Dynamic Chiropractic

DIAGNOSIS & DIAGNOSTIC EQUIP

# Neurogenic Spasmodic Torticollis

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I would like to share an experience that this writer feels is incredible in the annals of medical and chiropractic history.

It concerns a 15-year-old, male high school student who is an athletic trainer for the high school sports program. M.L. was attacked by a dog on March 24, 1989 that caused him to fall, striking the back of his head on a sewer-plate. This was followed by three additional accidents resulting in hyperextension/hyperflexion injuries to his neck. Within a period of two months the patient experienced accumulated trauma syndrome, (definition: disorders of the musculoskeletal and nervous systems which may be aggravated by repetitive motions or exertions, or by sustained postures), which, ultimately resulted in severe involuntary movements of his head. His head rotated left to right 80 times a minute, 18 to 20 hours a day, with cessation during sleep. Due to the nature of his competitive spirit and because he did not experience severe neck pain, he did not report to his parents the several subsequent injuries to his neck after his brain concussion.

His parents brought him to a hospital in New Orleans where, for about two and a half weeks, he underwent MRI, cat scan, x-rays, blood work, and complete neurological testing that, according to his parents, were all negative.

During his stay at the hospital he was in ICU where his treatment consisted of a variety of medications for epilepsy. The treatment for this diagnosis was ineffective and was ultimately ruled out.

Doctors at the first hospital sent M.L. by ambulance to a medical center for an electroencephalogram which was negative, and video monitoring which showed movement artifacts.

The following is the electroencephalogram report from the medical center:

Electroencephalogram report and videotape monitoring:

Approximately two hours of simultaneous EEG and videotape monitoring were performed. The patient is maintained on dilantin and valproic acid. A baseline EEG is reviewed, and a video tape of his clinical episodes was examined. On his EEG, the waking posterior background is a 8-9 cycle per second, symmetrical, reactive alpha with some superimposed theta and delta activity symmetrically, within normal limits for age. Photic stimulation does not alter the record. Sleep is not obtained, hyperventilation was not accomplished. Throughout the baseline EEG there were multiple episodes of unusual motor activity: Matthew would turn his head rapidly from side-to-side without associated limb movements, eye movements, injury, incontinence, or obvious impairment of alertness. He was able to communicate effectively with the technician and physician in the laboratory during these episodes. The EEG alteration during these episodes consists of high amplitude, two cycle per second, peaked slow waves that appear to be entirely generated by movement artifact. The posterior alpha rhythm continues until the beginning of these episodes and re-emerges immediately following them. There is no slowing or alteration in background following

these episodes. On three occasions, these episodes were interrupted by tactile stimulation: on one occasion a pinch stopped the episodes, and on two other occasions a physician's forceable turning of the head to the left interrupted the episodes.

Interpretation and Clinical Correlation:

Normal EEG background. Apparent pseudoseizures or some other variety of abnormal movement were documented. There are no epileptiform discharges on the EEG, and changes in the EEG during the episodes of head shaking appear to be entirely movement artifact.

It was concluded that this problem was psychological and he was diagnosed as suffering from some type of emotional trauma. Doctors at the first hospital then transferred him to a psychiatric hospital. During the 48 hours in the mental institution, he was heavily medicated with sedative drugs, in an effort to try to stop the involuntary head movements. This was done in an unsuccessful effort to produce a patient who could perform in psychological testing.

After much anguish and no results from all the medical facilities, the mother decided that she would call a doctor of chiropractic.

M.L. is a 15-year-old male whose parents presented him on Wednesday, June 7, with severe, involuntary, rotary head movements; right arm and leg tics, associated with severe headache; pain in right eye, neck, mid and low back, and knee; and edema of the right arm. He had to be supported under his arms by both parents when he entered the clinic. He needed assistance for all normal functions. M.L.'s mother said he had lost approximately 17 pounds. He had deteriorated dramatically while under medical care.

A-P x-ray of the upper cervicals revealed a severe right atlas laterality in its relation to the axis, as seen in the picture of the x-ray. X-rays of the thoracic and lumbar spine presented subluxations associated with a complaint of pain by the patient in these areas. During the course of examination the application of pressure on the right atlas stopped the involuntary head movement immediately. When pressure to the right atlas was discontinued, the involuntary head movement started immediately. This was a very significant clinical sign because pressure on the transverse process of the atlas ring corrected the signals to the accessory nerve XI and stopped the neurogenic spasms of the sternocleidomastoideus muscle.

After explaining my findings to the parents and the patient, I permitted the parents to attend this writer's adjustment of the cervical, thoracic and lumbar spine of the patient.

A right atlas break technic was performed, and in 1-1/2 seconds all involuntary movements stopped -- obviously, to the amazement and joy of the patient and parents.

Neurogenic torticollis is documented to be due to pressure or irritation on the accessory nerve XI. This nerve is a motor nerve consisting of two components -- spinal and cranial. In this case, a spasmodic neurogenic torticollis, the nerve was not able to send signals to the SCM and the trapezius properly, both associated with the upper five cervical segments that were misaligned.

