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A post-treatment report

A Report of variables and results from treatment - combination of physiotherapy - ghnathologic treatment for patients with cranio-cervico-mandibular dysfunction (ccmd) where chronic tension-type headache is main complaint.

Introduction

In both clinical practice and literature, many treatments have been suggested for chronic tension-type headache - very often unsupported by scientific evidence.

The authors of this article have, over many years, developed a technique combining basic physiotherapy together with generally accepted ghnathologic principles.

This technique commences with a thorough examination of the patient by each of the author practitioners followed by an agreed and carefully planned process with the aim of maximizing pain relief as well as optimizing the posture and function related to the ccmd. of the patient.

Optimizing posture and function implies obtaining the best possible posture and musclefunction as well as improving tissue quality in order to ensure a lasting positive effect resulting from the treatment.

This publication does not attempt to compare or provide evidence to any particular treatments. It should be regarded as a point of reference to make known the efficiency of the treatment described.

It is envisaged that in due course separate publications will be made of each of the physiotherapy and ghnathologic treatments.

Aim

The aim of this registration was to gain documentation for the effect of our treatments and to find which parameters used in daily practise could be used as tools forecasting the need of treatment

and outcome of it.

Material.

During 1999-2000 the authors had 394 referred patients whose main complaint was headache, diagnosed mainly as tension-type headache.

From this number the first 174 were selected. 99 received a combined physiotherapy - ghnathologic treatment.
Of those 99 patients, 70 undertook the full treatment to the point of what we regarded as stability (wide infra).

The 29 patients who ended the treatment before stability typically stopped because the symptoms had decreased to an acceptable level as a result of the treatment. Having talked to those patients, it is our impression the majority stopped treatment before stability as a result of satisfaction with the result to date.

As they did not complete treatment, those 29 patients have been excluded and no information is given as to their treatment.

The remaining 70 patients consisted of 58 women and 12 men. Their ages ranged between 19 - 70 years, with an average of 41 years.

All journals were available and no data missed.

Method

In all patients journals, both physiotherapy and ghnathologic, the following parameters were recorded :

- *Total Tenderness Score (TTS)* for all muscles in the head, refers to:

  musculus (m.) temporalis anterior (ant.) & posterior (post.)
  musculi (mm.) massetter profundus (prf.) & superficialis (spf.)
  m. pterygoideus medialis (med.)
  m. pterygoideus lateralis (lat.)

  Other positional muscles recorded:

  m. digastricus venter ant. & post.
  m. sternocleidomastoideus
  m. levator scapulae
  m. longissimus

mm. rectus capitis post major et minor, obliques capitis post superior et inferior
mm. scalenicus med. & post. & ant.
mm. pectoralis minor et major
m. trapezius

- *The mobility index a.m. Beigthon* was employed in both the ghnathologic and physiotherpy journals.

- *The average treatment time*

- *Any earlier attempts to treat the same condition*

- *Deviations in posture in the frontal plane* were recorded in the physiotherapy journal. Frontal deviations were divided into three categories :

    a) *Major deviations* : frontal deviations only was mesured. This was done on a individual basis by eyeinspection. This meant more than 2cm deviations of scoliosis from midline.

    b) *Minor deviations* : Here deviations was less than 2 cm from midline, but more than 0.

    c) *No deviations*

    Sagital deviations were also recorded, but is not included in these published results. In this plane deviations were not graduated, but registrated and the incidence was 100 %.

- *Dynamic deviations* were recorded as follows:
    Opening - closing movement and resting position were measured and deviations recorded.

- *Habitual movements with or without toothtcontact* were recorded.
    Where a patient did lateral excursions to one side during anamnesis and/or clinical examination more than twice within a period of 30 seconds it was duly recorded.

    A view was formed as to whether or not the excursions were made with or without tooth contact. Both the m. masseter and m. temporalis ant. were inspected and monitored by eye.
    Where the muscles looked active excursions were recorded as have been done with toothcontact.
    Accordingly excursions without activity in the above mentioned

muscles counted as habitual excursions without tooth contact.

Clinical examination of the teeth should at the same time note wear of minimum enamel, if habitual excursions were present.

Wear was recorded in the ghnatologic journal graduated 0 (no wear) to 3 (in dentine with only enamel borders).
Habitual excursions could be combined, that is both with and without toothcontact and it could be absent.

- *Patient compliance* was measured by the physiotherapist at the begining of each appointment. Compliance-values 2, 1, 0, and -1 were recorded as follows :
  - "2" for following full instructions
  - "1": partly following instructions
  - "0": not actively participating in the treatment
  -"-1": partly attending physiotherapy sessions and not actively participating in the treatment

  - Where a patient did not follow physiotherapy (instructions and treatment) and did not actively participate in the treatment they where excluded. As they did not receive therapy their inclusion could not contribute to the evaluation of the effect of this therapy.

