The association between a lifetime history of a neck injury in a motor vehicle collision and future neck pain: a population-based cohort study

European Spine Journal
March 2010, Vol. 19, pp. 972–981

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FROM ABSTRACT

The objective of this population-based cohort study was to investigate the association between a lifetime history of neck injury from a motor vehicle collision and the development of troublesome neck pain.

The current evidence suggests that individuals with a history of neck injury in a traffic collision are more likely to experience future neck pain. However, these results may suffer from residual confounding. Therefore, there is a need to test this association in a large population-based cohort with adequate control of known confounders.

We formed a cohort of 919 randomly sampled Saskatchewan adults with no or mild neck pain. At baseline, participants were asked if they ever injured their neck in a motor vehicle collision. Six and twelve months later, we asked about the presence of troublesome neck pain on the chronic pain grade questionnaire. Multivariable Cox regression was used to estimate the association between a lifetime history of neck injury in a motor vehicle collision and the onset of troublesome neck pain while controlling for known confounders.

We found a positive association between a history of neck injury in a motor vehicle collision and the onset of troublesome neck pain after controlling for bodily pain and body mass index.

Our analysis suggests that a history of neck injury in a motor vehicle collision is a risk factor for developing future troublesome neck pain.

The consequences of a neck injury in a motor vehicle collision can have long lasting effects and predispose individuals to experience recurrent episodes of neck pain.

KEY POINTS AND FINDINGS FROM THIS STUDY:

1) The objective of this study was to determine whether a history of neck injury in a motor vehicle collision is independently associated with the development of troublesome neck pain. Prior studies on this topic mostly controlled for age and gender. The strength of this study was the ability to test for the confounding effect of more variables than prior studies.

2) The confounding variables included in this analysis were:

- Demographic characteristics (age, gender, marital status, and location of residence)
- Socioeconomic variable (education, income, and employment status)
- General health (SF36, depression, cigarette smoking, BMI, and exercise)
- Comorbidities (allergies, arthritis, high blood pressure, heart/circulation, digestive disorders, headache, and mental/emotional disorders)

3) Whiplash trauma can cause neck pain and other symptoms such as headache, dizziness, and upper extremity numbness.

4) "The recently published report of the Bone and Joint Decade 2000–2010 Task Force on Neck Pain and its Associated Disorders found that a significant proportion of patients with WAD develop persistent or recurrent neck pain. Specifically, more than 50% of patients report neck pain 1 year after their injury." [Spine, 2008].

5) Whiplash injury recovery is "negatively associated with initial symptom severity, post-injury psychological distress, passive coping, and the intense initial health care utilization."

6) These authors cite 5 studies that show that individuals with a history of whiplash injuries are more likely to suffer from future episodes of musculoskeletal pain, including neck pain, than those without a history of whiplash injuries. They also note that these 5 studies contrast to the 2 Lithuanian studies on chronic neck symptoms gathered from police records.

7) "The results showed a positive association between a history of neck injury in a motor vehicle collision and the development of troublesome neck pain at 6 and/or 12 months." The increased risk compared to those never in a vehicle collision was 143%. Age and gender did not alter this association.

8) "Our survey was the first North American cohort study to investigate the association between a lifetime history of neck injury resulting from a motor vehicle collision and the development of troublesome neck pain."

9) "Our results suggest that the incidence of troublesome neck pain is higher in individuals who have a history of neck injury in a motor vehicle collision."

10) The authors state that their exclusionary methods may have excluded "subjects that had developed a new episode of troublesome neck pain after exposure to a motor vehicle collision but prior to the baseline survey analysis" which would "likely cause an underestimation of the true incidence of troublesome neck pain after a motor vehicle collision."

11) "Our study augments the evidence of a positive association between neck injury in a motor vehicle collision and future neck pain. The strength of our study is in our ability to test for the confounding effect of more variables than prior studies, which mostly controlled for age and gender."

12) "Neck pain is a recurrent disorder characterized by the periods of the fluctuating pain and disability." This study supports that whiplash injury is a risk factor for recurrent episodes of future neck pain.

13) "Our study raises the hypothesis that a past history of a neck injury in a motor vehicle collision is one of the determinants of recurrent neck pain."

14) "Our analysis provides the public, clinicians, and insurers with evidence that a past neck injury in a motor vehicle collision may have a significant role in the development of future episodes of pain and disability."

15) This study "found a positive association between a history of neck injury in a motor vehicle collision and the onset of troublesome neck pain after controlling for bodily pain and body mass index."

16) "Our analysis suggests that a history of neck injury in a motor vehicle collision is a risk factor for developing future troublesome neck pain."

17) "The consequences of a neck injury in a motor vehicle collision can have long lasting effects and predispose individuals to experience recurrent episodes of neck pain."

COMMENTS FROM DAN MURPHY

These authors reference the 2008 study from *Spine* "Course and prognostic factors for neck pain in whiplash-associated disorders: results of the Bone and Joint Decade 2000–2010 Task Force on Neck Pain and its Associated Disorders" in stating that **more than 50% of whiplash injured patients report neck pain a year later**.

A unique strength of this study is the inclusion of significantly more confounding variables than prior studies on this topic. This study found that a history of whiplash injury **increased the risk of future troublesome neck pain by 143%** compared to those never in a vehicle collision.

Because the increased risk of future troublesome neck pain subsequent to a motor vehicle collision was observed in all age groups this suggests that it **is inappropriate to ascribe future neck complaints on age related changes**.

This is probably the best study to date that indicates that the two "**Lithuanian**" study's conclusions (which are frequently cited by automobile insurers and/or their representatives) **are incorrect**.