Journal of Chiropractic Medicine (2013) 12, 201–206

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JOURNAL of CHIROPRACTIC MEDICINE

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Hangman's fracture presenting to chiropractic clinic as benign neck pain: a case report

Kay A. Fogeltanz DC, Marc D. Ditty DC, Kevin J. Pursel DC*

Private Practice, Green Bay, WI

Received 21 March 2012; received in revised form 16 July 2013; accepted 15 August 2013

Key indexing terms:
Spinal fractures;
Subdural hematoma;
Braces;
Chiropractic;
Neck pain

Abstract

Objective: The purpose of this study is to report a patient who presented to a chiropractic clinic with benign neck and upper back pain; however, the patient also had a recent hangman's fracture due to a drunken fall.

Clinical features: A 40-year-old established patient with neck and upper back pain presented to a chiropractic clinic for care. When questioned about the character and etiology of his pain, he reported that it was no different compared to past presentations, saying "it's the same as always." The patient was not questioned about recent trauma and did not report his fall while intoxicated several days prior. After history and examination, the working diagnosis was a low-grade cervical sprain strain with imaging considerations if improvement did not occur quickly as was observed with similar previous presentations. Treatment included chiropractic mobilization of the cervical spine. The following day, the patient reported no improvement. Upon additional questioning, a history of trauma was revealed; and plain radiographic imaging showed a C2 vertebral body fracture.

Intervention and outcome: Immediate referral and evaluation at a local emergency center revealed not only an unstable C2 fracture but a coronal fracture of the left frontal bone extending into the left temporal bone with an associated right subdural hemorrhage along the right hemisphere and tentorium. The patient was placed in a sterno-occipital-mandibular immobilizer brace and discharged 2 days later.

Conclusion: Historical experience with similar clinical presentations in established patients can influence health care providers to assume a benign causation of symptoms. Conscious effort must be exerted to treat established patients with typical presentations with the same diligence as those of new patients to a chiropractic clinic. This case illustrates that an unstable fracture and hematoma can present to a chiropractic clinic as a seemingly benign problem.

* Corresponding author. 2149 Velp Ave Ste 300, Green Bay, WI 54303. Tel.: +1 920 434 7393; fax: +1 920 434 7394.
E-mail address: kevin.pursel.dc@gmail.com (K. J. Pursel).

1556-3707/$ – see front matter © 2013 National University of Health Sciences.
http://dx.doi.org/10.1016/j.jcm.2013.08.004

Introduction

A hangman's fracture is a bilateral pedicle fracture of the axis (C2) with anterior displacement of C2 upon C3.[1] The injury is often caused by falling down or being involved in a vehicular accident producing cervical hyperextension. Although this fracture is unstable, survival is relatively common. The fracture tends to expand the spinal canal at the C2 level. It is not unusual for patients to walk in for treatment lacking neurological findings and have this fracture discovered upon imaging. Only if the force of the injury is severe enough that the vertebral body of C2 is severely subluxed from C3 does the spinal cord become crushed, usually between the vertebral body of C3 and the posterior elements of C1 and C2.[2]

The hangman's fracture was described by Schneider et al.[3] The predominant cause of hangman's fracture is motor vehicle trauma; however, falls and diving accidents are also noted.[4-12] As patients who experience these injuries also seek out chiropractic care for relief of neck and back pain, it is likely that patients with previously undetected fractures may present to these offices. The purpose of this study is to report a patient who presented to a chiropractic clinic with apparently benign neck and upper back pain; however, he had a recent hangman's fracture due to a drunken fall.

Case report

A 40-year-old male patient with a 10-year history of intermittent neck pain and acute torticollis presented to the treating chiropractor's clinic with neck and upper back pain. The patient was an established patient. In the previous 10 years, he had been managed successfully 6 times by the treating doctor of chiropractic for the recurring chief concern. Each episode responded immediately to chiropractic management with minimal intervention. Historically, this patient's neck and upper back pain was associated with his occupation as a machinist that included overhead work. He had minimal education and worked as a "blue collar" worker.

On the day of his seventh episode, he assured the treating chiropractor that the character and etiology of his pain were no different compared to past presentations by saying, "it's the same as always."

He reported a minimal headache at the base of the skull and neck pain, both of which had been occurring over the past 3 days prior to his presentation. He denied any numbness, tingling, or pain into his extremities. He was casually attired and presented after a day's work. He drove himself to the office and was in no overt signs of distress.

Static palpation showed muscle splinting of the right posterior muscles and tenderness of the suboccipital musculature—left greater than right. Active cervical spine ranges of motion were reduced in right rotation (20° of 80°) and left rotation (30° of 80°). All other cervical ranges of motion were observed to be normal. Passive ranges of motion were somewhat resisted in left and right lateral flexion with relatively free intersegmental motion in the posterior and anterior direction. Maximum cervical compression tests caused some increase in the posterior joint tenderness without radiation into the extremities.

The working diagnosis was a low-grade cervical sprain strain with imaging considerations if improvement did not occur quickly as was observed with similar previous presentations. Treatment on this day included mobilization of the cervical spine with manipulation of the thoracic spine. Self postisometric relaxation exercises were also prescribed, although poorly reproduced by the patient upon instruction.

The patient returned the next day and was upset that he did not experience relief for his neck pain and discomfort. Upon additional questioning by the chiropractor, the patient reported that, 4 days earlier, he "stumbled down some stairs, but did not fall down," although he did "fall against the side of the wall." He had a small abrasion about the size of a quarter on his left cheekbone. This was not questioned on the previous visit. He had a history of heavy alcohol consumption and had in the past presented for treatment with the smell of alcohol on his breath. He did not appear to be impaired by anything but his neck pain in the last 2 presentations. He also admitted that he was drinking at the time of the fall but denied alcohol intoxication.

New historical data (intoxicated fall and facial abrasion) coupled with a lack of symptomatic improvement consistent with past treatment plans prompted the doctor of chiropractic to refer the patient to a local medical clinic for cervical radiographs. Within 30 minutes, the patient returned with his radiographs that revealed a C2 vertebral body fracture through the lamina with a fragment of bone displaced from the posterior vertebral body. There was a 2- to 3-mm anterolisthesis of C2 on C3 and the appearance of a facet dislocation (Fig 1).

An immediate referral was made for his transport to the nearest emergency department (ED) via ambulance. He initially refused, not understanding the severity of his presentation. He believed this to be an overreaction