Clinical Integration of Osteopathic Manipulative Medicine

Internal Medicine/Family Medicine – Osteopathic Considerations in Patients with Hypertension

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Introduction: Hypertension (HTN) is one of the most common chronic diseases affecting adults in the United States. Treatment of hypertension is the number one most common reason for office visits in non-pregnant adults as well as for the use of prescription medications. HTN is a primary risk factor for myocardial infarction, stroke, renal failure, and death if not treated and controlled.

Based on the JNC 8 in 2013, HTN is defined under the following parameters in two or more visits after the initial screening:

- Normal BP is systolic <120 mmHg and diastolic <80 mmHg.
- Prehypertension is defined as 120-139 systolic or 80-90 diastolic.
- Stage 1 HTN: systolic of 140-159 and diastolic at 90-99.
- Stage 2 HTN: systolic >160 and diastolic >100

HTN can be classified as either primary or secondary. Primary HTN is idiopathic, with no underlying cause. The pathogenesis of primary HTN is poorly understood. Secondary HTN is elevated blood pressure that is attributed to another medical condition. Examples of secondary HTN include pheochromocytoma, hyperaldosteronism, Cushing syndrome, thyroid disease, and renovascular disease.

Although an estimated 29 to 31% of adults in the U.S. are considered hypertensive, many patients are not properly controlled. Data from the NHANES surveys of 2005-2008 reported that only about half of those patients diagnosed with HTN are actually appropriately controlled, with control defined as BP <140/<90 mmHg.

Patient presentations:

- Asymptomatic – found on screening
- If BP is severely elevated patients can present with
  - Headache
  - Blurred vision
  - Dizziness
  - Nervousness/anxiety
  - Facial flushing

Differential diagnosis:

- Anxiety disorder
- Sleep apnea
- Cocaine-induced cardiomyopathy
- Hypertrophic cardiomyopathy
- Congestive heart failure and pulmonary edema
- Primary hyperaldosteronism
- Hyperthyroidism/thyroid storm
- Myocardial infarction
- Stroke
- Drug toxicity (amphetamine, phencyclidine)

**Clinical pearls and diagnostic tools:**

- Alcohol use, obesity, physical inactivity, vitamin D deficiency, and excess sodium intake are all factors that increase risk of developing hypertension
- More common and often more severe in black patients
- Hypertension is the major risk factor for premature cardiovascular disease. It is more common than tobacco use, DM, and dyslipidemia.
- Major complications of untreated or uncontrolled HTN include: myocardial infarction, intracerebral hemorrhage, left ventricular hypertrophy with associated enhanced incidence of congestive heart failure, chronic kidney disease/end stage renal failure

**OMM Integration:** Many hypertensive patients, despite pharmacologic therapy, are inadequately controlled. This may be due to a number of factors including noncompliance and lack of adherence to long-term therapy, especially when patients are asymptomatic. Other potential reasons for poor control include limited access to healthcare and adverse reactions to antihypertensive agents. Osteopathic Manipulative Therapy (OMT) can be an important tool in the arsenal to achieve blood pressure control, especially in addition to pharmacotherapeutic agents.

While the pathogenesis of essential hypertension is incompletely understood, several factors have been implicated. Increased sympathetic neural activity is one of the factors that can be targeted in using OMT as treatment in addition to medications. OMT can be used to normalize the sympathetic outflow and remove restriction to the parasympathetic nervous system. Sympathetic innervation to the heart is through the stellate ganglia from T1-T5. The effect of sympathetic activity on the peripheral circulation is vasoconstriction, and an increase in total peripheral resistance. Another consideration in treatment of hypertensive patients with OMM is targeting the kidneys and adrenals, which both play a role in maintenance of BP.

Many different osteopathic techniques can be employed to normalize the autonomic nervous system (ANS). In a study done by Roman Schneider, cranio-sacral treatment was performed on patients who were monitored for the effects of OMT on the ANS. The results of blood pressure regulation on the subjects who received OMT showed a decrease of 16.8% in systolic mean value and 10.3% decrease in the diastolic mean value versus the control group. This study demonstrates there is an effect on balancing the ANS, which indicated a shift from the sympathetic to parasympathetic control.

Henley et al showed that treating patients with cervical myofascial can produce a strong enough vagal response to overcome sympathetic tone. Normalizing sympathetic tone can aid in reducing blood pressure, since the overall effect of sympathetic innervation on the circulation is vasoconstriction and increased TPR.
Osteopathic Structural Examination: A short-term study done by Johnston and Kelso showed there is an association between somatic dysfunction and the regulation of blood pressure. A specific pattern of segmental motion dysfunction was found at C6T2T6 using a standardized palpatory examination. This pattern was present repeatedly in a statistically significant number of subjects with a history of HTN. Other areas of somatic dysfunction that should be considered in patients with HTN include:

- Cranial Vault, examination of the CRI
- Occipital-atlantal joint – Vagal control of parasympathetic input to the heart
- Cervical Spine
- Thoracic Outlet
- Thoracic spine
- Ribs
- Chapman’s Points to the kidneys (T10-T11) and adrenals (T11-T12)

Possible Treatments Options:

- Rib Raising
- Cranio-sacral membrane and fluid balancing
- C2-C3
- Cervical myofascial
- Atlas adjustment
- CV4
- Parietal lift
- Posterior Chapman’s points to the adrenals (T11-T12)
- Thoracolumbar junction

Evidence Based Medicine Articles


Citations:


