

For Safety's Sake, If You Adjust C-1

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I recently read an article on the death of a Canadian patient as a result of a vertebral artery rupture, in relationship, possibly, to a chiropractic adjustment.^{1,2} I have written about this subject before, and I thought that it would be appropriate again to voice my concerns and opinions.

In my manual, *The Connection*, I made reference to the seeking phenomenon. Briefly, this refers to various spinal and extra-spinal segments seeking certain patterns. In the cervical spine, relative to my experiences, the C-1/C-2 articular is a supreme example of this seeking process. C-1 almost 99.9% of the time seeks a certain pattern in relation to C-2. I cannot explain why this occurs. Upon supine motion examination of C-1 on C-2, the following invariably is observed. C-1 seeks the right anterior and left posterior. This is observed regardless of whether hypo or hypermobile status is present. The right side of C-1 seeks the anterior, and the left side seeks the posterior direction. This means that there is already too much anterior stress to C-1 on the right and too much posterior stress upon C-1 on the left. In other words, C-1 is almost surely and always right anterior and left posterior, as determined by supine motion analysis. Therefore, there is tension stress upon C-1 on the left and right sides.

You can demonstrate this for your own satisfaction and realization by contacting C-1 posteriorly on the right and rotating to the left. If your patients are like mine, you will find that C-1 almost always rotates from left to right with more restriction than from right to left, whether hyper or hypomobile in classification. Often, the occiput reacts with restriction on the right going P to A, right to left, and lateral to medial. C-2 frequently restricts motion lateral to medial and infrequently in rotation right to left. The right side around C-1 can feel taut as a result; this can be interpreted as a needed region to adjust. Adjusting C-1 on the right with a contact on C-1 will only drive C-1 more anterior on the right, over-stressing the ligaments and vertebral artery.

There is great danger to vertebral arteries when adjusting C-1 on the right side in any way with a right-sided contact on the posterior arch or TP of C-1. It already is stressed in the anterior and right lateral to medial directions. Adjusting C-1 with a right posterior TP or arch contact will stress the neurovascular elements beyond safety.

There is also great danger to vertebral arteries when adjusting C-1 when one or both sides are hypermobile as determined by motion analysis. Still, most stress will be realized with a right sided adjustment to C-1 or C-2, if this mistake is made.

Why am I picking on C-1? I am a full-spine and extra-spinal adjuster. Yet, I realize through practice and literature review that C-1/C-2 has most potential for movement than any other cervical joint complex. Some authors state that the C-1/C-2 articulation is responsible for 50% of the rotation of the cervical spine. This is why it is most vulnerable to vertebral artery injury. C-2 also can pose a danger because it seeks the anterior direction on the right side, almost as much as C-1. It fixates on the right

side routinely as a lateral flexion restriction, which can appear to be a rotation restriction.

I would recommend that you begin motion palpating the cervical spine in the supine position, and I am sure that you will observe right anterior seeking and left posterior seeking with C-1 as it rotates upon C-2. This is done with your palpating contacts at the posterior and anterior locations in the cervical spine. You should notice also the common right anterior seeking process at the C-2 level.

To verify this finding, check C-1 from anterior to posterior in the supine position. If you exert A to P pressure upon C-1 on the left side, invariably; you will find little restriction. If you exert A to P pressure upon C-1 on the right, you find invariably more restriction, as compared with the left side. This is because C-1 on the right is seeking the anterior direction. If you exert further pressure on the right from posterior to anterior with a right sided rotational adjustment, you will increase your susceptibility to creating a vertebral artery injury.

I recommend, for the safety of your clients that you do not adjust C-1 on the right side with a right-sided posterior contact. If a right sided upper cervical fixation does exist, it would involve, most probably, the following adjustment corrections:

1) C-1 right anterior to posterior, not posterior to anterior; 2) Occiput posterior to anterior and lateral to medial; 3) C-2 right lateral to medial, right anterior to posterior; and 4) C-2 right posterior to anterior in a fewer percentage of cases will be appropriate.

For safety's sake, if you must adjust C-1, adjust it from the left side with a posterior left contact. The correction will be for rotation to the right and/or some lateral flexion restriction, lateral to medial. C-2 usually is adjusted as a right lateral flexion restriction, if fixated; and occasionally for rotation right to left. When C-1 is adjusted from the left side, a simultaneous right-sided contact can be made to pull C-1 on the right anterior to posterior. The same applies to C-2.

What I have presented is based solely upon my experiences with supine motion and static palpation procedures. Like everyone else who practices, experiences include successes and failures. Failures are hard to look at and be objective about. Fortunately, I have not had any lawsuits, nor have I seriously injured anyone. However, I have seen warning signs: post-adjustment dizziness, nausea and disorientation. These negative signs always were associated with adjusting C-1 and C-2 on the right side for rotation or with adjusting hypermobile segments. I do believe that mistakes are more related to poor choices in relation to the selection of cervical levels for adjustment and directions of applied force with adjustments. This could pertain to regular adjusting or low-force adjustments. Naturally, there are potentiating variable factors involved, such as connective tissue strength, affected by nutritional and hormone status; inflammatory potential, and weather changes.

References

1. Chiropractic acquitted in Canada. *DC* Nov 2, 1998.
2. Clarification on patient death in Canada. *DC* Jan. 12, 1999.

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