

RSWT and posturology: Clinical study on achillodynia and plantar fasciitis

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Resume

The aim of this study is to examine the influence of Radial Shock Wave Treatment (RSWT), by itself and also in conjunction with mesotherapy, on tendinopathy of the rear of sportsmen's feet as well as its possible posturographic repercussions.

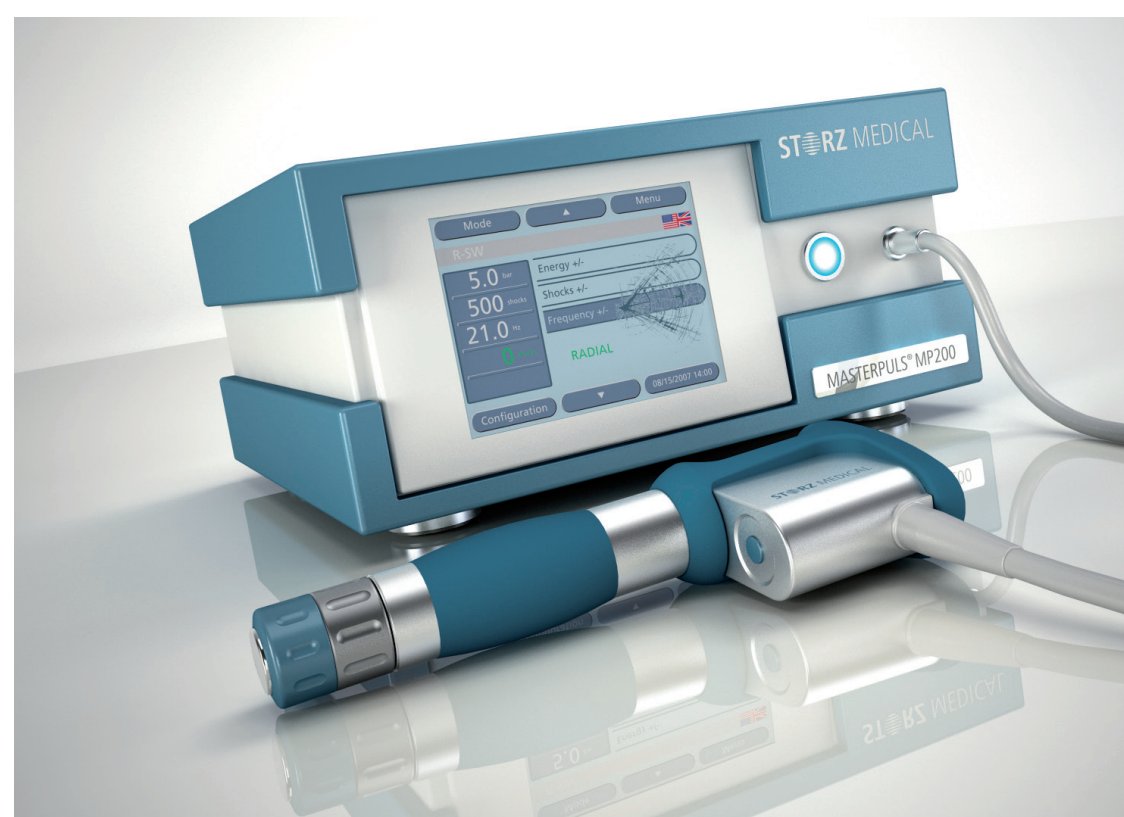
Our study was based on 13 test persons (average age 50.5 years) whom we divided at random into 2 groups. One group received exclusively treatment via RSWT, the other received mesotherapy in addition. We evaluated the pain (VAS = visual analogical scale) prior to the start of the treatment (T0), at the end of the treatment (T30) and one month after the end of the treatment (T60). A posturographic analysis was also carried out on a standardised platform.

The statistical analysis shows a significant reduction in pain at T30 (81% for the RSWT group alone and 61% for the RSWT + mesotherapy group). This reduction is maintained at T60. Even if the results of the RSWT group appear better, there is no statistically significant difference between the 2 groups. As far as the posturography is concerned, no statistically significant difference was revealed.

The RSWT treatment considerably diminishes the pain and makes it possible to regain mobility (80% were able to resume their sporting activities), but does not appear to influence the posturography. 83% of the patients estimate that the results are satisfactory (16%) to very satisfactory (67%). The combination with mesotherapy does not improve results.

Methods

The evaluation concerned 13 patients (7 males and 6 females), runners, with an average age of 50. These patients had been suffering for more than 3 months and had not improved through various forms of "traditional" treatment well carried out. Surgery was envisaged most of the time. We excluded ruptures of the tendon as well as litigation with insurance companies or federations.



