Syringomyelia and Arnold-Chiari Malformation Associated with Neck Pain and Left Arm Radiculopathy Treated with Spinal Manipulation

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BACKGROUND FROM DAN MURPHY

Arnold-Chiari Malformation is a developmental anomaly in which the cerebellar tonsils and portions of the posterior fossa structures herniate through the foramen magnum. In Arnold-Chiari Malformation Type-I, there is a downward displacement of the cerebellar tonsils through the foramen magnum and into the cervical spinal canal; yet, the fourth ventricle remains in a relatively normal position. Criteria for determining Arnold-Chiari Malformation Type-I are:

- Herniation of *both* cerebellar tonsils 3-5 mm below the plane of the foramen magnum
- Herniation of *one* cerebellar tonsil 5 mm or more below the foramen magnum

KEY POINTS FROM THIS ARTICLE:

1) This study reports successful results with the use of spinal manipulation in a case of neck pain and radiculopathy associated with syringomyelia and Arnold-Chiari malformation. The treatment in this case was exclusively spinal manipulation.

2) The "spinal manipulation was used to promote separation between the facet joint surfaces, enhance smooth gliding, promote joint gapping, elongate joint spaces, and stimulate mechanoreceptors and reduce pain pathways."

3) CASE:

- An 18-year-old female patient presented with left neck and arm pain after a motor vehicle collision 3 months prior.
- Her cervical spine MRI showed syringomyelia and an Arnold-Chiari Type-I malformation.
- She underwent 4 manipulative treatments in 2 weeks. By the end of the treatment plan and after a 1-month follow-up, she was asymptomatic "with complete resolution of mechanical and neurological symptoms."
- No adverse effects were noted and her outcome assessment score decreased from 56% to 0%.

4) "This case illustrates that spinal manipulation may be a useful adjunctive treatment procedure for spinal pain, even in the presence of syringomyelia and Chiari malformation, which may not necessarily be a contraindication to spinal manipulation, when performed by a skilled and well-trained physician." **[Key Point]**

5) "Current research supports spinal manipulation as an intervention in acute cervical pain and radiculopathy."

6) The recommended treatment for Arnold-Chiari Malformation Type-I with Syringomyelia is surgery intended to provide more space at the base of the skull and upper neck. [occipital craniotomy and atlas posterior arch laminectomy] However, this surgery "only provides stabilization of symptoms or modest improvement." In cases with moderate neck pain, scapulothoracic pain, headache and radiculopathy, surgical treatment is "ineffective and difficult."

7) "In our case, using spinal manipulation in a case of neck pain and radiculopathy with associated syringomyelia and Arnold-Chiari malformation had a successful outcome, showing that similar treatment should be considered and not necessarily contraindicated in such cases."

8) "It is important to enhance the awareness of clinicians regarding the utilization of spinal manipulation in the management of cases of syringomyelia and Chiari malformation."

9) [Spinal manipulation for Arnold-Chiari Malformation Type-I with Syringomyelia] "should be considered, as it is far less aggressive and does not carry the risk of possible disability that can be caused by surgery."