CPQ Medicine (2019) 5:3
Case Report

Cross-Over and Longitudinal Shockwave Studies in a Patient with Intermittent Claudication and Buerger's Disease: A Case Report

Robin Koertshuis[1] & Michael Naafs, A. B.[2*]

[1]*Claudication Physiotherapist, Physical Rehabilitation Trainer LAS, Plaza Medical, Netherlands*

[2]*Department of Medicine, Naafs International Health Consultancy, Netherlands*

[*]**Correspondence to:** Dr. Michael Naafs, A. B., Department of Medicine, Naafs International Health Consultancy, Netherlands.

Copyright

Received: 24 January 2019

Published: 25 January 2019

Keywords: *Claudication; Buerger's Disease; Extracorporal Shockwave Therapy*

Abstract

In this case report extracorporoal shockwave therapy (ESWT) was applied in a patient with intermittent claudication due to Buerger's disease. Walking distance increased progressively and significantly. As this is the first case in the literature no comparisons with other studies can be made.

Introduction

Extracorporal shockwave therapy (ESWT) can be used in patients with peripheral arterial disease (PAD) and as well as cardiac shockwave therapy (CSWT) in chronic refractory angina pectoris [1] Increased expression of growth factors such as endothelial nitric oxide (eNOS) and vascular endothelial growth factors (VGEFs) are induced by ESWT. IKL, integrin linked kinase, plays a key factor in this process of angiogenesis, believed to be responsible for the beneficial effects of ESWT [1].

Both CSWT in chronic refractory angina pectoris as well as ESWT in PAD patients show a uniformly consistent, beneficial effect in all studies until now [1].

For that reason we performed cross-over and longitudinal shockwave studies in a patient with intermittent claudication and Buerger's disease, described in detail elsewhere [2].

Study Design

After conventional treadmill exercising walking distance increased from 70m to 200m in 6 months without further improvement. Therefore, shockwave studies were started.

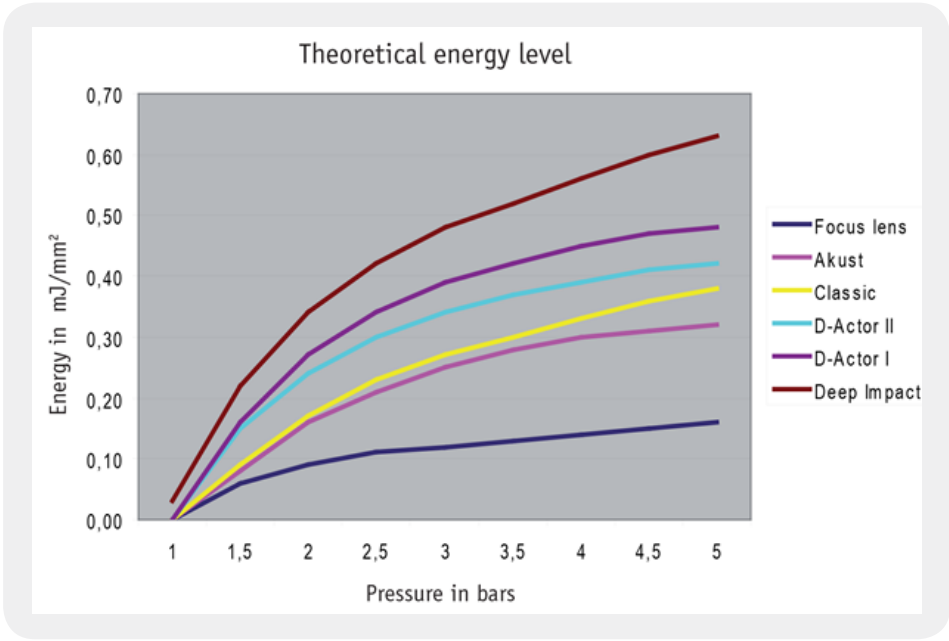
Shockwaves were given at the calf of the left leg for 4 weeks followed by direct treadmill exercising and after this period the same was done at the right leg during 4 weeks, creating a cross-over model. Subsequently both legs received shockwave pulses for a period of 8 weeks, followed by direct treadmill exercising after the shockwave sessions again.

Methods

Shockwaves were delivered by a radial pulse Shock master 500 RSWT, Shock master, B.3740 Bilzen, Belgium.

In the cross-over setting 2000 2Hz pulse of 1,7 bar equivalent to 0,2mJ/mm^2 were applied (Table 1). In the longitudinal study 1000 8Hz, 1,7 bar pulses were given on each leg, followed by 2000 pulses on the calves of both legs of 1,6bar, 17Hz in each session, followed by straight away treadmill exercising.