We divided these test persons (randomly) into 2 groups. The first was treated solely with RSWT and the second with RSWT + mesotherapy (a mixture of 2 cc of calcitonine 100 ui, 0.5 cc Piroxicam and 0.5 cc Mesocaine) following the RSWT session.

We used MP100 from Storz Medical for the RSWT, all other simultaneous treatment was prohibited and sporting activities were not forbidden.

Posturographic recording has been done on a Satel platform with 3 pressure sensors standardised as per

APE at 40 Hz, in static and dynamics.

The statistical analysis was carried out with the help of the XLSTAT software, version 2007.7 from Addinssoft.

The diagnosis is essentially clinical. The palpation shows a more or less painful thickening of the tendon. The three-stage examination is carried out (functional, passive dorsiflexion and passive equinism).

The procedure is as follows:

- T0, date of the initial consultation: diagnosis, decision to include in the evaluation or not, visual analogical scale (VAS) for the purpose of evaluating the pain and posturographic analysis in accordance with the APE standard.
- T30, end of the treatment: functional analysis, VAS and posturographic analysis.
- T60, one month after the end of the treatment: functional analysis and VAS. A posturographic analysis was envisaged but could not be carried out as a result of technical problems. The treatment consisted of 4 sessions (an interval of 7 days between each session) of RSWT only for group 1 (6 persons) and the same plus mesotherapy at the end of the session for group 2 (7 persons). The RSWT has been applied with 2 different transmitters (the head initially focuses on the tendon and then the D-Actor® on the muscle):

- Focus Head (Fig. 1): A pressure of 2.5 to 3 bars (depending on patient sensitivity) was used which generates an energy of 0.12mJ/mm² (11 MPa). A frequency of 10 Hz was used over 3.000 hits. Contact gel was placed on the skin and pressure exerted which was comfortable for the patient. We always began with the most painful and most thickened point of the tendon. Small circular movements were made and the inclination of the hand piece varied during the application.



- D-Actor® Head (Fig. 2): produces impulses associated with vibrations of a small amplitude which enable activation of muscular and conjunctive tissue and create hyperhemia. In this case, contact gel was applied over the entire muscular zone (the gastrocnemius muscles), a frequency of 15 Hz was used with a pressure of 3 bars for a total of 1.000 strikes. The applicator was moved over the length of the muscle with small circular movements. A certain pressure was exerted in order to achieve excellent contact.

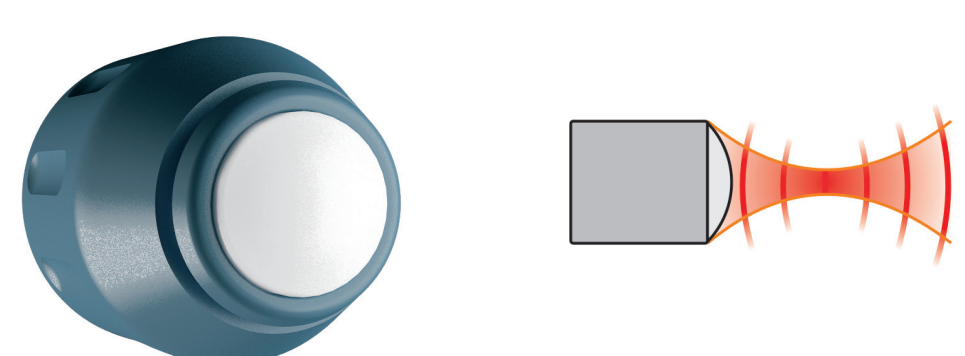


Figure 1 (Focus Head)

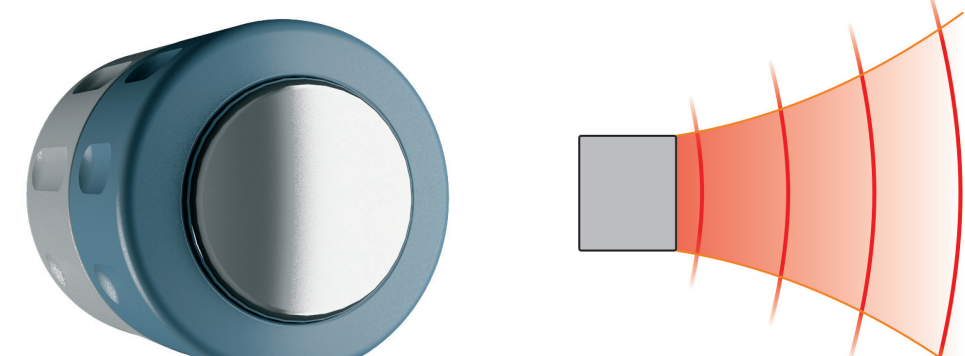


Figure 2 (D-Actor® Head)

Results

The comparisons between two groups were studied via a t and z test as well as an analysis of the variances. The correlations were studied using Pearson coefficients followed by linear regression in the event of significance. The statistical significance threshold was set at 5%.

