

Internal jugular Venous Compression Syndrome: hemodynamic outcomes after cervical vertebral decompression manipulations



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OBJECTIVE: *The AA studied hemodynamic effects in Venous Compression Syndrome of internal Jugular veins, after non-invasive treatment by RIMA (Ricci's manipulation) cervical manipulations.*

METHODS: *Twentysix subjects were enrolled with at least one jugular vein with complete (white) compression in frontal neck position, assessed by echo color Doppler.*

RESULTS: *after first RIMA procedure we had a reduction of 81.25% (6/32) in the total number of internal jugular vein white compressions.*

CONCLUSIONS: *Our results suggest that RIMA decompression method may be useful to restore the drainage of internal jugular veins when a white compression occurs. Considering the novelty of this work and the total absence of scientific similar works able to confirm this data, it is necessary to continue these studies in order to improve the management of this venous hemodynamic condition.*

KEY WORDS: Chiropractic RIMA manipulation, Internal jugular vein compression, Venous Compression syndrome

Introduction

In the last years, scientific literature highlighted Venous Compression Syndrome of internal jugular veins in symptomatic or asymptomatic subjects, either on supine or upright position^{1,2}. Many different conditions (postural, muscular, fascial, anatomical or bone anomalies) may cause VCS.

After Echo Color Doppler (ECD), we defined: "Physiological internal jugular vein flow" (N) the cross area more than 6.0 mm² without blood block or reflux. "White compression" (W) the internal jugular vein flow block by fully compression. Fig. 1 "Black compression" (B) the internal jugular vein flow reduction (cross area less than 6.0 mm²) by severe compression. "White-Black compression" (WB) the intermittent internal jugular vein flow, only during deglutition or postural maneuvers.

Methods

In our preliminary study, we enrolled 26 subjects with at least one jugular vein with "white compression" in frontal neck position (defined "neutral position"), either in clino- either in ortho-static position. All subjects were assessed by ECD before and after manipulative treatment. (Figs 1, 2)

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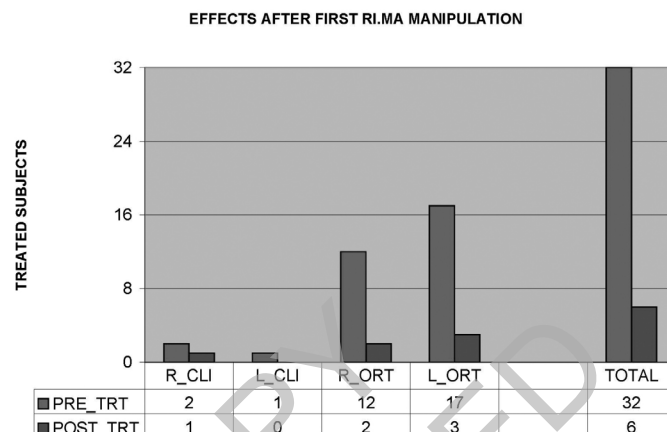
Fig. 1: ECD before treatment. Red arrow: white compression of left internal jugular vein in J2.



Fig. 2: ECD after treatment. Red arrow: restored physiological flow in left internal jugular vein in J2.

We treated the subjects' cervical vertebrae either in clino- either in ortho-static position on weekly manipulation. This new manipulative procedure (named RIMA® by the acronym Ricci's Manipulation) is a decompression method developed by chiropractic and osteopathic revised Palmer, Sutherland and Makenzie techniques for cervical vertebrae treatment.³ Domenico Ricci M.D. (Bari – Italy) developed this full inclusive method after 30 years of manipulation practice. The manipulative procedure consists in then maneuvers: first six maneuvers for realignment of cervical vertebrae, and for the opening of

TABLE I - After first RIMA procedure we had a reduction of 81.25% (6/32) in the total number of internal jugular vein white compressions.



