

**Neck pain and minor trauma:
Normal radiographs do not always exclude serious pathology**

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FROM ABSTRACT:

A 37-year-old woman presented following a trampolining accident with neck pain and paraesthesia of the left arm.

Cervical spine radiographs were normal and a provisional diagnosis of whiplash was made.

Three hours later she developed rotational vertigo and then cerebellar signs.

Magnetic resonance angiography and magnetic resonance imaging of the brain confirmed the diagnosis of vertebral artery dissection with cerebellar embolic infarcts.

She was anticoagulated and symptoms resolved over one week.

Vertebral artery dissection is a relatively common cause of posterior circulation stroke in young people.

It usually presents following (often minor) trauma, with headache, neck pain, cerebellar, sensory and cranial nerve signs.

However, it remains a diagnosis that is frequently missed or misdiagnosed.

THESE AUTHORS ALSO NOTE:

A 37-year-old woman presented with left shoulder and neck pain, with pins and needles in her left arm, following a trampolining accident.

She landed on a trampoline on her left shoulder, head turned to the right, with no head injury or loss of consciousness.

She was taking oral contraceptives.

She did not drink alcohol or smoke.

Cervical spine radiographs were normal.

She had no tenderness of the C-spine, a good range of neck movement and no neurological deficit.

"A provisional diagnosis of neck sprain (whiplash) was made."

Three hours after the injury she developed vertigo and vomited several times. She then developed "nystagmus, truncal ataxia, past pointing with the left hand and had reduced left-sided heel–shin coordination. Cranial nerves, fundoscopy, power, tone, reflexes and sensation in all four limbs were normal."

A magnetic resonance angiography confirmed the diagnosis of a left vertebral artery dissection with a left cerebellar embolic infarct.

Anticoagulation therapy improved her symptoms over the next week and she remained asymptomatic at 6 months.

DISCUSSION

Vertebral artery dissection is an uncommon cause of stroke; however, it is a "common cause of stroke in young (under 60 years) people and is more common in women, causing 3–8% of ischaemic strokes in this age group."

"Dissection of the vertebral artery is described as spontaneous or, more commonly, traumatic dissection."

"Trauma is the only definite risk factor for vertebral artery dissection."

"Although the trauma may be an overt neck injury, more classically the trauma is a low-impact twisting movement of the neck, which turns the head away from the side on which the arterial tear occurs."

"The amount of force required might be little more than that applied during everyday activities," including

- 1) Chiropractic manipulations
- 2) Yoga,
- 3) A trip to the hairdressers
- 4) Painting the ceiling

"The precipitating trauma may precede the onset of symptoms of vertebral artery dissection by a variable time, usually several days and may be as long as a month."

"It is possible that all vertebral artery dissection are related to at least some minor neck trauma; however, the precipitating event is not always recalled."

"Spontaneous vertebral artery dissection is also positively associated with oral contraceptives, migraine, hypertension, fibromuscular dysplasia and connective tissue disorders."

The typical vertebral artery dissection presentation:

- 1) Occipital headache
- 2) Neck pain
- 3) Stroke symptoms from the territory supplied by the vertebral artery:
 - A)) Ipsilateral loss of coordination
 - B)) Nystagmus
 - C)) Ataxia
 - D)) Vertigo
 - E)) Cranial nerve palsies affecting CN V, VIII–XII:
 - V – ipsilateral facial dysaesthesia
 - VIII – vertigo, tinnitus
 - IX, X – dysarthria, dysphagia
 - XII – ipsilateral loss of taste because tongue sensory fibers pass through the lateral medulla causing ipsilateral sensory loss

Vertebral artery dissection is confirmed by angiography, by magnetic resonance angiography or Doppler ultrasound.

“The mainstay of treatment is anticoagulation for a minimum of 6 months.”

“The prognosis of vertebral artery dissection is good, with complete resolution of symptoms or minimal functional deficit in approximately 75% of patients at one month, although fatal cases have occurred.”

“Vertebral artery dissection should be suspected in any young patient with symptoms of a posterior circulation stroke following neck trauma.

KEY POINTS FROM DAN MURPHY

- 1) Although rare, when vertebral artery dissection occurs, it is usually in the young, individuals under 60 years of age.
- 2) “Vertebral artery dissection usually presents following (often minor) trauma, with headache, neck pain, cerebellar, sensory and cranial nerve signs.”
- 3) The initial examination of a vertebral artery dissection can include normal cervical spine radiographs, a good range of neck movement and no neurological deficit.
- 4) “Trauma is the only definite risk factor for vertebral artery dissection.”
- 5) “Although the trauma may be an overt neck injury, more classically the trauma is a low-impact twisting movement of the neck, which turns the head away from the side on which the arterial tear occurs.”

- 6) "The amount of force required might be little more than that applied during everyday activities," including
- A)) Chiropractic manipulations
 - B)) Yoga,
 - C)) A trip to the hairdressers
 - D)) Painting the ceiling
- 7) "The precipitating trauma may precede the onset of symptoms of vertebral artery dissection by a variable time, usually several days and may be as long as a month."
- 8) "It is possible that all vertebral artery dissections are related to at least some minor neck trauma; however, the precipitating event is not always recalled."
- 9) "Spontaneous vertebral artery dissection is also positively associated with oral contraceptives, migraine, hypertension, fibromuscular dysplasia and connective tissue disorders."
- 10) The typical vertebral artery dissection presentation:
- A)) Occipital headache
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- 11) Vertebral artery dissection is confirmed by angiography, by magnetic resonance angiography or Doppler ultrasound.
- 12) "The mainstay of treatment is anticoagulation for a minimum of 6 months."
- 13) "The prognosis of vertebral artery dissection is good, with complete resolution of symptoms or minimal functional deficit in approximately 75% of patients at one month, although fatal cases have occurred."
- 14) "Vertebral artery dissection should be suspected in any young patient with symptoms of a posterior circulation stroke following neck trauma."

COMMENTS FROM DAN MURPHY:

Although this article mentions the force from chiropractic manipulation as a potential activity related to vertebral artery dissection, please recall the following two recent Article Reviews that present a different perspective:

**Safety of Chiropractic Manipulation of the Cervical Spine
A Prospective National Survey**

Spine

Volume 32(21), October 2007, pp 2375-2378

Thiel, Haymo W. DC, PhD; Bolton, Jennifer E. PhD; Docherty, Sharon PhD; Portlock, Jane C. PhD

In this study, there were 50,276 cervical spine manipulations, and "there were no reports of serious adverse events."

**Risk of Vertebrobasilar Stroke and Chiropractic Care: Results of a
Population-Based Case-Control and Case-Crossover Study**

Spine

Volume 33(4S), February 15, 2008 pp S176-S183

Cassidy, J David DC, PhD; Boyle, Eleanor PhD; Côté, Pierre DC, PhD; He, Yaohua MD, PhD; Hogg-Johnson, Sheilah PhD; Silver, Frank L. MD; Bondy, Susan J. PhD

The objective of this study was to investigate associations between chiropractic visits and vertebrobasilar artery stroke and to contrast this with primary care physician visits and VBA stroke.

"There was no increased association between chiropractic visits and vertebrobasilar artery stroke in those older than 45 years."

"The increased risks of vertebrobasilar artery stroke associated with chiropractic and primary care physicians visits is likely due to patients with headache and neck pain from vertebrobasilar artery dissection seeking care before their stroke."

"We found no evidence of excess risk of vertebrobasilar artery stroke associated chiropractic care compared to primary care."