Osteopathic management of an adult patient suffering from trigeminal neuralgia after a Chiari Type I decompression: A retrospective case report

Rafael Zegarra-Parodi1, 2, DO, MEd, Dip Clin Res, Dip Stats Pauline Allamand1, 2, DO Laurent Fabre1, 2, DO, Dip Anat Sami Nall1, 2, DO
1. Private practice in Paris (France), Centre des Médecins Ostéopathes Paris France (CMOPF)
2. Doctoral Researcher @ CEESO - Centre Européen d’Enseignement Supérieur de l’Ostéopathie

Abstract

Introduction
Herniation of the cerebellar tonsils through the foramen magnum into the cervical spinal canal with obliteration of the cerebello-medullary cistern is the primary feature of Arnold-Chiari type I (AC1) malformation. Posterior crano-cervical decompression by opening foramen magnum and atlas lamina usually with corresponding dural and arachnoid opening is the surgical procedure most frequently used. Postoperative pain impairing functional activity and quality of life is common and it is possible that manual treatments such as osteopathy may bring relief.

Objectives
To describe the examination, intervention, and outcomes for a patient suffering from trigeminal neuralgia after postoperative AC1 decompression surgery with osteopathic treatment.

Methods
A case report of a 39 year old man who presented with trigeminal neuralgia 5 years after decompression surgery. Encephalochias -cervico-thoracic medullary MRIs were normal, described only scar tissue following surgery. The trigemino-cervical nucleus receives nociceptive inputs from both the trigeminal nerve and the first three cervical nerve roots which innervate the anatomical structures most affected during the surgery. Most recent surgical scar tissue was targeted for osteopathic manipulative treatment based on its hypothesized influence on a sensitization state of the central nervous system. Manual desensitization techniques devised to reduce patient pain were proposed.

Results
A clinically significant decrease in overall pain as measured with a VAS occurred after the second treatment. Throughout the treatment period, an increase in cervical function was also described by the patient.

Conclusions
Pain perception in some patients suffering from trigeminal neuralgia following cranio-cervical decompression could be triggered by scar tissue and reduced by appropriate manual treatment.

1. Introduction

Rare presentation in osteopathic practice (see Annex 1).

Comprehension of neurophysiological processes that might be involved in pain perception of muscular-skeletal origin.

A challenging differential diagnosis.

Stimulation for further research.

Patient received in private practice; oral and written approval for a retrospective case report (personal MRI not supplied).

2. Case presentation

- Patient details:
  - 29-year-old male patient;
  - Arnold-Chiari type 1 (see Figure 1) diagnosed and treated 5 years ago: posterior fossa decompression surgery;
  - Symptoms: pain with pins and needles on face (left side) which started a month ago

- Patient attitude: visit to neurologist; full neurological examination including new MRI (normal only scar tissue)

3. Diagnosis & Intervention

Osteopathic management and treatment were recorded on a special form, the Outpatient Osteopathic SOAP Note Form, as they are defined by the World Health Organization’s (WHO) draft report Guidelines on Basic Training and Safety Guidelines on Basic Training and Safety in Osteopathy 6. These practitioners have a first contact status in every country where osteopathy has been recognized and regulated by law.

Osteopathic management is an approach to healthcare that emphasizes the role of the musculoskeletal system in health and disease; its paradigm is based on (1) the body is a unit, (2) the body possesses self-regulatory mechanisms, (3) structure and function are reciprocally interrelated and (4) rational therapy is based on the previous tenets 9.

