



ORIGINAL ARTICLE

# Results of chiropractic treatment on 46 patients referred from an ear, nose and throat department

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## Summary

**Objectives:** The objectives of this study were to report on and evaluate the results of chiropractic treatment of patients referred from an ear, nose and throat (ENT) department with neck/jaw-related symptoms.

**Methods:** The target group consisted of 46 consecutive patients who had experienced a long period of diversified symptoms relating to neck and jaw dysfunction. Clinical and neurological examinations by an ENT specialist revealed no pathology; further, skeletal radiography and magnetic resonance imaging findings were normal. Diagnoses prior to referral to an ENT department were diverse, but all had neck and/or jaw complaints.

Chiropractic examination indicated that the patients had neck/jaw dysfunction and related compensatory biomechanics. According to predetermined inclusion and exclusion criteria, all patients were treated at the chiropractor's clinic. The mean follow-up period was two years.

**Results:** All but six patients benefited from the treatment, and there was a clear reduction in sick leave among the patients compared with conventional medical treatment.

**Conclusions:** To our knowledge, this is the first report on the work of a chiropractor participating on the initiative of ENT staff within an ENT department of a Norwegian hospital and an ENT specialist's private clinic. The results might hopefully increase referrals to chiropractors in the treatment of patients with neuromusculoskeletal dysfunction. Based on our experience, we believe that the presented collaboration should encourage closer relations between ENT physicians and chiropractors, and hopefully encourage further research on the topic.

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## Introduction

Throughout the history of chiropractic, a profound suspicion of joint manipulation has clouded

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relations and restricted collaboration between the medical profession and chiropractors. Adjustments of the neck in particular have provoked reactions focusing on a few unfortunate patients who have had adverse reactions following chiropractic care. A lack of research and knowledge in the field has sometimes been used to discourage both patients from seeking chiropractic care and general practitioners from referring patients for chiropractic treatment. With an improved nomenclature and understanding between the professions, a Norwegian ENT department initiated this cooperation in the best interests of patient care, with full cooperation between the ENT and chiropractic clinic staff. The study was carried out retrospectively over a defined period of two years of referrals. This was instigated by the ENT department as an attempt to establish procedures never before practised elsewhere in Norway. The objectives of this study were to define a basis for chiropractic efforts and to describe their results.

## Subjects and methods

Forty-six consecutive patients, 37 women and 9 men, were treated between July 2006 and July 2008 for a diversity of symptoms after referral from the ENT department of Sogn and Fjordane Central Hospital (SSSF) to a chiropractic clinic.

The mean age at the time of referral was 51 years (range 18–75 years). The mean age difference between the sexes was four years (male 48 years, female 52 years). The mean observation period of results was two years (range 0.5–2.5 years). The duration of the patient's main problem and diversity of symptoms resulting in sick leave at the time before and after referral were recorded. All patients had a pre-referral diagnosis, but of idiopathic origin, as there were no findings to suggest the cause of the symptoms.

The patients underwent a full clinical examination informed by a diversity of signs and symptoms. They were all examined by their doctor or other specialists before referral to the ENT department or specialist's private clinic. Depending on their symptoms, the patients underwent clinical, neurological, orthopaedic and/or radiological examination.

None of the patients showed any clear signs of an upper motor neural lesion (UMNL) or other sinister pathology.

A written referral contained the history and previous examinations. This was received by the chiropractor before the first consultation.

A report of findings was sent to the ENT specialist after the first examination. The chiropractor then

followed up with a full treatment programme and subsequently reported back. The report focused on treatment, progress and status when discharged. A letter of information and a patient consent form was sent to all patients, and written consent was obtained.

A randomized questionnaire with baseline and discharge measures was used to obtain patient experience and evaluation, with a free-of-charge postal return to the specialist's private office.

## ENT examination

When referred by their GP the ENT specialist for problems like tinnitus, dizziness, headaches, suspected sinusitis, etc., all patients underwent a standardized, full-scale examination. This investigation revealed no obvious signs of otogenic vertigo, sinusitis or ear pathology. Thus, the examination mainly raised the question of a possible articular or muscular problem in the neck or jaw as a cause of the symptoms. These patients were therefore referred to a chiropractic clinic for further examination and treatment.