Table 1



Results

Results for the cross-over study are shown in fig. 1a and 1b. Walking distance increased again significantly as it also did progressively in the longitudinal study (fig.2) Individual walking distance data for the combined experiment are shown in table 2 as maximal distance and functional distance, the latter defined when ischemic pain started. Total walking distance increase is shown in fig.3

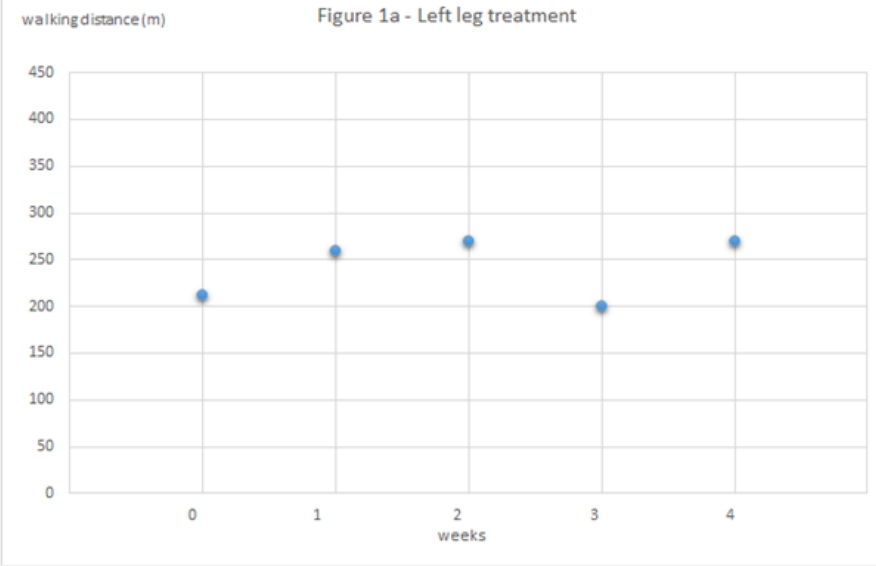


Figure 1A: *Left leg treatment*

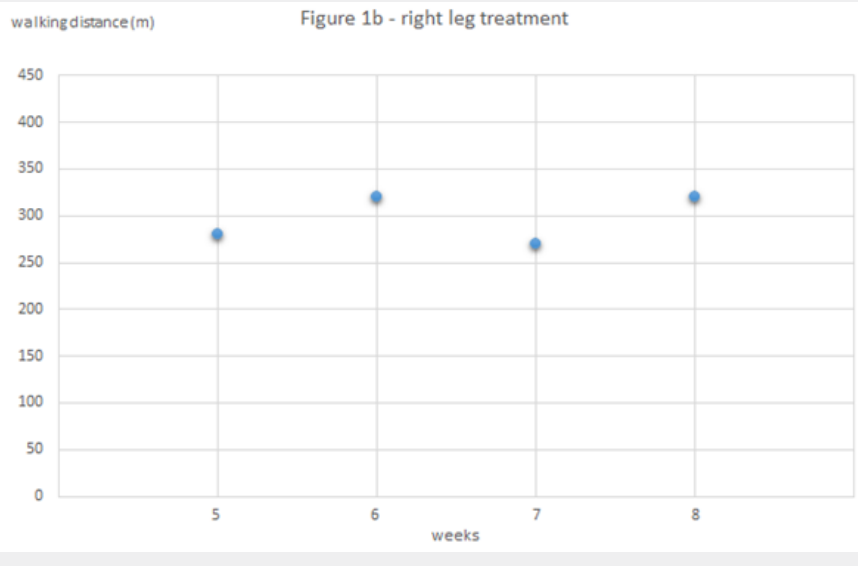


Figure 1B: *Right leg treatment*

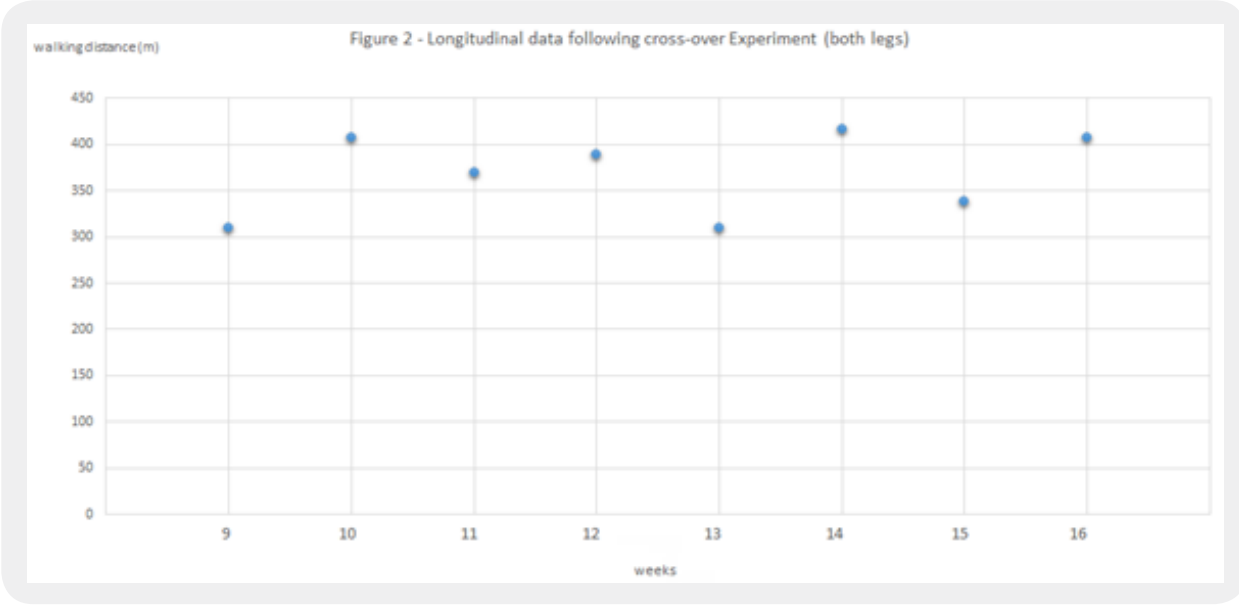


Figure 2: *Longitudinal data following cross-over Experiment (both legs)*

Table 2: *Cross Over and Longitudinal Experiment*

			Functional distance (m)	
Date	**Measurement Moment**	**Max-distance**	**Left**	**Right**
23-08-2018 (before treatment)	0	212	70	no measurement made
30-08-18	1	260	110	no measurement made
06-09-18	2	270	180	no measurement made
13-09-18	3	200	150	no measurement made
20-09-18	4	270	220	no measurement made
