Dynamic Chiropractic

WHIPLASH / NECK PAIN

Can Chronic Post-Whiplash-Injury Pain Be Avoided? (Pt. 1)

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Despite treatment, the rate of transition from acute injury to chronic pain following a motor vehicle collision (MVC) is estimated to be 50 percent.[1,17,26] This transition probably occurs in the first three months after injury,[2-4] and those who have not recovered by this time are likely at one year post-injury to have partial recovery (39 percent), no recovery, or progress to chronic widespread pain (16 percent).[4] Clinical experience suggests many, if not most patients who have significant pain at one year continue to have pain for a long time afterward, if not indefinitely.

Treatment of pain that has become chronic is not highly effective[5-6] and also costly. According to the Centers for Disease Control, chronic pain affects an estimated 20.4 percent of Americans,[7] with other estimates ranging as high as 40 percent[8] – a tremendous burden on society in terms of human suffering, cost of treatment and lost productivity. In 2011, the Institute of Medicine calculated the cost of treatment and lost productivity to be $560-$635 billion annually.[9]

There may be hope. Research over the past couple of decades has demonstrated some ability to identify those at risk for developing long-term post-MVC symptoms. A small sample of that research is reviewed herein. To reduce the rate of transition, we propose a particular chiropractic intervention within the first two months for those at risk of developing chronic pain.

The chiropractic profession is in an excellent position to provide appropriate intervention. Chiropractors are among the first to provide treatment following MVC and at least as important, chiropractors have a unique "trust factor" with their patient population. Studies comparing chiropractic management vs. other forms of health care delivery find higher patient satisfaction scores with chiropractic care.[10-12]

Is It Possible to Identify the Patients Who Are Likely to Progress to Chronic Symptoms?

Under the premise that there are identifiable factors which predispose to chronic pain, much ongoing effort has been devoted to isolating those prognostic factors. In August 2018, the National Institutes of Health launched a research program to explore the transition from acute to chronic pain as part of the "Helping to End Addiction Long-term" initiative.[13]

Unfortunately, the research to date has not been clear cut. For example, the Bone and Joint Decade 2000-2010 Task Force on Neck Pain and Its Associated Disorders reviewed 70 research articles and concluded in 2009 that the important prognostic factors included:[1]

- Greater initial pain
- More symptoms
- Greater initial disability
- Direction of the collision
- Headrest type
- Passive coping style
- Depressed mood
- Fear of movement

Four years later, the International Collaboration on Neck Pain Project compiled the findings of 13 systematic reviews and developed a list of different prognostic factors. The Collaboration

considered more than 130 potential prognostic factors and specific to whiplash injury, deemed the following to be important:[14]

- Elevated post-traumatic stress symptoms
- Highly catastrophic beliefs about pain
- Higher pain intensity
- Higher self-reported disability
- Hyperalgesia

Of these, the best evidence was for high initial pain intensity (5.5/10 or greater) and self-reported disability (greater than 15/50 points on the Neck Disability Index [NDI]). In our view, these levels of pain intensity and disability may be a sensitive measure for detecting those at risk, but the specificity is probably low.

The Collaboration further found that accident parameters, mood disorders, coping traits, reduced cervical range of motion, body mass index, morphological changes on imaging, the medicolegal context, social factors, age, gender, and educational level were either not related, had poor supportive evidence, or the evidence was inconclusive.

Other prognostic systems have been devised as well.[15-17] For example, a combination of cold hyperalgesia, older age, initial NDI score and PTSD symptoms has shown an ability to discriminate between those who do not recover and those who do 2-3 years post-accident.[15] In another study, a combination of NDI > 40%, age >34 and PTSD symptoms was found to successfully differentiate, with fair to good sensitivity and specificity, between those who recover well, those who do not, and an intermediate group who may or may not recover.[17]

The foregoing suggests many characteristics may be associated with developing chronic pain and are not necessarily the same for each individual. To simplify matters, VAS and NDI scores may serve well as screening tools in a busy chiropractic clinic, but it is our opinion that considering other factors, such as the presence of widespread complaints and PTSD symptoms, will increase specificity.

What Screening Tools Can We Utilize to Evaluate Patients at Risk?

Fortunately, a variety of validated tools have already been developed to capture many of the factors thought to be prognostic. One such tool is the recently validated Yellow Flags Questionnaire (YFQ). The YFQ measures pain intensity, physical function, sleep, mood, and pain beliefs assessing pain-related disability, regardless of the nature of the injury or patient.[18]

The findings from the screening tool can be vetted further with well-known and well-validated tools such as:

- The Patient Health Questionnaire-9 (PHQ-9) for depression
- The General Anxiety Disorder-7 Questionnaire (GDQ-7) for anxiety
- The Rivermead Post Concussion Symptoms Questionnaire (RPQ) for post-concussion symptoms
- The Impact of Events Scale-Revised (IES-R) for post-traumatic stress disorder
- The Pain Catastrophizing Scale (PCS) to assess catastrophic thinking
- The Fear Avoidance Belief Questionnaire (FABQ) for fear-avoidance beliefs
- The Tampa Scale for Kinesiophobia (TSK) for fear of movement

It is important to understand that these are still just screening tools and are not diagnostic, but

significant scores justify referral to the appropriate specialist. For example, concerning findings on the RPQ can be further vetted with a psychologist or neuropsychologist.[19]

Are Physical Examination and Imaging Findings Reliable?

Counterintuitively, physical examination findings may be less helpful prognostically than expected. Cold hyperalgesia has shown some utility, but the evidence for Waddell signs, kinesiophobia, reduced range of motion and hyperpathia (exaggerated response to stimuli) has been inconsistent.[14]

Reliance on imaging studies is equally fraught with issues. The relatively high prevalence of findings such as disc protrusions and annular tears in asymptomatic individuals[20] diminishes the value of such findings in symptomatic individuals and may explain why standard imaging has not been useful to predict chronicity.[13]

Neuroimaging of the central nervous system, on the other hand, can reveal functional and structural changes in the brain associated with chronic pain. Although most neuroimaging research studies are cross-sectional,[21] a few longitudinal studies have been done, allowing a degree of prognostication. For example, Mansour, et al., have demonstrated with diffusion tensor imaging (DTI) that white-matter structural changes in individuals with subacute back pain predict those in whom symptoms persist at one year.[22] However, DTI is not available to most practitioners.

Editor's Note: Part 2 of this article proposes a comprehensive clinical strategy for preventing chronicity. Complete references supporting the citations in this two-part article accompany pt. 2 of the digital version (December issue).

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