Case Reports

Upper Cervical Manipulation Combined with Mobilization for the Treatment of Atlantoaxial Osteoarthritis: A Report of 10 Cases

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Abstract

Objective: This study presents the outcomes of patients with idiopathic degenerative and posttraumatic atlantoaxial osteoarthritis who were treated with upper cervical manipulation in combination with mobilization device therapy.
Clinical Features: A retrospective case review of 10 patients who were diagnosed with either degenerative or posttraumatic atlantoaxial arthritis based on histories, clinical symptoms, physical examination, and radiographic presentations was conducted at a multidisciplinary integrated clinic that used both chiropractic and orthopedic services. All 10 patients selected for this series were treated with a combination of upper cervical manipulation and mechanical mobilization device therapy. Outcome measures were collected at baseline and at the end of the treatment period. Assessments were measured using patients' self-report of pain using a numeric pain scale (NPS), physical examination, and radiologic changes. Average premanipulative NPS was 8.6 (range, 7-10), which was improved to a mean NPS of 2.6 (range, 0-7) at posttreatment follow-up. Mean rotation of C1-C2 at the end of treatment was improved from 28° (±3.1) to 52° (±4.5). Restoration of joint space was observed in 6 patients. Overall clinical improvement was described as "good" or "excellent" in about 80% of patients. Clinical improvements in pain and range of motion were seen in 80% and 90% of patients, respectively.
Conclusion: Chiropractic management of atlantoaxial osteoarthritis yielded favorable outcomes for these 10 patients. (J Manipulative Physiol Ther 2011;34:131-137)
Key Indexing Terms: *Atlantoaxial Joint; Osteoarthritis; Intractable Pain; Manipulation; Chiropractic*

Atlantoaxial osteoarthritis is an uncommon clinical condition that has been recognized as a distinct cause of severe neck pain and reduction of range of motion (ROM) between the atlas and axis.[1,2] It has a prevalence between 4% and 18%.[2,3] Commonly, idiopathic degenerative atlantoaxial osteoarthritis occurs in the elderly; however, posttraumatic atlantoaxial osteoarthritis occurs more often in younger patients. A search of the literature revealed only a few reports on the diagnosis and the treatment of this pathology. Conservative treatment was the most common approach,[4,5] and only a few cases were reported that were treated with surgery.[6,7] Conservative treatment consists of nonsteroidal anti-inflammatory drugs, soft collar, and gentle traction, which can reduce pain to a tolerable level. Steroid injections into the arthritic joint may be successful for a limited period.[8] No reports of chiropractic manipulative therapy for the management of atlantoaxial osteoarthritis were found. The purpose of this case series was to report the results of upper cervical manipulation combined with auxiliary spine instrument adjuster therapy used as a conservative treatment of both degenerative and posttraumatic atlantoaxial osteoarthritis.

Case Series

A retrospective case review of 10 patients (5 men, 5 women) with neck pain and atlantoaxial osteoarthritis who were managed at our institution for the previous 5

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Table 1. *Demographic information, pretreatment conditions, and posttreatment results*

Case	Sex, age (y) at manipulation	Duration of symptoms before manipulation (yr + mo)	History of neck injury before manipulation	Neurovascular pathology before manipulation	Radiographic findings before manipulation	Side	Length of treatment (mo)	Duration of follow-up (yr + mo)	Results	
									Relief of pain	Radiologic improvement
1	M, 37	0 + 1	+	–	L lat C1-C2 fusion, L lat masses	Left	1.5	2 + 9	Excellent	Partial
2	F, 70	0 + 2	–	–	R lat C1-C2 fusion, R lat masses; osteoarthritis	Right	18	0 + 10	Fair	Partial
3	M, 46	0 + 2	+	–	L lat C1-C2 fusion; L lat masses	Left	1	6 + 6	Good	Partial
4	M, 67	1 + 6	–	–	L lat C1-C2 fusion, L lat masses; osteoarthritis	Left	6	1 + 10	Poor	Partial
5	M, 54	0 + 9	–	–	R lat C1-C2 fusion; R lat masses; osteoarthritis	Right	3	4 + 1	Poor	None
6	F, 42	0 + 10	+	–	L lat C1-C2 fusion; L lat masses;	Left	1.3	7 + 1	Excellent	Partial
7	F, 43	0 + 1	+	–	L lat C1-C2 fusion; L lat masses	Left	0.6	2 + 2	Excellent	Full
8	F, 32	0 + 3	+	–	R lat C1-C2 fusion; R lat masses	Right	0.5	1 + 9	Excellent	Partial
9	F, 63	2 + 0	–	–	L lat C1-C2 fusion; L lat masses; osteoarthritis	Left	6	3 + 8	Good	Partial
10	M, 46	2 + 0	+	–	L lat C1-C2 fusion; L lat masses; osteoarthritis	Left	2	2 + 3	Good	Partial

M, male; *F*, female; *L*, left; *lat*, lateral; *R*, right.

years with the upper cervical manipulation combined with an auxiliary spine adjuster was conducted. The average age of the patients was 50 years (range, 32-70 years). Six patients had a history of head or neck injuries. The average age of these patients was below 50 years. Four patients had no noticeable trauma, although radiographic evidence of atlantoaxial osteoarthritis was presented. The chief complaint of these patients was unilateral neck pain occurring with the slightest head rotation to the side of the lesion. The ROM between C1 and C2 was limited, especially in the plane of axial rotation. The physical examination usually revealed tenderness at the C2 level. Neurologic status was also evaluated to exclude any signs of neurologic pathology. The diagnosis of atlantoaxial osteoarthritis was confirmed by plain radiographs (anterior/posterior, open mouth, and lateral views) taken before treatment. Computed tomography (CT) scans were ordered in 4 patients to rule out tumor, fractures, upper cervical deformities, rheumatoid arthritis, and other postoperative abnormalities. Transcutaneous Doppler ultrasound was also performed to evaluate the condition of the vertebral arteries. Neck pain was evaluated before and after manipulation using the numeric pain scale (NPS) in all patients (NPS: 0, no pain; 10, maximum pain).

Chiropractic manipulation was only provided to patients who presented with no neurovascular deficits and had no acute injuries. The chiropractic manipulative technique consisted of high-velocity, low-amplitude (HVLA) thrust to the upper cervical spine. The frequency and intensity of cervical manipulation was delivered on a case-by-case basis, largely depending on patients' tolerance to the manipulation. The age of the patient, cause, duration, and course of the arthritis were all taken into consideration when setting up the frequency and intensity of manipulation. The following