ORTHOSPINOLOGY

DISCOVER AT

DeCubellis Family Chiropractic

Upper Cervical Care & Blood Pressure

Orthospinology, a specialized form of upper cervical chiropractic care, focuses on precise adjustments to the atlas (C1) vertebra, which is located at the top of the spine. This approach may influence blood pressure regulation by impacting the nervous system and vascular function. Here's a detailed explanation of how it may affect blood pressure, considering both neurological and vascular factors:

Neurological Influence

1. **Autonomic Nervous System (ANS) Regulation:** The upper cervical region houses critical structures of the brainstem, specifically the **medulla oblongata**, which is directly involved in the regulation of autonomic nervous functions, including heart rate and blood pressure. Misalignments in the atlas can cause irritation or pressure on the brainstem, potentially disrupting the balance between the sympathetic ("fight or flight") and parasympathetic ("rest and digest") nervous systems.
    - **Sympathetic Overactivity:** Misalignment may lead to excessive sympathetic activity, which causes

vasoconstriction (narrowing of blood vessels), increased heart rate, and elevated blood pressure.

- **Parasympathetic Stimulation:** Correcting atlas misalignment may restore proper parasympathetic function, reducing sympathetic overdrive, leading to lower blood pressure through relaxation of blood vessels and normalization of heart rate.

2. A 2007 pilot study by Bakris et al., published in the *Journal of Human Hypertension*, found that upper cervical chiropractic adjustments resulted in significant reductions in both systolic and diastolic blood pressure in patients with high blood pressure. The results of this study suggest a potential neurological link between atlas misalignment and blood pressure regulation .

Vascular Influence

2. **Cervical Spine's Impact on Blood Flow:** The atlas vertebra is closely associated with **vertebral arteries**, which supply blood to the brain. Misalignment in this region may impinge on these arteries, leading to altered blood flow to the brain and potentially contributing to vascular dysregulation.
    - **Vertebral Arterial Influence:** Some research suggests that an atlas misalignment can interfere with the flow of blood through the vertebral arteries, possibly leading to compensatory mechanisms that raise blood pressure to maintain adequate cerebral perfusion.

    - **Cerebral Perfusion Pressure:** When the upper cervical spine is aligned properly, blood flow to the brain and the regulation of cerebral perfusion pressure (which influences overall blood pressure) may normalize.
3. **Baroreceptor Function:** Baroreceptors, specialized cells located in the carotid sinuses and aortic arch, play a key role in sensing changes in blood pressure and transmitting this information to the brainstem for regulation. The upper cervical region, particularly the C1-C2 complex, may indirectly affect the function of these baroreceptors through its proximity to the carotid arteries.
    - **Baroreflex Sensitivity:** By restoring proper alignment, orthospinology may help restore normal baroreceptor function, which can help the body maintain stable blood pressure. Some studies suggest that cervical adjustments may enhance baroreflex sensitivity, leading to improved autonomic regulation of blood pressure .

Mechanisms of Impact

- **Spinal Cord and Brainstem Pressure Relief:** Adjusting the atlas may reduce mechanical stress on the brainstem and upper spinal cord, enhancing its ability to regulate autonomic cardiovascular responses.
- **Improved Neurological Signaling:** Restoring the alignment of the atlas could reduce interference in the communication between the

brain and the heart, improving the body's natural ability to regulate blood pressure.

Scientific Evidence

- **Bakris Study (2007):** This landmark study found that patients who received upper cervical chiropractic adjustments experienced an average reduction of 17 mmHg in systolic blood pressure and 10 mmHg in diastolic blood pressure—comparable to taking two blood pressure medications simultaneously. This study indicates that atlas adjustments could have a significant effect on hypertensive patients .
- **Dickholtz Study:** A study by chiropractor Marshall Dickholtz Sr. also demonstrated positive effects on blood pressure after upper cervical adjustments, further supporting the idea that cervical spine alignment plays a role in regulating vascular and neurological systems that control blood pressure .

Conclusion

Orthospinology may improve blood pressure regulation through both neurological and vascular mechanisms. By correcting atlas misalignment, it potentially restores proper autonomic nervous system balance and reduces vascular resistance. Scientific studies, while limited, show promising results, suggesting that upper cervical adjustments could be an effective non-pharmacological intervention for managing hypertension. However, more research is needed to fully understand the underlying mechanisms and long-term