

## Anthroposophical Medicine for Treating Carpal Tunnel Syndrome

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### Abstract

**Introduction:** Carpal tunnel syndrome (CTS) is debilitating, very common, and all known treatments have controversial results. Anthroposophical methods for treating CTS have not previously been employed. The objective of this study was to observe whether anthroposophical therapy is effective in treating CTS.

**Materials and Methods:** A total of 21 female patients with bilateral CTS were divided into 3 groups, a) 14 hands treated daily with self-applied mixed anthroposophical gel on the wrists (90 days); b) 14 hands treated daily with self-applied placebo gel on the wrists plus weekly anthroposophical external therapy - AET (90 days); c) 14 hands treated with self-applied mixed anthroposophical gel plus weekly AET (90 days). Numerical data from 4 different questionnaires and sensory and motor conduction studies were obtained before and after treatment for statistical analysis.

**Results:** Subjective overall improvement was seen in all groups; evidence of improvement by statistical analysis was obtained from 3 of the 4 questionnaires; improvements in conduction study results were observed in Group C.

**Conclusion:** Anthroposophical treatment is a well-tolerated good non-surgical option for treating CTS.

**Keywords:** Anthroposophy; Carpal Tunnel Syndrome; Treatment

### Abbreviation

AET: Anthroposophical External Therapy; D3, D4: "D" comes from "Decimal" potentization: D3 means that the ingredients were diluted 1:10 three times with rhythmic shaking between each dilution; D4 means same procedures four times; °C: temperature measured by the Celsius scale; WHOQOL-Bref World Health Organization - Quality of Life; SALSA: Short Questionnaire for Screening of Activity Limitation and Safety Awareness; DASH: Disabilities of the Arm, Shoulder and Hand suppress Questionnaire

### Introduction

Different countries in the world are showing an increasing interest in anthroposophic medicine. Recently Baars, *et al.* [1] applying criteria from the philosophy of science, concluded that anthroposophic medicine fulfilled all criteria for what is science.

In Brazil we are witnessing a growing interest from physicians in this medical field.

Like in Sweden [2], Netherlands [3], Germany [4,5], Switzerland [6] and other countries, there are many doctors in Brazil with different medical specialities who belong to the Brazilian Society of Anthroposophical Medicine. Carpal tunnel syndrome (CTS) is a common debilitating syndrome found around the world; it can be objectively assessed by sensory and motor conduction studies using modern equipment which provide numerical latency, amplitude and velocity values from the median nerve at the wrist.

Several types of clinical treatment have been proposed for this syndrome, these include physiotherapy, immobilization, steroids [7,8], the use of different substances [9,10] and procedures such as laser, ultrasound [11], yoga [12] and acupuncture [13]. Reviews from literature have shown that all the different CTS treatments, including surgery, have varying and controversial results [14-17].

As strategies related to anthroposophical medicine are usually non-invasive, inexpensive in relation to surgery, and easy to apply, this study was conducted to test their effectiveness in treating CTS by employing conduction studies to objectively evaluate patients both before and after treatment. As far as we know, this is the first report of attempting to treat CTS using anthroposophical medicine.

### Materials and Methods

After approval by the Ethics Committee on Human Research of our Institution, 21 untreated, 21 to 49 years-old female patients with bilateral CTS seen between 2014 and 2017 agreed to take part in the study. Patients from the 3 groups were comparable, had not used medication, and were without co-morbidities.

The clinical criteria for untreated patient were a) a refusal to undergo surgery; b) no previous corticosteroid use; c) no use of other drugs such as nonsteroidal anti-inflammatories; c) no previous procedures such as immobilization or anaesthetic infiltrations in the carpal tunnel region. The first patient diagnosed with CTS was included in Group A, the second in Group B, the third in Group C, the fourth in Group A, and so on.

Patients in Group A (7 patients, 14 hands) underwent daily treatment by self-applying mixed gel\* on the wrists (90 days, 12 weeks); Group B (7 patients, 14 hands) underwent daily treatment by self-applying placebo gel on the wrists plus weekly anthroposophical external therapy - AET\*\* (90 days, 12 weeks); Group C (7 patients, 14 hands) underwent daily treatment by self-applying mixed gel\* on the wrists plus weekly AET (90 days, 12 weeks).

The mixed gel\* was provided by the Brazilian Weleda Laboratory and Pharmacy and consisted of a 10% final concentration of a decimal-potentiated mix of ingredients including: *Rhus toxicodendron*, folia - D4 - 1.66%; *Arnica montana*, planta tota - D3 - 1.66%; *Apis mellifica/Atropa belladonna*, planta tota - D3 - 0.83%/0.83%; *Mandragora officinarum*, radix - D3 - 1.66%; *Aconitum napellus*, planta tota - D4 - 1.66%; *Hypericum perforatum*, herba - D3 - 1.66%. AET consisted of immersing the feet in water at 40°C in a foot bath for 20 minutes followed by a 20-minute full body friction with *Betula/Arnica* massage oil provided by the Brazilian Weleda Laboratory and Pharmacy, and then covering the body in sheets, flannelling, and a blanket for 20 minutes.

All AET\*\* procedures were performed by the same physiotherapist once a week over a one-hour period. For comparison purposes, each patient was asked about their current subjective clinical symptoms pre- and post-treatment such as local pain, paraesthesia in the hands, sleep disruption due to CTS symptoms, and motor disability.

