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OMT in Post Concussion Syndrome

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OMT in Post-Concussion Syndrome

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Objectives

- Evidence for OMT following concussion
- Common techniques utilized
- Practice techniques

REVIEW ARTICLE

Assessing the Immediate Effect of Osteopathic Manipulation on Sports Related Concussion Symptoms

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KEYWORDS:

Concussion

Osteopathic

Manipulation

Sports

Background: Osteopathic manipulative therapy has been reported to improve dizziness and neck pain, which are symptoms commonly seen in concussion. Conceivably OMT could be used to treat similar symptoms secondary to concussion. To our knowledge there has not been any studies that linked OMT to the reduction of concussive symptoms. **Objective:** To retrospectively examine the effect of OMT in reducing concussive symptoms in athletes. **Methods:** Records included in this retrospective chart review were those that had a diagnosis of concussion sustained during athletics and required that the patient had completed the symptom checklist found on the Standardized Concussion Assessment Tool (SCAT2) prior to the visit as well as completing another SCAT2 symptom checklist following OMT. Scores from each patient's pre-treatment SCAT2 assessment were then compared to their post-treatment scores. **Results:** A total of 26 patient charts met selection criteria and were included in this retrospective study. Summary descriptive statistics were generated. Paired sample t-tests revealed that OMT improved each of the 22 self-reported symptoms listed on the SCAT2, with 10 symptoms (45.4%) demonstrating statistically significant improvement ($p < .05$). These symptoms included: headache, pressure in head, blurred vision, sensitivity to light, feeling in a fog, don't feel right, difficulty concentrating, fatigue or low energy, irritability, and sadness. **Conclusion:** OMT was effective at reducing overall symptoms related to concussion. A substantial subset of concussive symptoms on the SCAT2 had significant reduction with the use of OMT. The integration of OMT into concussion management appears to immediately reduce symptom burden.

OBJECTIVE

- To examine the effectiveness of OMT at reducing concussive symptoms in athletes who were diagnosed with a concussion.

HYPOTHESIS

- OMT is effective at reducing symptoms related to concussion

DESIGN

- A retrospective chart review of cross-sectional medical information collected on symptomatic athletes diagnosed with concussion during a visit to the physician's sports medicine practice. Institutional Review Board (IRB) permission was obtained to review patient records.

INSTRUMENTS

- The SCAT2 was used to assess concussion symptoms. The SCAT2 is a standardized assessment tool that measures **self-reported** symptoms and neurocognitive functioning following a suspected concussion. **Each patient evaluated was asked to complete the symptom log that contains 22 symptoms commonly seen in concussed individuals. The log prompts the patient to rank each symptom on a 0-6 scale with 0 being no symptoms and 6 being severe symptoms.**

Scat 2 Symptom list

- Headache
- Pressure in head
- Neck Pain
- Nausea or vomiting
- Dizziness
- Blurred vision
- Balance problems
- Sensitivity to light
- Sensitivity to noise
- Feeling slowed down
- Feeling like you're in a fog
- Don't feel right
- Difficulty concentrating
- Difficulty remembering
- Fatigue or low energy
- Confusion
- Drowsiness
- Trouble falling asleep
- More emotional than usual
- Irritable
- Sadness
- Nervous or Anxious

PROCEDURE

- Each patient chart contained the **SCAT2 that was completed upon arrival** for an appointment with the physician. During the course of the evaluation, each patient was treated with osteopathic manipulation by the physician or by one of two OMM/NMM Plus-One Residents under the direct supervision of the physician. **Osteopathic treatments were individualized based upon the patient's complaint and location of somatic dysfunction.** Osteopathic techniques used to treat somatic dysfunction was left to the discretion of the treating practitioner but included both direct and indirect technique. **At the close of the appointment the patient was asked to fill out another SCAT2** symptom checklist which was placed in the chart. Once data was collected the pre-treatment scores were compared to post-treatment scores to determine whether osteopathic manipulation had an effect on the participants' SCAT2 scores.

