

Clinical Note

Upper Cervical Adjustments May Improve Mental Function

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Summary. This report describes abrupt improvement in mental and motor deficits in a 14-year-old girl after the initiation of specific upper cervical chiropractic care. Cessation of this care for several months was associated with a return to the patient's previous condition. Repeat manipulation was followed by recovery of the patient to the level of her previous improvement. This cycle of regression to pretreatment condition in the absence of care followed by recovery after specific upper cervical care has occurred three times to date.

Key words: Mental retardation – Chiropractic – Manipulation – Attention deficits – Atlanto-occipital joint – Atlanto-axial joint.

Periodic evaluations of a 14-year-old girl by her school psychologist were conducted between March 1984 and October 1989. The Leiter Performance Scale indicated severe mental deficits, and the "Vine land Adaptive Behavioral Scale indicated social adaptation within the trainable mentally handicapped range. Evaluations were most recently performed prior to initial chiropractic care in 1989. Informally, her teachers reported occasional moments of

increased alertness and performance of tasks she normally did not perform.

Medical history

The birth of this patient followed an uncomplicated pregnancy. Apgar scores were seven after 1 min and nine after 5 min., well within normal ranges.

Speech problems were first noted at 30 months of age. In November 1978, the patient was admitted into an Early Childhood Education Program because of her deficiencies in speech and social development. She had developed behavioral problems by November 1979. She was evaluated by a neurologist who told the parents she would outgrow these problems by the age of 6 years. An electroencephalogram (EEG) performed in September 1980 was reported as normal.

The patient was enrolled in kindergarten in September 1981. She was transferred to a behavioral disability class in the next semester because of inattention in class and poor test scores. Initially, it was hoped the smaller class and more intense instruction would correct the inattention and test scores would improve. In September 1982, the patient's teacher reported she was having "staring spells". In January 1983 "slight abnormalities" were noted in a sleeping EEG. In February 1983 the diagnosis of

psychomotor seizures was presented to the family. Tegretol and Dilantin were prescribed without positive results. By August 1983, the patient had been weaned off both medications. At this time the patient's neurologist felt that there was a "degenerative neurological disorder," and she was subsequently referred to the Mayo Clinic in Rochester, Minnesota. By January 1984, she had twice been examined at the Mayo Clinic without further definition except for acknowledgment that the sleeping EEG continued to be slightly abnormal. In May 1984, the patient was transferred from a behavioral disability class to a trainable mentally handicapped class.

In August 1985, she underwent a week-long evaluation at the National Institute of Health in Bethesda, Md. Again, all was normal (including MRI and various serum studies) except for slightly abnormal EEG. By July 1987, her EEG had improved and a degenerative neurological process was ruled out.

In October 1988 and August 1989, this patient was examined at the Children's Hospital in Milwaukee. All findings were negative.

Chiropractic care

At the Palmer Public Clinic, interviews conducted in October 1989 with the parents and examination of available written records revealed a 13-year-old female with a tested verbal ability at approximately 3 years of age. The patient reportedly spent most of every day sitting and staring into space while listening to the radio. She never made contact with others.

The patient tended to stay near her family and followed behind them when they went walking. She spoke very rarely, using single words, always nouns,

which were occasionally appropriate and often echolalic. She often mumbled incoherently to herself. Given several choices, she always took the last choice offered.

The patient did not use her left arm or hand in situations where normal children would. In retrieving objects or grasping a swing while swinging she used only her right arm. The left arm did not swing appropriately as she walked, hanging flaccidly at her side while her right arm swung appropriately. We found adequate grip strength in both hands, with the right hand stronger than the left.

Orthopedic and neurologic evaluation was difficult due to patient noncompliance. The supine leg check showed leg length inequality, with the right leg 2 cm shorter. X-rays revealed osseous misalignment at the cranio-vertebral junction, with left atlas laterality and posterior rotation. This was accompanied by coupled motion of the inferior cervical vertebrae into the left frontal plane. Skull rotation was into the right frontal plane. Postural distortion was consistent with unilateral right extensor muscle hypertonicity.

Specific upper cervical adjustments using National Upper Cervical Chiropractic Association (NUCCA) procedures were given on 16, 17, and 19 October 1989. Leg length inequality and postural distortion were corrected after the third adjustment. Post manipulation X-rays on 19 October 1989 revealed a proportional 90% correction of the previous cranio-vertebral misalignment.

The patient began to make eye contact. On 19 October 1989 she returned with her parents to her home in Wisconsin. Within 2 weeks, the patient was forming sentences with personal

pronouns, verbs, adjectives and nouns. The patient began standing straighter. She used her left arm in activities and swung her left arm normally during walking. These changes persisted for about 6 weeks, when her condition again began to deteriorate.

The patient was adjusted by a succession of three chiropractors near her home utilizing three techniques, different from the technique we employed. None of their interventions was effective. By June 1990, the patient's condition was back to its previous baseline.

On 6 August 1990, the patient was again brought to our clinic. Upper cervical radiographs were again taken and specific upper cervical adjustment delivered. Radiographs obtained immediately after the adjustment revealed a proportional 95% correction. Immediately, the patient responded with eye contact, full sentences, and appropriate speech which she initiated. Left arm use was again regained. She stood straighter and walked more symmetrically. For the first time, she engaged in family conversation and activities. When offered a choice, her decision was truly a decision and not agreement or a repeat of the last choice given.

The family returned home and these changes persisted for about 6 weeks before the patient began to return to her former condition. By the time the patient was next adjusted by a chiropractor using NUCCA procedures, in late June of 1991, she had lost much of the use of her left arm and was no longer speaking in sentences. Specific upper cervical adjustment again restored use of the left arm and ability to speak in complete sentences. As of 28 August 1991, the patient had not been again

adjusted and no longer spoke in complete sentences, although active left arm use persisted.

Discussion

Interpretation of these results is difficult, because there is a correlation between upper cervical adjustments and apparent improvement in mental function. High correlation does not necessarily indicate a causative relationship,

Perhaps the mechanism that might most assist in explaining neural dysfunction accompanying upper cervical misalignments is altered input to the central nervous system from neck joint capsule receptors [1]. Some chiropractors who treat the upper cervical spine believe that upper cervical misalignments may alter neural function by causing longitudinal and transverse traction on the upper cervical spine and brain stem or on the upper cervical spine alone. Even in cases where stretching is not pathological, stretching of axons decreases their diameter. Conduction velocity decreases as fiber diameter is decreased [2]. Sufficient reduction of axon diameter completely blocks the transmission of nerve impulses.

References

1. Schwartz IL, Siegel GJ (1985) Excitation, conduction, and transmission of the nerve impulse. In: West JB (ed) *Best and Taylor's physiological basis of medical practice*, 11 th edn, chap 3. Williams & Wilkins, Baltimore, pp 28-57
2. Wyke B (1979) Neurology of the cervical spinal joints. *Physiotherapy* 65:72-76