Group

Group	No. of patients	Male	Female	Age
RSWT group	6	3	3	49
RSWT + mesotherapy group	7	4	3	51

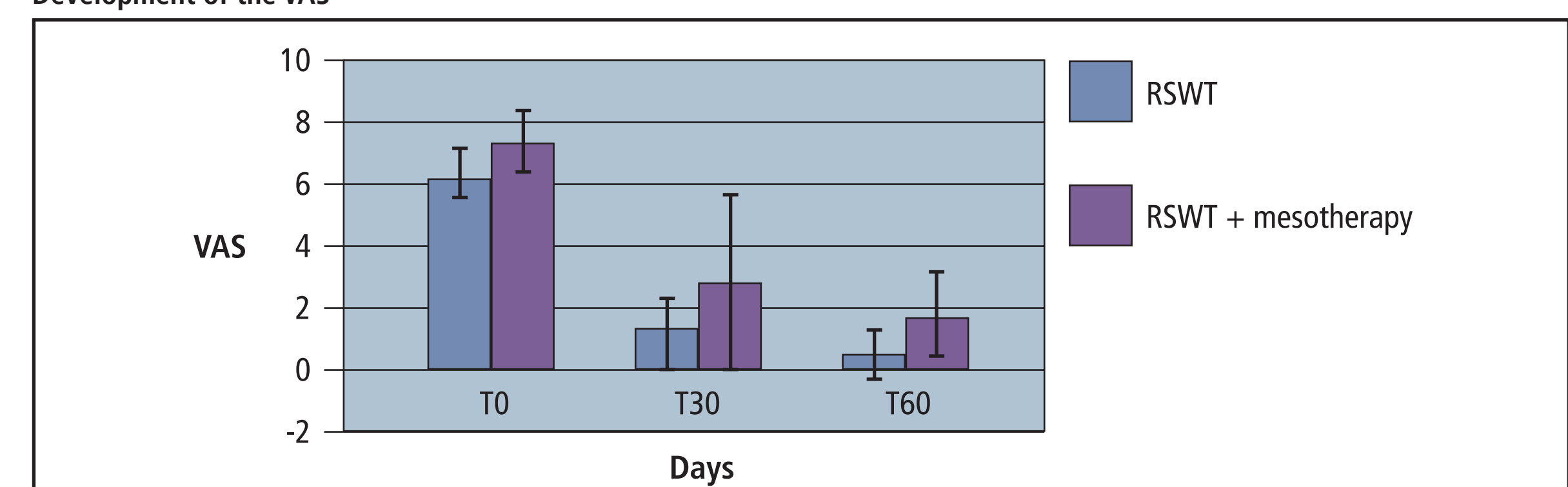
Functional analysis

	Test	T0	T30	T60
RSWT	- standing on tiptoe on 2 feet	83%	100%	100%
	- standing on tiptoe on 1 foot	0%	83%	100%
	- hopping on tiptoe on 2 feet	33%	83%	100%
	- hopping on tiptoe on 1 foot	0%	83%	100%
RSWT + mesotherapy	- standing on tiptoe on 2 feet	57%	86%	86%
	- standing on tiptoe on 1 foot	0%	71%	86%
	- hopping on tiptoe on 2 feet	14%	86%	86%
	- hopping on tiptoe on 1 foot	0%	71%	86%

VAS

VAS	T0	T30	T60
RSWT group	6.33 ± 0.82	1.17 ± 1.17	0.5 ± 0.84
RSWT + mesotherapy group	7.33 ± 1.03	2.83 ± 2.71	1.83 ± 1.47

Development of the VAS



Patient appreciation

VAS	TS	S	I	D	A
RSWT	67%	16%	16%	0%	0%
RSWT + mesotherapy	57%	28%	0%	14%	0%

Very satisfactory (VS), satisfactory (S), insufficient (I), disappointing or zero (D), aggravation (A).

Posturography

As far as the posturography is concerned, no statistically significant difference was revealed.

Conclusion

Treatment using radial shock waves shows excellent improvement in terms of both pain and functional mobility on these patients with chronic tendinopathy that has not been improved by various forms of treatment. 80% were able to resume their sporting activity, a fact which is very remarkable as they had been recommended to undergo surgery.

Mesotherapy does not potentiate the RSWT, the results are even slightly poorer.

Treatment using RSWT thus appears to be establishing itself as a reference treatment for tendinopathy of the Achilles, even in chronic cases. In view of these results, it is clear that treatment via RSWT should be proposed before surgery.

This preliminary study needs to be carried out using a higher number of test persons and compared to a reference group.

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