Chronic Pain Linked To Hypertension

The bad news just keeps coming for chronic pain sufferers. Not only is it difficult to find adequate treatments, but chronic pain has been linked to high rates of anxiety and depression as well. Recent research has even shown that chronic pain actually damages the brain and destroys brain cells. As if that weren't enough, chronic pain has now been linked to persistently high blood pressure - also known as hypertension - which of course is not a good thing.

Researchers have known for awhile that the systems that regulate blood pressure and pain are linked in some way. In healthy people, a higher resting blood pressure is associated with a decreased sensitivity to acute pain. In other words, if you’re blood pressure is high, you wouldn’t feel as much pain if someone stuck you with a pin. Scientists speculate that this link between the two systems is a way to restore normal arousal levels after a painful stimulus. The body responds, or is aroused, initially by pain, but then the pain signals are turned down so that the rest of the body’s systems can return to normal.

In people with chronic pain however, the relationship between the two systems is reversed. For a chronic pain sufferer, higher blood pressure levels have been associated with an increased, or higher, sensitivity to pain, as opposed to a decreased, or lower, sensitivity in healthy people. In people with chronic pain, the increased sensitivity extends beyond acute pain as well, with higher blood pressure also being linked to an increased sensitivity to chronic pain.

Given the links between blood pressure and pain, Dr. Stephen Bruehl, a researcher at Vanderbilt University Medical Center, and his colleagues wanted to see if chronic pain was associated with higher levels of hypertension. To do this, they retrospectively examined the medical records of 300 chronic pain patients and compared them to the records of 300 medical patients who were not in chronic pain. They published their results in the March/April, 2005 issue of the Journal of Clinical Pain.

The medical records for the pain group yielded information on demographics, cause of pain, pain duration, pain intensity, history of hypertension, family history of hypertension, and history of medication use. For the non-pain group, records were examined to exclude people who had reported either chronic pain or chronic headaches. Information on demographics, history of hypertension, and history of medicine use was collected for those subjects identified as not suffering from chronic pain.

Both the pain and non-pain groups were comprised of people between the ages of 18-65. The pain group had more women than men (66% female), while the non-pain group had more men than women (55% male). The most common types of pain in the pain group were myofascial (62%), and neuropathic (25%). The pain sufferers reported an average pain intensity of 2.7 out of 5 and had been in pain on average for 37 months.

In analyzing the data, Bruehl and his team found that the pain group had a significantly higher prevalence of hypertension than the non-pain group (see Table 1). Specifically, 39% of the pain group had been clinically diagnosed with hypertension, versus only 21% for the non-pain group. The pain group rate of hypertension was also significantly higher than the national norm (matched for age and race) of 23% in men and 14% in women. The non-pain group, in contrast, was not different from the national norm for either men or women.

The researchers also found significant sex differences in the pain group. Although in general men have a higher rate of hypertension than women, in the pain group a higher percentage of women (41%) were diagnosed with hypertension than men (36%).

To see if pain related medications were associated with the higher rate of hypertension in the pain group, the researchers next looked at the types of drugs being used by people in this group. They found that while narcotic and NSAD use were similar for those in the pain group with hypertension and those in the pain group without hypertension, people in the pain group who also had hypertension were much more likely to be taking antidepressants and anxiolytics (anxiety medicine) than those with chronic pain but without hypertension.

Finally, the scientists used a statistical technique to try to determine which factors played a role in the increased rate of hypertension among the pain sufferers. Not surprisingly, they found that well-known predictors of hypertension, such as age, sex, race, and family history of hypertension, were large contributors; however, they also found that pain intensity predicted hypertension, above and beyond the known demographic risk factors.

Although it can't be proven from this study alone, the authors believe their results, combined with other research, indicate that the relationship between chronic pain and high blood pressure is not easily explained as chronic pain causes high blood pressure. Rather, they believe that chronic pain somehow fundamentally alters the relationship between the cardiovascular and pain regulatory systems.

Definitions

**acute** - lasting a short, or brief, period of time

**antidepressants** - medications used to treat depression

**antihypertensive** - a medication which lowers blood pressure

**anxiolytics** - type of medication used to treat the symptoms of anxiety

**blood pressure** - the pressure of blood, as it is pumped by the heart, against the walls of arteries.

**cardiovascular** - having to do with the heart and blood vessels

**chronic** - occurring for a long period of time

**hypertension** - chronic high blood pressure

**inverse relationship** -
They go on to offer several possibilities as to the nature of the link between the two systems. First and foremost, Bruehl hypothesizes that a common substance modulates both blood pressure and pain pathways. Thus, chronic pain may exhaust this substance and reduce its regulatory effect on blood pressure.

Second, the team points out that the hypertensive subjects in the pain group did use more antidepressants and anxiolytics than those without hypertension. Because of this, it could be argued that these drugs were leading to higher blood pressure. However, there is no real evidence for this and there is actually evidence that these types of drugs lower blood pressure.

Finally, Bruehl hypothesizes that body mass may play role in linking pain and blood pressure. Specifically, that people in chronic pain may be less active and thus put on weight. Obesity is a known risk factor for hypertension. While this makes sense, no data on weight was collected in the study, so the hypothesis can not be evaluated.

Continued research is likely to shed light on the exact link between chronic pain and hypertension, but whatever it turns out to be, this study provides yet another reason for chronic pain sufferers to aggressively seek treatment.

<table>
<thead>
<tr>
<th>Group</th>
<th>% With Hypertension</th>
<th>% Using BP Med's</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic Pain</td>
<td>39</td>
<td>36</td>
</tr>
<tr>
<td>No Chronic Pain</td>
<td>21</td>
<td>18</td>
</tr>
</tbody>
</table>

**Related C&S News Articles**

- [Chronic Pain Is Hard On The Brain](#)
- [Talking About Chronic Pain](#)
- [The High Cost Of Neuropathic Pain](#)
- [How Neck & Arm Pain Affect Overall Health](#)