DATA ANALYSIS

- Summary descriptive statistics (mean, standard deviation, and range) were generated for continuous variables such as age and the number of days post-injury treatment occurred. Furthermore, descriptive statistics were generated for SCAT2 scores pre and post OMT. Frequencies were generated for the categorical variable, gender. Paired sample t-tests were used to determine pre-post differences in the SCAT2 scores for each of the symptoms as well as an overall summative SCAT2 symptom score. Where appropriate a chi-square test of proportions was used. Statistical significance was set at $p < .05$

Mean Differences, Standard Errors, Confidence Intervals, and p-Values of the Statistically Significant SCAT2 Symptom Scores

Symptom	Mean Difference (post - pre score)	Standard Error of Mean Difference	95% Confidence Interval		p-value (2-tailed)
			Lower	Upper	
Headache	-0.731	0.226	-1.196	-0.266	.003
Pressure in head	-0.615	0.229	-1.087	-0.143	.013
Balance problems	-0.462	0.194	-0.861	-0.062	.025
Sensitivity to noise	-0.615	0.193	-1.012	-0.218	.004
Feeling like in a fog	-0.731	0.219	-0.280	-3.340	.003
Don't feel right	-0.615	0.272	-1.176	-0.055	.033
Difficulty concentrating	-0.808	0.309	-1.444	-0.171	.015
Fatigue or low energy	-0.615	0.208	-1.044	-0.187	.007
Irritability	-0.462	0.194	-0.861	-0.062	.025
Sadness	-0.500	0.224	-0.961	-0.039	.035
Overall symptom	-10.846	3.769	-18.608	-3.085	.008

Statistically Non-Significant SCAT2 Pre-Post Scores Differences

Symptom	Mean Difference (post – pre score)	Standard Error of Mean Difference	95% Confidence Interval		p-value (2-tailed)
			Lower	Upper	
Neck pain	-0.538	0.320	-1.197	0.120	.105
Nausea or vomiting	-0.308	0.173	-0.665	0.049	.088
Dizziness	-0.500	0.243	-1.001	0.001	.051
Blurred vision	-0.269	0.197	-0.674	0.136	.183
Sensitivity to light	-0.269	0.239	-0.761	0.223	.271
Feeling slowed down	-0.308	0.247	-0.816	0.200	.224
Difficulty remembering	-0.462	0.310	-1.100	0.177	.149
Confusion	-0.462	0.237	-0.949	0.026	.063
Drowsiness	-0.462	0.243	-0.963	0.039	.069
Trouble falling asleep	-0.385	0.222	-0.843	0.073	.096
More emotional	-0.308	0.222	-0.761	0.146	.175
Nervous or anxious	-0.423	0.243	-0.923	0.077	.094

CONCLUSION

- The use of OMT following concussion had a positive impact on symptoms as measured by SCAT2 symptom scores. The impact of OMT in reducing the burden of concussive symptoms was significant for 10 of the 22 symptoms on the SCAT2.
- Implementing OMT into the management of concussive symptoms decrease the overall symptom burden experienced by the athlete.

Common Somatic Dysfunction Following Concussion

- OA
- Upper cervical
- Upper Thoracic
- Rib
- Sacral

Disclaimer

- I trained with
 - Ed Styles DO
 - Anthony Chila DO
 - David Eland DO
 - Steven Walkowski DO

An Approach to the Concussed Patient

- Treat the Key Lesion
 - Upper Thoracic
 - Ribs
 - Sacrum
 - OA
 - Cervical

Upper Thoracic

- Muscle energy - T3 FRS right
 - Patient seated
 - DO stands to the patients left and behind the patient
 - Patient places right hand on left shoulder
 - DO places patient in the ERS left position and engages the barrier
 - The patient is then asked to rotate to the right while the DO provides an unyielding counterforce
 - Repeat until the dysfunction resolves