## Chiropractic examination

As no structural damage was found, and parameters of infection or systemic diseases were negative, the chiropractor focused on the patient's biomechanics. This included an analysis of the neuromusculoskeletal system and assessment of possible dysfunctions relating to the patient's symptoms. Specific neck tests (e.g. Spurling's and Jackson's) and jaw tests provoked pain in all patients and often increased or reproduced the symptoms. This was not a typical nerve root pattern, but most likely a trigger to peripheral nerves and referred pain syndromes. Specific palpation mostly also gave a clear cause of symptoms by function-based lesion patterns.

All patients had also undergone some form of radiological screening of head and neck (X-ray or MRI). No structural abnormalities were found. The chiropractic examination focused mainly on function, and showed that all patients had upper cervical spine dysfunction – often combined with a jaw problem and compensatory lower cervical/upper thoracic problems. Muscular hypertonicity closely related to this could thereby show a complex muscular compensatory problem, sometimes manifesting as far as the lower thoracic region.

## Chiropractic treatment

Patients were placed in a prone or supine position on the treatment table to relax them, and soft tissue techniques aimed at affecting muscle tone at the sites of joint lesions were used. These techniques included pressure on local muscular trigger points, often in combination with passive stretching or PNF (post neurological facilitation-stretch/pause), to achieve relaxation. Sometimes joint dysfunction and the change in related muscle tonus seem to create a fibrous tightness, often called a trigger point. Structures that move passively, such as joints, ligaments, fascia, and tendons, all play a role in the treatment toward recovery; therefore a light, fingertip-pressure was applied directly on the local muscle irritation for approximately 30 s. This was directed to the muscular areas surrounding the jaw and in the neck to ease the tension, and possibly increase muscle blood flow. The main treatment consisted of manipulation of the joint fixations, detected by palpation and decreased range of motion in one or more planes of movement.

The adjustment technique comprised traction, followed by a fast passive stretch of deep structures around the joint, with the emphasis placed on the appropriate force, speed and amplitude specificity; these adjustments were applied to the spine, jaw, shoulders and scapulae (Figs 1-6). After the initial manipulation, ice packs were applied locally for 10–15 min to decrease any local pain or oedema. General advice and instructions were given on subsequent use of ice, home exercises, and possible inexpedient motions.

When sufficient improvement (pain reduction and improvement of mobility) had been noted, simple rehabilitation exercises were recommended and coached; these mainly comprised post-isometric relaxation. Patients were treated two to three days a week for the first two to four weeks in the chiropractic clinic. Depending on need, the patients received follow-up treatments once or twice a week for some time thereafter. None of the patients was treated in the hospital or in the specialist's private clinic. Under Norwegian public health regulations, cost refunding is limited to 14 treatments per treatment year; the total number of chiropractic treatments rarely exceeded this number (Figs. 1–6).

## Inclusion and exclusion criteria

Patients were included in this study if they exhibited classic symptoms usually requiring treatment by an ENT specialist, which, after a full medical examination, were found to be idiopathic. Patients



Figure 1 TMJ traction technique.



Figure 2 TMJ self-traction.



Figure 3 Traction of the cervical spine.

were excluded if they were older than 75 years or had active rheumatic diseases; structural spinal changes, other than degenerative ones; neurological upper motor neuron defects; or major depression or anxiety.



**Figure 4** Adjustment of upper cervical spine.

### Outcome measures

Outcome was determined by subjective symptomatology, biopsychosocial disability and the sick leave from work. These were evaluated using a mailed questionnaire with prepaid return postage.

### Results

All patients had, on average, experienced eight or more weeks of dysfunction and symptoms of appar-



**Figure 5** Adjustment of upper cervical spine including occiput.



**Figure 6** TMJ adjustment.

ent peripheral or central neurological syndromes, leading to a referral to an ENT specialist from their GP. Four of the patients had a history of trauma. With the exception of students and pensioners, they were all on full or partial sick leave for an average period of 1.6 months.

The appearance of a typical patient was one of multiple symptoms; however, neck complaints were common to all. Because of this, all symptoms were evaluated as possibly secondary to cervical spine dysfunction. We therefore used the neck syndrome (Table 1, row 1) as a working diagnosis and the remainder (Table 1, rows 2–20) were treated as related, secondary diagnoses.

Fifty-two patients were initially examined by the ENT specialist. After this, they were all referred to the chiropractic clinic for further examination and treatment. Before treatment, one patient was referred back because of apparent UMNL symptoms. This patient was subsequently diagnosed by the specialist and referred to the neurological department. Three patients were sent back due to constant, non-improving headaches of clear psychogenic origin detected by further history taking. Two patients failed to return the questionnaire and were lost to follow-up. This gave a total of 46 patients with clear female predominance (4:1).

The period between ENT examination and chiropractic examination and treatment was 1–2 weeks. With the exception of the patient detailed above, none of the subjects had changes in clinical, central neurological or laboratory parameters.

Six of 46 patients reported that their neck problem and associated symptoms were unchanged. One of these was on permanent sick leave, one in full time employment and four were pensioners. Five patients reported that their neck problem and associated symptoms had improved slightly, nine that their neck problem and associated symptoms had improved significantly and 26 that

**Table 1** Patient diagnoses in male and female patients.

	Diagnosis	No	Male group (9)	Female group (37)	Total
1	Neck syndrome	L83	(All) 9	(All) 37	46
2	Tinnitus/audible irritation	H03	6	13	19
3	Ear pain/ache	H01	1	5	6
4	Jaw symptoms/ache	L07	1	16	17
5	Headache	N01	2	13	15
6	Dorsalgia	L02	1	1	2
7	Dizziness (posture/movement dependent)	H82	1	17	18
8	Earplug/pressure	H13	1	3	4
9	Ear symptoms/irritation	H29	2	5	7
10	Facial pain	N03	—	6	6
11	Sleep disturbance	P06	—	2	2
12	Shoulder rotator cuff	L92	—	5	5
13	Scalenus hypertonicity/syndrome	L83	—	4	4
14	Paraesthesia (skin hands/fingers)	N05	—	4	4
15	Chest symptoms/aches	L04	—	3	3
16	Pharyngitis chronic	R83	—	1	1
17	Migraine	N89	—	1	1
18	Problems with swallowing	D21	—	4	4
19	Whiplash chronic	A82	—	2	2
20	Fainting	A06	—	1	1

No = Norwegian Health Department diagnosis categorization. Diagnosis no. 10-12 only in female group

their neck problem and associated symptoms had improved very significantly. No adverse responses were reported.

On a pain and disability scale from 0 to 10 (10 = worst pain/disability, 0 = no symptoms), the average score on presentation was 8.0; following treatment, this had decreased to 3.7, an average improvement of 4.3 points.

With regard to sick leave, one patient reduced her absenteeism from 50% to 20%. This was agreed with her GP as her job related stress working in a wheel rim factory caused her neck tightness and headaches. One patient reduced her absenteeism from 100% to 50% by means of returning to work part-time of her own volition.

Three patients needed further sick leave of an average of 20.3 days after chiropractic treatment. The remaining 30 patients required no further sick leave after chiropractic care.

The female group received an average of 6.5 treatments before discharge, the male group an average of 14.0 treatments (cohort average 10.3 treatments).

## Discussion

This study illustrates the potential benefits of cooperation between ENT specialists and chiropractors, particularly in patient with diagnosis of 'idiopathy', that is with no overt pathological cause for their

symptoms from the neurologists' perspective but with positive structural and functional findings from chiropractic assessment. Traditionally, such patients have been discharged, referred to physiotherapy, or prescribed various drugs, and there is no valid information on their outcome other than the high sick leave period for this group, statistically presented by the Norwegian Health Department (NAV).

One of the challenges in instigating a framework in which both physician groups could work together was developing mutual understanding and a common nomenclature. Previous studies have shown the importance of this<sup>1</sup> and this study has helped foster a further improvement in relations and interprofessional cooperation.

The study has a number of limitations, primarily a lack of randomization that precludes comparison of treatment outcomes with any natural history of self-resolution or regression to mean; blinding to control for placebo and Hawthorne effects was impractical given the physical nature of the intervention. The trial does serve as a useful pilot study to establish methodology protocols for future, more rigorous studies.

The diversity of chiropractic diagnoses, particularly compared to the overall number of subjects, detracts from the specificity of the study; however, this is compensated for by the fact that all of the subjects had primary cervical spine symptoms and findings.

