Focus - F 1, Displayed level - 9/10, 0.16-0.18 mJ/mm^2 ; GROUP B: 50 patients, Focus F3, Displayed level - 12, 0.10 mJ/mm^2 .

Results:

With F1 it was possible to reach the desired density, but it was not possible to reach the desired value with F3 (level 14/15 of internal scale) due to the average of pain threshold. With F3 we reached level 12. Although the energy density reached with F3 is lower than with F1, the final results are similar in both groups.

Discussion:

This is the first analysis made comparing focal dimensions, delivered energy levels and focal density energy levels utilizing the same shock wave therapy unit with the option of using different focal dimensions. The results are similar, so it is logical to ask: which is more important with respect to the clinical results; the energy level delivered (mJ) or the density of the energy level (mJ/mm^2). Probably the effect of the shock wave is due to the combination of the effect of the spike of pressure of a single shock wave and the energy produced.

Conclusion:

The investigation of this correlation between physical data of the shock wave (mJ, mJ/mm^2 , MPa and focal dimension) and the direct effects on pathology is the "purpose" of this experimental study at present. These studies are designed to compare the treatments using different focal dimensions and different energy densities (mJ/mm^2) at the same energy delivered (mJ).