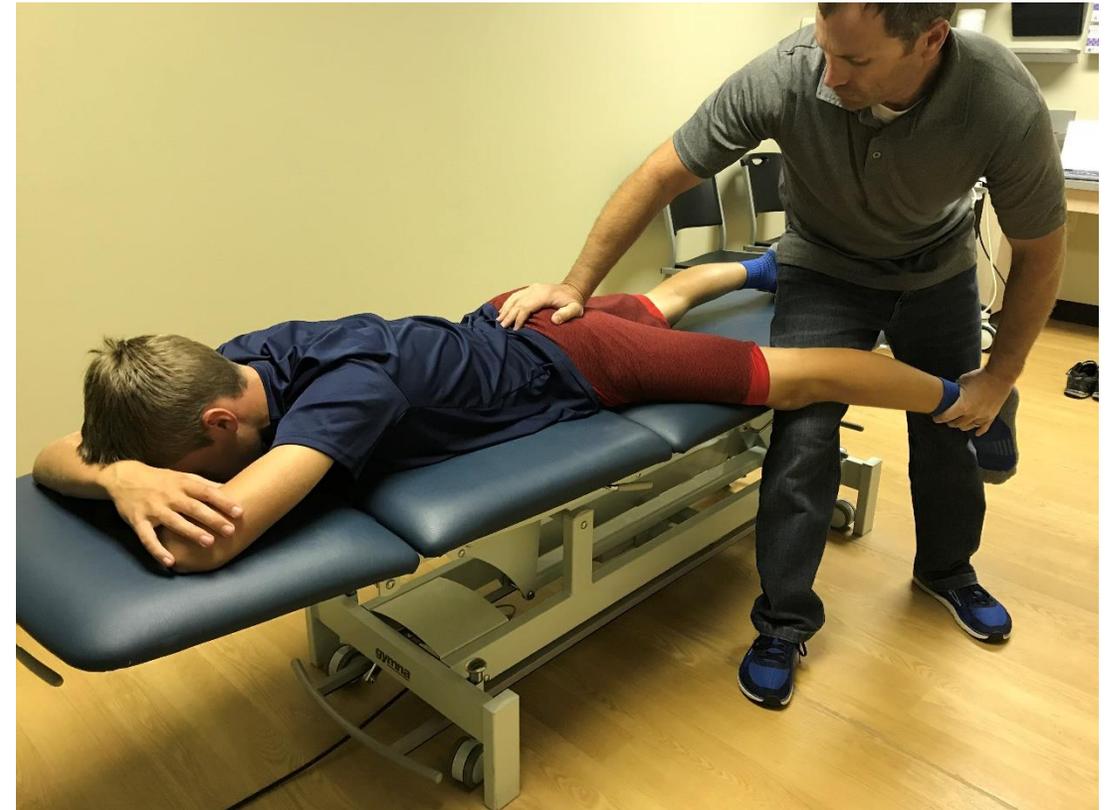
Upper Ribs

- LVLA – Right rib 3 is exhaled (post rib is cephalad)
 - Patient supine
 - DO stands to patients left
 - Patient place left hand on right shoulder and then places right hand on left hand so that the right elbow is towards the sky
 - DO places thenar muscle on affected rib to supply a caudad force
 - DO places patients right elbow between the DO's left pec major and deltoid to supply a posterior force
 - DO then cradles patient's occipital area with the right hand and adds cervical flexion with a cephalad force while maintain the caudad force on the posterior rib with the left thenar muscle



Sacral Dysfunction

- Muscle energy – left sacral shear or sacral flexion
 - Patient prone
 - DO stands to the left of the patient
 - DO abducts the patients left leg so knee is off the table and adds internal hip rotation just proximal to the ankle
 - DO places heel of right hand on the patients left ILA and pushes cephalad and toward the midline
 - The DO provides an unyielding counterforce while the patient attempts to lift the left leg up and over onto the table



OA Dysfunction

- FPR – OA ESB rRI
 - Patient supine
 - DO at the head of the table with the left hand under the occiput, with the index finger at the edge of the occiput and posterior to the right mastoid process
 - DO places patient's skull with right hand and flexes the occiput upon the atlas
 - DO adds a mild compressive force while monitoring with left hand
 - DO add extension of occiput upon the atlas
 - DO adds translator force right and left with left index finger to **place in a position of ease and "Jiggle"**



Upper Cervical

- C1 rotated right – muscle energy
 - Patient supine
 - DO and head of table
 - DO place hands on either side of the patients head and rotates C1 to the left to the edge of the barrier
 - Patient closes eyes and is instructed to look to the right to engage the oculomotor reflex
 - This is repeated until resolution or improvement of dysfunction



Conclusion

- OMT can be used as an adjunct in the treatment of symptoms related to concussion

Thank you

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