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The Dural Connection

By Warren Hammer, MS, DC, DABCO

A recent article in *Spine*¹ represents a major breakthrough for both the chiropractic and osteopathic professions. The article shows a direct attachment between a muscle and the central nervous system (dura mater). This information in *Spine* applies to upper cervical adjustments, sacro-occipital technique, craniosacral therapy, trigger point therapy, fascial release and deep massage, to mention a few.

The dura mater connects the occiput with the sacrococcygeal complex and has firm osseous attachments at the entire circumference of the foramen magnum, to the posterior bodies of the second and third cervical vertebrae and within the sacral canal at the level of second sacral segment at its anterior portion where the subdural space ends. The dura mater also has connections to the posterior longitudinal ligament.² The dura encloses the cerebrospinal fluid. The spinal nerves as they exit the vertebral foramen are covered by prolongations of the dural sheath which blend into the paravertebral fascia. Upledger and Vredevoogd² state that restrictions of motion at the occiput or sacrococcygeal complex, or at the posterior bodies of the second or third cervical vertebrae, explains a significant clinical relationship between upper cervical, head, and lower back pain.

The article in *Spine* by Hack et al.,¹ shows a newly discovered direct connection between an occipital muscle and the dorsal spinal dura. Both the rectus capitis posterior minor (RCPM) muscle and the posterior atlanto-occipital membrane attach from the posterior arch of the atlas to the occipital bone. In all 11 cadavers examined dense connective tissue (fascia) connected the RCPM muscle to the posterior atlanto-occipital (PAO) membrane and the PAO membrane was "fused to the spinal dura by numerous fine connective tissue elements."¹ Tension of the RCPM could explain dual drag or restriction of the pain sensitive dura. Cervical headaches and influences on the cerebrospinal fluid flow affecting our whole body are possible scenarios.

Recently Arnold Cianciulli, DC (a columnist for "DC") spent time with Dr. DaMadeian, inventor of the MRI. They observed cerebrospinal fluid flow on flow on MRI before and after a lateral break of the atlas. Before the adjustment there was a stasis of the cerebrospinal fluid; about a minute after the adjustment there was a significant increase in flow. Two chiropractors, Drs. Vincent and Carmen Esposito have been working with Dr. DaMadeian for a year on the study of the affects of spinal adjustments on cerebrospinal fluid.

The release of the RCPM muscle is also another reason for the effectiveness of an atlas adjustment. This concept also explains Upledger's technique for release of the cranial base,² which is explained in the new soft tissue course, "Soft Tissue Alternatives -- Upper Extremity."

References

1. Hack GD, Koritzer RT, Robinson WL et al. Anatomic relation between the rectus capitus posterior minor muscle and the dura mater. Spine 1995; 20: 2484-2486.
2. Upledger JE, Vredevoogd JD. Craniosacral Therapy. Seattle, Washington: Eastland Press 1983.

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