- *Measurement of Subjective reaction to treatment*:
  At the beginning of each appointment patients were requested to compare their condition to both the last appointment and the commencement of the treatment:

  If the condition was much better (2) ; better (1) ; unchanged (0) ; worse (-1) or much worse (-2).

Treatment method

Physiotherapy

Examination methods:

First and second consultation included:

a) Anamneses

b) Inspection: Analysis of the standing posture, including head and mandible. Assessment of deviations of posture in the sagittal and/or frontal

plane

c) Tests of mobility: Hypermobilitytest ad modum Beighton
Specific joint-examination by accessory and physiologic movements in spine, sacroiliac (SI) joints and temporomandibular joints (tmj)

d) Test of instablity/stability:

e) Neurologic tests: Upper limb when refered pain

f) Palpation: Assessment of tissue quality (muscle/nerve/connective tissue)
Hypertone/hypotone
+/- pain

g) Painlevel: "Worse" /"Better" /ISQ from treatment to treatment
SIN or non-SIN

At the second consultation, a treatment plan is made in contract with the patient. A succesfull treatment depends on and is conditioned by a motivated and involved patient.

Treatmentmethods:

- Musculoskeletal tecniques implied :

  - MFR (myofascial release)
  - MET (muscle energy tecnique)
  - deep massage
  - specific joint mobilisation i.e. HVT (high velocity thrust) and mobilisation a.m. Maitland (only cervical facetjoints, not TMJ)
  - Neurodynamic treatment of neurogene tissue

- - posture correction incl. home exercises for daily training, ergonomic counselling in relation to sitting/sleeping/working positions, insoles.
  - function- and stability training
  - specific stability and/or strengthening exercises for cervical column and mandible

- Information and awareness-training of:
  - habitual movements e.i. bruxism with or without tooth contact, such as biting nails, lip or extra-oral items and, further, how to avoid it.
  - tension/dysfunctions
  - painmechanisms

At every consultation status is evaluated. Between treatments the physiotherapist and the dentist communicate regarding status, progress and compliance. This enables the physiotherpist to

change interventions according to the dental treatment.

The interdisciplinary work/cooperation between dentist and physioterapist:

Following patient diagnosis, treatments are carried out simultaneuously between the two professions until optimal stability in tmj and posture is obtained. The treatment period runs normally for 1-2 years.

Consultations with the physiotherapist are held once every 2 - 8 weeks, most frequently in the beginning.

Ghanatologic examination

Anamneses was carried out over 1 - 2 appointments at the conclusion of which the patients were asked as to prior problems. In this paper all made symptoms related to chronic tension type headache their major concern/problem. They were requested to prioritize problems according to NAS (Nominal Analog Scale).

Conventional examinations were performed and a treatment plan was devised, to which the Patient's acceptance was sought prior to commencement of treatment.

In this material it meant that after examinaton the patient had a splint.

Non-hypermobile patients were first given a plane (RFS) splint, which was then modified according to the physioterapy - ghnatologic examinaton / plan. Physiotherapy treatment was initiated after adaptation of the splint.

Hypermobile patients including those with habitual excursions, were, from commencement of treatment, given a splint which restricted excessive movements. After this, the physiotherapist worked on patient posture to improve it as much as possible in order to bring balance in muscle tone in different areas of the body - to break the tension patterns in the patient.

The ghnatologist creates for instance a more posterior and inferior tongue position through the splint design, hereby relocating cranial and os hyoideum position. Correction of a more forward head position, can be established by creating posibilities for a more posterior bite than previous contact positions, hereby through improved musclecapacity stabilising the posterior neck muscles. This as an example, the individual has to be viewed as a hole and the body as a result of functions, bodymechanisms, balances and neurologic processes.

These processes has to be done by an intimate collaboration between patient, physician, physiotherapist and ghnatologist.

One of our aims is to balance the anterior vs. posterior of the ideal plumb line as well as left vs. right side of plumb line, even if the patient no longer feels any discomfort.

It is our belief that in order to make changes in the posture permanent, they must reach an equilibrium.

At the same time (when balancing, as referred to above) the quality of the tissues is measured to gain an impression of the bodybalance , as well as seeking an intuitive "reading" in the single muscle and thereby to ascertain the major problem.

Very often we find a decrease of TTS and improved tissue / muscle quality a short while before the patient claims the subjective problems have decreased. We believe this is due to changed muscle and neurologic condition, where the neurologic response is delayed to the local muscle tissue.

The ghnatolog will change the splint to both cater for the changes in head posture and/or body posture and to actively work with it, e.g. to give the patient the possibility to retract the head and make a bite in a more posterior position. Further, body "disbalances" , may be ameliorated by balancing tooth contacts, mode of excursions or any other pattern .

Increased muscletone is often seen due to too short working position skeletal, and can be adjusted.

