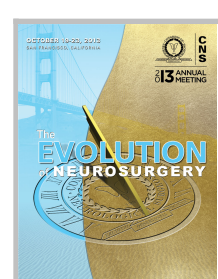


The Prevalence and Outcome of Traumatic Vertebral Artery Dissection: Analysis from National Trauma Data Base (NTDB)

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Introduction

Vertebral artery dissection (VAD) is an important cause of stroke in young adults. The natural history and epidemiological aspects of traumatic VAD is not fully understood. We determined the prevalence and outcome of dissection of vertebral artery in trauma setting.

Methods

All patients who were admitted with traumatic brain injury or head and neck injury were identified by ICD-9-CM codes from the National Trauma Data Bank (NTDB), using data files from 2009 to 2010. NTDB represents one of the largest trauma databases and contains data from over 900 trauma centers across the United States. Presence of VAD was identified in these patients by using ICD-9-CM codes. Admission Glasgow Coma Scale (GCS), Injury Severity Score (ISS), in-hospital complications and treatment outcome were compared in patients with VAD with the patients without vascular dissection.

Results

A total of 84 VAD patients were identified which comprised 0.01% of all patients admitted with head and neck injury. The mean age for patients with VAD was significantly higher than patients without dissection [46 (95% CI: 41-50) versus 41.3 (95% CI: 41.2-41.4); $p=0.003$]. The admission GCS score was significantly lower in patients with VAD with 31% of these patients presenting with $GCS < 9$ ($p < .0001$). Patients with VAD had higher rate of in-hospital stroke than the patients without dissection (5% versus 0.2%; $p < .0001$). Numbers of ICU days, ventilator days, and hospital length of stays were all significantly higher in patients with VAD. These differences remained significant after adjusting for the demographics, admission GCS and ISS ($p < .0001$). Only 7% (N=6) of the patients with VAD received endovascular treatment and there was no in-hospital stroke in these patients. Patients with VAD had higher chance of discharge to nursing facility in comparison to head trauma patients without VAD (OR; 95% CI: 2.19; 1.38- 3.48. $p < .0001$).

Conclusions

Although infrequent, vertebral artery dissection in head and neck trauma is associated with higher rates of in-hospital stroke and greater length of ICU and hospital stay. Considering the risks associated with anticoagulation in trauma setting, endovascular treatment may be an alternate option to reduce in-hospital complications in these patients.

Learning Objectives

Due to the complexity of the trauma patients and the lack of clinical symptoms at the injury time, the early diagnosis of vertebral artery dissection is very difficult and demands a high index of suspicion. Therefore, the incidence of isolated vertebral artery injury in the setting of head and neck trauma is not very well understood.

In this study, we aimed to determine the prevalence of traumatic vertebral artery dissection and its impact on hospital outcome in patients with head and neck injury and traumatic brain injury, using a nationally representative database.

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