27-09-18	5	278	210	no measurement made
04-10-18	6	313	220	no measurement made
11-10-18	7	264	200	no measurement made
18-10-18	8	270	190	no measurement made
22-10-18	9	315	220	300
29-10-18	10	407	360	no pain
01-11-18	11	363	220	330
08-11-18	12	387	250	320
15-11-18	13	319	220	250
22-11-18	14	417	250	300
29-11-18	15	338	220	250
14-01-19	16	408	240	300

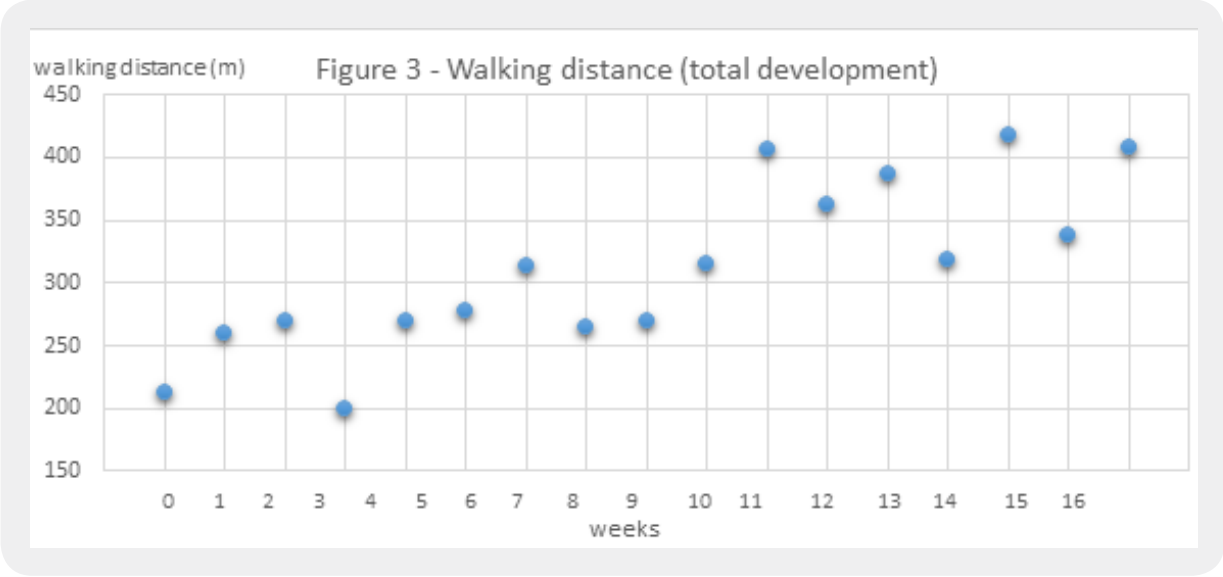


Figure 3: *Walking distance (total development)*

Conclusion

ESWT improved walking distance significantly in a patient with Buerger's intermittent claudication. The method was feasible and without adverse effects such as hematoma's, thrombo-embolic events, pain etc. As this is the first case in the literature applying ESWT in Buerger's intermittent claudication, comparisons with other studies can't be made.

Bibliography

1. Naafs, M. A. (2018). Shockwave Therapy in Atherosclerosis. *LOJ. Med. Sci.*, *1*(2), 11-13.

2. Naafs, M. A. (2019). Autoimmune Buerger's Disease Joining Polymyalgia Rheumatica: A Case Report. *Adv.Case.Stud.*, *1*(4), 1-2.