Grey's Anatomy:

Grey's Anatomy also states the fibers pass through the lateral funiculus, emerge on the surface, and join each other seriatim as they follow up the cord between the ligamentum denticulum and the dorsal outlets of the spinal nerves. The nerve passes through the foramen magnum into the cranial cavity, crosses the occipital bone to the jugular notch, and penetrates the dura mater over the jugular bulb. It passes through the jugular foramen lying in the same sheath of dura as the

vagus, but separated from it by a fold of the arachnoid.

In the jugular foramen, it interchanges fibers with the cranial part, or joins it for a short distance and separates from it again. At its exit from the foramen, it turns backward, lying in front of the internal jugular vein in two-thirds and behind in one-third of the bodies. It passes posterior to the stylohyoideus and digastricus to the upper part of the sternocleidomastoideus, which it pierces, and then courses obliquely downward across the posterior triangle of the neck to the anterior border of the trapezius. In the posterior triangle it is covered only by the outer investing layer of deep fascia, the superficial fascia, and the skin. It communicates with the second, third and fourth cervical nerves, and with a plexiform arrangement continues on the deep surface of the trapezius almost to its lower border. Experimental observations with monkeys (Corbin and Harrison '38) indicate that the communications with the cervical nerves carry proprioceptive sensory fibers from cells in the dorsal root ganglia of the spinal nerves.

The nucleus of origin of the spinal part receives, either directly or indirectly, terminals and collaterals controlling voluntary movements from the pyramidal tracts and also from the aberrant pyramidal tracts. Certain of the latter are uncrossed, since the sternocleidomastoideus muscle turns the head to the opposite side.

The nucleus also receives fibers from head and eye turning mechanisms through the medial longitudinal fasciculus. It is probable that terminal and collaterals reach the nucleus, either directly or indirectly, from the rubrospinal and the vestibulospinal tracts. It is also connected indirectly with the spinal somatic sensory nerves by association fibers of the proper fasciculi.

Accessory Nerve XI

1. Components -- efferent -- special somatic (muscle).
2. Function -- movement of head and shoulder.
3. Central connection -- lateral column of upper cervical spinal cord.
4. Peripheral distribution -- spinal portion (branches to sternocleidomastoideus and trapezius muscle).

Dorland's Medical Dictionary defines:

Neurogenic torticollis -- due to pressure or irritation of the accessory nerve XI.

Spasmodic torticollis -- due to spasm of sternocleidomastoideus muscles occurring intermittently.

Neurogenic spasmodic torticollis is the descriptive diagnosis used for the involuntary movement seen in this case.

M.L. was again adjusted Thursday, June 8, and because he did so well, I recommended that he continue his treatment on Monday, June 12. After the second adjustment, Mrs. L. took M.L. back to the hospital and spoke to the neurologist, who also witnessed M.L.'s asymptomatic, stable condition. When Mrs. L. stated a doctor of chiropractic was responsible for the change in symptoms, the medical doctor refused to acknowledge this fact, nor did the medical doctor inquire about the diagnosis or therapy that was used.

On Sunday, June 11, 1989, at 12:00, I received a call that M.L. started his involuntary movements again. I met the family at the office and adjusted M.L. His motor-tic gradually stopped within 15 minutes.

M.L. was adjusted June 12, 13, 14, 16, 17, or five days that week, with no recurrence of his

involuntary head movements. He was then scheduled for three times weekly for two weeks, twice weekly for two weeks, once weekly for two weeks, then once every two weeks, which is his present schedule. The rationale for this procedure is as follows: Each time the manipulation of specific vertebrae is employed in the proper direction, we are training the vertebrae, ligamentous and tendinous tissues, to assume a more normal position, and as the structure is normalized the physiological function of all the surrounding tissues, including the neurological vascular, somatic and skeletal, become normal. This is part of the natural healing process. He has regained 9 of the 17 pounds he lost. M.L. has returned to his regular diet as well as a multiple vitamin and 1,000 mgs of vitamin C daily. M.L. is now back in school doing his regular routine classes and duties concerning the high school sports programs.

One A-P comparative radiograph of the atlanto-axial vertebrae was made on July 10, 1989, showing the atlas in a normal position in relationship to the axis and the lower cervical vertebrae.

Conclusion: In this case of spasmodic neurogenic torticollis, chiropractic treatment resulted in relief from involuntary head movements. Five days after commencing treatment, the patient had a relapse which was successfully reversed within 15 minutes of treatment. No further involuntary movements have occurred over a twelve-week period.


1. Grey's Anatomy
2. Brock, S. "Basis of Clinical Neurology." Baltimore 1952.
3. Dejong. R.N. "The Neurologic Exam." New York 1958.
4. Grinker, R.R.; Bucy, P.C. "Neurology Ed."
5. Sahs, A.L. Illinois 1959.


(Names of hospitals were omitted for legal reasons.)

The purpose of this documentation is to create an atmosphere of learning in the chiropractic profession and to encourage the DC to meet the challenge of the upper motor neuron lesion. This good diagnostic technic and strong principles of practice was based on the type of anatomical and physiological background encouraged by the leaders in our profession.

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