When a level of balance was reached and the patient subjectively found an acceptable lower level of problems, we always insert a control period of a minimum of 3 months in order to ascertain as to whether or not the patients condition is the same or has improved at the time of the next control.

Results.

In all cases, there had been previous attempts to treat the main problem using physiotherapy or dental techniques - all without acceptable results.

The number of hypermobile patients was 32 i.e. with a mobilityindex (MI) more than 1 with an average MI of 4,8.

The average TTS from muscles in the head was 2,04.
With regard to hypermobile patients, the average TTS from head muscles was 3,10.
Average TTS of the total patient group at the end of treatment was 0,66, i.e. less than one muscle had any tenderness.

27 patients (38 %) had tender muscles after treatment. TTS at the end of their treatment was 1,70 and 9 had an MI bigger than 1.

The remaining 62% did not complain of any sore muscles after treatment.

Other findings:

Frontal posture deviations (Pht recording)

Degree of deviation	*Patients at debut of treatment (pt)*	*Patients at final control (pt)*
Major	7 (10 %)	2 (2,85 %)
Minor	63 (90 %)	18 (25,7 %)
None	0 (0 %)	50 (71,4 %)

Dynamic deviations of mandible (Pht recording)

Presence of deviation	*Patients at debut of treatment (pt)*	*Patients at final control (pt)*
With deviation	69 (98,6 %)	16 (22,9 %)
Without deviation	1 (1,4 %)	54 (77,1 %)

Habitual movements (Pht recording)

Sort of habitual movement	*Patients at debut of treatment (pt)*	*Patients at final control (pt)*
With toothcontact	25 (35,7 %)	0 (0 %)
Without toothcontact	24 (34,3 %)	5 (7,1 %)
With and without	15 (21,4 %)	0 (0 %)
No habitual movements	6 (8,6 %)	65 (92,9 %)

Change in tissue quality at time of final control (Pht recording)

Degree of change in tissue quality	*Patients at final control (pt)*
Much better (2)	51 (72,8 %)
Better (1)	17 (24,3 %)
Neutral (0)	2 (2,9 %)

Average : 1,7

Compliance (Pht recording)

Degree of compliance	*Patients at final control (pt)*
Good (2)	58 (83 %)
Acceptable (1)	8 (11 %)
Neutral (0)	4 (6 %)
Negative / non-cooporating (-1)	0 (0 %)

Average 1,77

Treatment time

Treatment	*Months of treament*	*Average*
Physiotherapy	2 - 36	16,8
Ghnathologic	2 - 48	17

Results / patient subjective experience of result (Ghnatologic recording)

Degree of subjective experience of result	*Patients at final control (pt)*
Much better (2)	40 pt (57 %)
Better (1)	16 pt (23 %)
Unchanged (0)	13 pt (18 %)
Worse (-1)	0 pt (0 %)
Much worse (-2)	1 pt (2 %)

Average 1,5

Discussion

This is a report on only 70 consecutively treated patients, over a certain period, and there are no control group with which to compare. Accordingly, it is not possible to evaluate, definitively, the advantages of combining respective treatments from the physiotherapist and the dentist.

Notwithstanding, certain comments may be made on the results:

The hypermobile seems to have, in general, a higher degree of TTS.
The non-hypermobile also seem to have higher TTS; the reason cannot be ascertained from this study. The treatment, in general, appears to help both.

Tissue quality improves evaluationwise and subjectively judged.

There seems to be two groups of patients – a) the majority who has advanced benefits and b) a more sensitised group (allthough small : 9 patients) who has a benefit, but not so pronounced, meassured on TTS and tissuequality.

Deviations were rather common and were corrected, both locally (jaw movement deviations) and more generally (posture).

A prominent improvement in the habitual movement incidence among the patients was found. This together with the above mentioned improvements suggest a neurologic rehabilitation with best results on the more voluntary level than on the higher more involuntary levels. This in fact is part of treatment concept and stability outcome of treatment, since these "habits" are belived to be involved in fixating dysfunctions.

We tried to relate our research/study to "tissue quality" as a meassure of dysfunction on several levels (locally to neurologically); it is our firm belief such can be used as a tool for evaluation, perhaps understanding and treatment. It is a very sensitive tool, which requires years of experience and has been develloped through praxis.

Compliance was, in general, good. Since we only accept referred patients and enjoy a specialist

status, we generally see very troubled patients who are typically very motivated.

Patients were treated over a period averaging 1,5 year with often months between appointments. Cost - benefits have not been evaluated.

Our group of patients look like most other registrations, in respect to sex and age:

More women than men; mostly mid-life people, but all ages were represented.
(We do treat children, but the majority are treated by the general health system).

We have no sociological psychological information/profiles on our group.

We hope to later publish a similar paper elucidating treatment of a similar group with solely physiotherapeutic treatment and another with solely conventional splint terapy.