A positive effect of cooperation between ENT specialists and chiropractors may be a reduction of sick leave with the attendant economic benefits. The length of sick leave is exacerbated by the long waiting period to consult a specialist; this could be further reduced if such patients were identified earlier. Chiropractors are well-positioned to triage such patients at an early stage and instigate treatment if appropriate – long lasting biomechanical dysfunction might cause a diversity of problems.<sup>2,3</sup>

There is little available information on the treatment offered to patients with idiopathic neurological findings but this is a frustrating patient group for the ENT specialist. Most commonly, patients are excluded from treatment, other than the use of pain-relieving and anti-inflammatory drugs. Sometimes physiotherapy is used, but there are no reports on results or outcomes for comparison.

The duration of sick leave among the patients included in this study was clearly reduced following chiropractic treatment, but these findings were confounded to an extent by the unclear factor of time-related termination of sick leave prior to seeing the specialist. Statistics from the NAV (December 2008) show that an isolated common cervical problem (neck syndrome) resulted on average in 74 days of sick leave. The statistics also show that approximately 14 100 patients were on sick leave due to this diagnosis alone in the first three quarters of 2008. It is also worth mentioning that patients with tinnitus (773 patients in the first three quarters of 2008) required on average 108 days of sick leave, and patients with dizziness (2926 patients) on average 55 days of sick leave in the same period. If we single out only musculoskeletal diagnoses in this period of 2008, more than 350,000 patients required an average of 55 days of sick leave.

Compared with the figures cited on the period of absence from work after conservative treatment, this amounts to a clear reduction. It is also worth mentioning that the patients in this study had diverse chronic neck syndromes with secondary comorbidities; almost all patients were able to resume work soon after treatment whereas only 49% of workers return after more than eight weeks of sick leave. A gradual increase and workload adoption during the first week of the return to work seems important as a 'shock absorber'.

The gender difference in the number of treatments (male 14.0, female 6.5) may be related to a higher level of severity and chronicity among males before seeking help. This might also be an explanation for a male patient group that was only one fifth of the total.

Chiropractors use a variety of diagnostic procedures and therapies to treat a wide array of disorders; however, the mode of treatment common to all chiropractors is spinal manipulation, although many different techniques are used.<sup>4</sup> There has been significant research on spinal manipulation,<sup>5</sup> but there are still areas for which no evidence has been found and others that remain uninvestigated. This absence of evidence has contributed to the present low status amongst healthcare professions.<sup>6</sup> The need for a better evidence base is, however, recognized amongst most chiropractors.<sup>7,8</sup>

Some of the links between dysfunction-related syndromes and symptoms in this study have been well described.<sup>9,10</sup> In other studies and reports, mechanisms of referred pain, either mechanical or biochemical, have been documented,<sup>11,12</sup> as well as effects on the autonomic nervous system<sup>13–20</sup> and somatovisceral reflexes,<sup>21–23</sup> and it is possible that we see some of these effects and changes in this trial. The chiropractor corrects what is described in the literature as 'functional spinal lesions' (FSL).<sup>24</sup> These lesions, often termed 'fixations' or 'subluxations' by chiropractors show a connection to various symptoms. Clinical research is limited, and clinical reports on conditions other than biomechanical disorders are mostly anecdotal.

Owing to circumstances, this study was performed retrospectively and lacked any control group. It did, however, represent a pioneering effort by the ENT department to seek help outside the hospital for this patient group and identified a subpopulation of ENT patients that might have been lost in a more generalized study. Since the referral and collaboration started in 2003, the ENT specialists have come to understand the importance of checking and asking about musculoskeletal issues before referring. This should be a first step towards a randomized study and hopefully encourage other clinicians to conduct similar research.

## Conclusion

Chiropractic treatment was apparently successful in alleviating ENT symptoms and enabling return to work from long-term absenteeism in a population of referred patients for whom no neurological explanation could be determined for their symptoms. Cervical spine dysfunction was a common feature to all of these patients and this may explain the response to manipulative therapy. Further research is required to determine cause and effect and identify specific clinical features that may be used to precipitate or exclude referral for chiropractic management.

## Conflict of interest statement

The authors do not have any financial and personal relationships with other people or organisations that could inappropriately influence our work.

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