A key identifiable feature of osteopathic medicine is the concept of somatic dysfunction defined as a functional disturbance of the tissues of the musculoskeletal system and related vascular and neurological components which can be treated by manipulation 10. Clinical symptoms associated with somatic dysfunction can be compounded by the acronym TART (Tenderness, Asymmetry, Restriction and Tissue change(9)). According to its commonly used neurophysiological model and depending on the patient’s condition, the somatic dysfunction may be causative, perpetuating or a combination of both 11. The evaluation of the patient’s capacity for a homeostatic response and the interpretation of the theoretical understanding physiopathological processes with the palpation of components of the somatic dysfunction guide the osteopath for treatment strategies 12. A wide range of manual techniques described in the Authorized Osteopathic Therapeutas are used for the treatment of somatic dysfunctions by the two categories of osteopathic practitioners, the osteopath who provide only osteopathic manipulative treatments (OMT) and the osteopathic physicians who are fully licensed to practice medicine and provide OMT, as they are defined by the World Health Organization’s (WHO) draft report Guidelines on Basic Training and Safety in Osteopathy 6.

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4. Discussion

Trigeminal neuralgia could be triggered with the nociceptive input to the upper cervical spine joint complex to the pain-sensitive dura mater (Hack et al, 1995).

4.1. Cervicogenic headaches

For cervical spine disorders to cause head pain there must be: (1) pain sensitive structures in the neck, (2) changes in the neck sufficiently to cause stimuli to the pain receptors and (3) identifiable neurological pathways from the cervical spine to the head.

Present patient had a past history of surgery and scar tissue in the sub-occipital area.

Dura mater (see Figure 4):
- Extremely sensitive structure;
- Connective bridges between dura mater and rectus capitis minor muscle (see Figure 4);
- Arterial tension in the spinal dura can cause cervicogenic headache pain (Atki & Balas, 1999);
- Dura connections transmit forces from the cervical spine joint complex to the pain-sensitive dura (Hach et al, 1995).

Pain transmission in the trigeminal system (see Figure 5):
- Information from the C1-C3 neck structures is transmitted by the trigeminal nerve from the spinal dura to the brainstem (Bogduk, 2000).

Trigeminocervical nucleus can be viewed as the nociceptive input to the upper cervical spine joint complex to the pain-sensitve dura mater (Bogduk, 1999).

4.2. Differential diagnosis made using main pain provoking tests

Diagnosis challenging in a post-surgical patient.

(1) Central sensitization (passive dural stretching, allodynia & hyperalgesia, bilateral V 4.3. V2 and V3 involvement;
(2) Trigeminal neuralgic pain (unilateral V 4.4. V2 and V3 involvement;
(3) Somatic referred pain (compression, stretching and contraction with resistance; joints and lateral trigger points);
(4) Radioculcer prostate pain from upper cervical (passive cervical extension, passive cervical nerve roots).

Combination of different concepts:
- Movement of pain sensitive structures in the cervical vertebral and cranial intervertebral foramina (Maltiad, 1990);
- Adverse mechanical tension in nervous system (Butler, 1999);
- Neurodynamics (Shacklock, 1995);
- Osteopathic diagnosis and treatment were recorded on a special form, the Outpatient Osteopathic SOAP Note Form (see Figure 5): Osteopathic diagnosis (Sammut and Shacklock, 1980);
- Somatic referred pain (compression, stretching and contraction with resistance; joints and lateral trigger points);

Mechanisms underlying pain types (Suka, 2000):
- Primary hyperalgia;
- Secondary hyperalgia;
- Allodynia;
- Temporal summation.

5. Limitation of case report

Patient managed in a non-controlled environment.

Natural progression of disease or dysfunction may explain results.

Impossible to conclude that a particular management strategy will be effective for other patients with the same condition.

This hypothesis, that osteopathy can bring relief, can only be tested using experimental clinical trials.

6. Conclusion

Consider the scar tissue in a post-surgical context as a probable source of aberrant nociception and/or abnormal biomechanical patterns.

Could have triggered somatic dysfunctions.

Importance of clinical examination to differentiate possible sources of aberrant nociceptive/mechanoreceptive inputs.

Trigeminal neuralgia could be managed with appropriate manual treatment.

Annex 1: Osteopathic medicine

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References


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