In an attempt to statistically analyse these subjective symptoms, we applied the Visual Analogue Scale for pain - VAS (horizontal 0 - 10), the FQEHNL questionnaire, the WHOQOL-brief questionnaire [18] adapted for Portuguese [19] and the McGill questionnaire [20] both before and after treatment, and numerical values were tabulated. In 2010, a Brazilian Numerical 30-item scale called the Functional

Questionnaire for Evaluation of the Hand with Nerve Lesion (FQEHNL) was developed based on previous numerical scales, such as SALSA, DASH, and others [21-23]. FQEHNL includes daily activities for clothing (4), food (4), personal hygiene (4), household chores (4) and other daily tasks (14) such as writing, computer and phone use, handling money and small objects, opening and closing faucets, key use, etc [24]. Each question is classified according to the individual's perception of their difficulty in performing the activity where: 0 = no difficulty; 1 = little difficulty; 2 = extreme difficulty; 3 = impossible or X = not applicable (not part of their daily routine). The final functional evaluation is the sum of the scores divided by the number of performed tasks. Higher scores reflect increased activity limitation.

After CTS was clinically suspected, a conduction study was performed for CTS diagnosis where criteria were closely based on standard published data [25,26], including: a) abnormal sensory conduction study of the median nerve - amplitude reduction, conduction velocity reduction across the carpal tunnel segment, and different degrees of sensory potential temporal dispersion co-existing with normal conduction studies on the ipsilateral ulnar and radial nerves; b) prolonged distal motor latency of the compound muscle action potential obtained from the abductor pollicis brevis by supra-maximal stimuli on the median nerve at the wrist crease, with normal conduction velocity in the median nerve on the elbow-wrist segment. All exams were performed using a 4-channel Nihon-Kohden MEB 9400 apparatus, with ambient temperature remaining above 25°C.

The conduction study was performed on all patients in all affected hands both before and after treatment using the same technical procedures and supervised by the same examiner. Statistical analysis of numerical data from the 4 questionnaires, sensory conduction study latencies, amplitudes and velocities and distal motor latency (DML) obtained before and after treatment were compared using the paired t-Test. Statistical significance was considered when  $p < 0.05$ .

### Results

All patients reported subjective improvement in all hands after anthroposophical treatment. When statistical analysis was performed, strong statistical significance was observed for the Visual Analogue Scale for pain ( $p = 0.0007$ ,  $0.0002$ , and  $0.003$  for Groups A, B and C respectively); significance was observed for FQEHNL ( $P = 0.01$ ,  $0.004$ , and  $0.04$ , for Groups A, B, and C, respectively) and for the McGill questionnaire ( $p < 0.002$  for Groups A, B, C). No significant values were obtained for the WHOQOL-Bref questionnaire ( $p > 0.2$ ,  $0.6$  and  $0.5$  for Groups A, B and C respectively).

In the conduction studies, sensory latency, sensory amplitude, sensory velocity and DML in Groups A and B, and sensory amplitude and DML in Group C showed no statistically significant differences. Sensory velocity was increased after the procedures in Group C ( $p = 0.04$ ).

In summary, overall subjective improvement was seen in all groups, evidence of improvement demonstrated by the conduction studies was only observed in Group C.

### Discussion

In this work we proposed treating CTS using anthroposophical methods, which are not well understood by all doctors, however CTS is also not well understood - it is notoriously prevalent in females in different countries of the world [27-30]; women differ significantly from men in terms of clinical presentation and ultrasound findings upon first diagnosis [31]; the difference in CTS incidence between males and females is not attributable to occupational risk factors [32], it is rarely seen in children [33] and is a complication of pregnancy with symptomatic improvement following delivery [34]. Additionally, CTS may be the presenting symptom of an underlying disease such as diabetes mellitus, hypothyroidism, or connective tissue disease [35-37]. Statistical analysis of clinical data from the VAS, FQEHNL, and McGill questionnaires was positive; however, it was not significant in the WHOQOL-bref questionnaire probably because the study duration was short (3 months). Clinical results in this work were satisfactory overall and sensory conduction velocity evaluated by conduction studies showed an increase in Group C patients where the anthroposophical method was more complete. In most peripheral neuropathies

thies, such as uremic or diabetic neuropathy, sensory nerves are initially affected, and improvements in sensory conduction studies, such as after kidney transplant, are seen first. For the normal myelinated nerve, conduction velocity depends on longitudinal axoplasmic resistance and internodal membrane capacitance and conductance. With large values of these 3 parameters, more current is dissipated before the impulse reaches the next Ranvier node, longer time is then required for local current to depolarize the adjacent membrane resulting in slower conduction [38]. This is the proposed mechanism for the slower conduction seen in carpal tunnel syndrome that leads to a continuous process of demyelination and remyelination of the median nerve thus increasing these 3 parameters. Considering the short treatment time employed in this study, it is unlikely that anatomical modification of sensory axon diameters has occurred, therefore longitudinal axoplasmic resistance of the sensory nerves must have remained the same. We do not understand how the anthroposophical method of treatment interfered with the capacitance and conductance between the nodes of Ranvier from the sensory nerves of the median nerve.

### Conclusion

In conclusion, we employed anthroposophical therapeutic options to treat CTS. The clinical data and conduction measurements showed an improvement in symptoms and sensory conduction velocity. Based on the results of our study and because it is non-invasive, inexpensive, and easy to apply, we conclude that anthroposophical medicine can be chosen as a therapeutic option for CTS.

### Statement of Ethics

The patients gave their written informed consent to publish their cases. This study was approved by the Ethics Committee on Human Research of our Institution.

### Disclosure Statement

The authors have no conflicts of interest to declare.

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### Author Contributions

Prof. LSR Resende is an anthroposophical doctor as well as the research coordinator; G Luvizzutto participated of the project design and was responsible for body frictions as a physiotherapist; Prof. T Sardenberg recruited patients for the study as an orthopaedist; Dr. R Ghelman participated in the project as the anthroposophical doctor responsible for formulating the compound gel; Prof. ABS Oliveira participated in data collection and revision of the final text.

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