Legend

R_CLI = right clino-static jugular veins;
 L_CLI = left clino-static
 R_ORT = right ortho-static jugular veins.
 L_ORT = left ortho-static jugular veins.
 PRE_TRT = before treatment.
 POST_TRT = after treatment.

foramen magnum are done in supine position. Other two maneuvers for treatment of C1-C2 are done in prone position. The last two for realignment of cervical vertebrae are done in upright position. All these adjustments consist in rotation and flexion movements of cervical vertebrae and cervical muscles manipulations.

Results

In our sample we had 11 male plus 15 female aged 48 ± 14 (from a minimum of 21 and maximum of 84 years, with a median of 48 and a mode of 44 years). Sixteen subjects were symptomatic, and 10 were asymptomatic.

After the first RIMA procedure, we had effects showed in table I. Data did not show significant difference after first RIMA procedure between symptomatic and asymptomatic subjects with internal jugular vein white compressions (Table I).

Discussion

Neck venous compression syndrome is a new hemodynamic condition that may promote vascular pathologies. Many muscles can be involved in such venous compression: for example the scalene muscle could entrap

the J1 terminal segment of the internal jugular vein, the omohyoid muscle could entrap the J2 medium segment of the internal jugular vein, while the sternomastoid muscle can compress the J3 proximal segment of the internal jugular vein. Some papers demonstrated by RMI this condition in symptomatic or asymptomatic subjects ². Up today, only surgical intervention procedure were suggested to solve these hemodynamic condition, but without significant results ⁴. We suppose that all these compressions may be caused by the misalignment of cervical vertebrae with stretching of the muscles and aponeurosis with effect on neck veins. This intermittent compression block of vertebral and jugular veins could be one of the multifactorial causes of the clinical conditions in these subjects. These subjects frequently had head and neck trauma.

Conclusions

Our results suggest that RIMA decompression method may be useful to restore the drainage of internal jugular veins when a white compression occurs. This preliminary study stimulate to further researches on these venous hemodynamic condition. Considering the novelty of this work and the total absence of scientific similar works able to confirm this data, it is necessary to continue these studies in order to improve the clinical management of these subjects and to perform therapeutic strategies based on venous decompression treatments both surgical that manipulatives.

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Riassunto

OBIETTIVO: abbiamo studiato gli effetti emodinamici sulla Sindrome Compressiva Venosa delle vene giugulari interne, dopo il trattamento non invasivo di manipolazioni cervicali RIMA (Ricci's manipulation).

METODO: Sono stati arruolati 26 soggetti con la compressione completa (white compression) di almeno una vena giugulare nella posizione frontale del viso, valutati con EcoColorDoppler.

RISULTATI: dopo la prima seduta di manipolazione RIMA abbiamo avuto una riduzione del 81,25% (6/32) del numero totale di compressioni white delle vene giugulari interna.

CONCLUSIONI: i nostri risultati suggeriscono che il metodo di decompressione RIMA può essere utile per ripristinare il drenaggio delle vene giugulari interne quando si verifica una white compression. Considerando la novità di questo lavoro e la totale assenza di lavori scientifici simili in grado di confermare questi dati, è necessario continuare questi studi per migliorare la comprensione di questa condizione emodinamica venosa.

References

1. Mandolesi S, Manconi E, Niglio T, d'Alessandro A, Orsini A, Mandolesi D, Fedele F: *Incidence of anatomical compression of the internal jugular veins with full block of their flow in patients with chronic cerebro-spinal venous insufficiency and multiple sclerosis*. Torino: Minerva Medica 21st Eurochap-IUA 2013.
2. Radak D: *Incidence and distribution of extravascular compression of extracranial venous pathway in patients with chronic cerebrospinal venous insufficiency and multiple sclerosis*, Phlebology Online First, May 9, 2013.
3. Palmer DD: *The Chiropractor's Adjuster: A Textbook of the Science, Art and Philosophy of Chiropractic for Students and Practitioners*. Portland, OR 1910. Portland Printing House
4. Simka M, Majewski E, Fortuna M, Zaniewski M: *Internal jugular vein entrapment in a multiple sclerosis patient*. Case Rep Surg. , 2012; 2012:293568.