Abstract

Objectives: To characterize patients presenting with petrous temporal bone fractures (TBF) who underwent a computed-tomography angiography (CTA). Study design: Retrospective case series. Methods: Patients presenting with all types of TBF and underwent CTA at our academic institution from 2012 to 2016 were retrospectively reviewed. All CTAs was performed in the context of a traumatic injury. The patients mechanism of injury, type of fracture, and any positive findings were recorded. Results: Seventy-seven patients with TBF who underwent a CTA were included. The average age of those included was 41 years old (range 9-85 years). Fifty-eight were males (75%). Blunt trauma was the most common type of injury (72 cases). Fall (44.2%) and motor vehicle accidents (44.2%) were the most common mechanism of injury. Fractures were most commonly longitudinal (50.0%), with some transverse (20.5%) and mixed (27.3%) fractures. Intracranial injury, spinal injury and death occurred in 69, 27, and 14 patients, respectively (89.6%, 35.1% and 18.2%). The fracture involved the carotid canal (CC) in 14 patients (18%). Positive findings on CTA included aneurysm (n=3), carotid injury/dissection (n=2), and incidental findings unrelated to the trauma (n=4). The incidences of orbit fracture (42.9% vs 8.9%, p=0.048) were significantly higher among the patients with positive CTA results. Patients with CC fracture had fewer cases of hemotympanum (7.1% vs 47.6%, OR=0.08), higher incidence of orbit fracture (42.9% vs 12.7%, p=0.005, OR=5.16). Chi square analysis and independent samples t-test were used for dichotomous and continuous variables respectively for statistical analysis; p-value < 0.05 was considered statistically significant.

Methods and Materials

- IRB approval was obtained.
- Retrospective chart review of all patients with TBF between 2012 and 2016 who presented to our tertiary academic center who had a CTA performed.
- CT scans were reviewed and TBF were characterized.
- Patient characteristics and outcomes were recorded.
- Chi square analysis and independent samples t-test were used for dichotomous and continuous variables respectively for statistical analysis; p-value < 0.05 was considered statistically significant.

Introduction

- Objectives: To identify which patients had positive CTA findings and characterize their demographic and clinical findings, to determine which patient characteristics are most likely associated with CTA injury.

Results

- Blunt trauma was the most common type of injury (n=72); Fall (n=34, 44.2%) and motor vehicle accidents (n=34, 44.2%) were the most common mechanism.
- 54 patients had no CTA-specific findings (70.1%).
- CC fracture found was in 14 patients (18%), aneurysm in 3 (14%), carotid artery injury or dissection in 2 (10%) and incidental findings unrelated to the trauma in 4 (19%).
- Hemotympanum was observed more commonly in those with negative CTA (19.0% vs 48.2%, p=0.02).
- For those with CC fracture or positive CTA results, orbit fracture was seen in 42.9% and death in 33.3%, both statistically different compared to the negative CTA group (p=0.002, p=0.048 respectively).
- Although the incidence of spinal injury was seemingly higher in the CC fracture or positive CTA group, a significant difference was not achieved (p=0.051).

Conclusions

- In total, 14 patients (23%) with TBF demonstrated a CC fracture; 5 patients demonstrated ICA injury/dissection or aneurysm on CTA.
- Positive CTA findings was also associated with orbit fractures, death, and the absence of hemotympanum, as compared to those with a negative CTA.

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References