Predictive Factors for

CAROTID ARTERY PSEUDOANEURYSM RUPTURE

In patients with previous radiations for head and neck cancers:
A retrospective cohort of 32 cases

He Zhexi, Zhuang Tin Fong, Wong Kwok Chu George

Division of Neurosurgery, Department of Surgery,
Prince of Wales Hospital
The Chinese University of Hong Kong

Hong Kong Neurosurgical Society Annual Scientific Meeting | Dec 18-19, 2020 P11
OBJECTIVE

Predictive factors for pseudoaneurysmal bleeding

Carotid artery pseudoaneurysm rupture may occur in the head and neck cancer survivors who had received previous radiotherapy with high morbidity and mortality. The rate of bleeding among post-irradiated patients is reported from 4.5% to 21.1%. The survival rate at one year after index bleeding is 17% on average. The identification of patients with pseudoaneurysmal rupture is difficult and challenging. In this retrospective study, we reviewed the outcomes of cases with carotid artery pseudoaneurysm rupture and analyzed the predictive factors for pseudoaneurysmal bleeding versus other sources of bleeding with an aim to delineate the high risks group of patients for early and adequate investigations and treatments.
METHOD

Retrospective case cohort

INCLUSION

Patients who
- presented with oral, nasal or ear bleeding
- inpatient investigations and treatments required
- history of head and neck cancer with history of radiation therapy

EXCLUSION

Patients who
- In-patient investigations or treatments not warranted
- Carotid artery bleeding after open surgery

OUTCOME

Demographics

Patient cancer types and treatments, medical comorbidities

Presentations

Presenting symptoms, vital signs, blood tests,

Investigation & Treatment

Angiograms (DSA / CTA), Treatment details
RESULTS

There are total 32 patients with 41 bleeding episodes identified from 2016 July to 2020 June, including 22 male patients and 10 female patients. 27 patients had history of NPC while 5 patients had other pathology. The mean age at bleeding episode is 47.3 years old. There are 25 cases with cancer in remission, while 16 cases with active disease. Reirradiation was performed for 8 cases. There are 10 cases suffering from second cancer apart from the primary head and neck cancer.

- 41 bleeding episodes for profuse nasal, oral or ear bleeding
- 17 ruptured carotid artery pseudoaneurysms identified
  - 11 ICA pseudoaneurysms
    - 8 patients received trapping after passing balloon occlusion test,
    - 1 patient received stenting
    - 2 patients were not treated
  - 6 ECA pseudoaneurysms all received trapping
  - 2 patients developed 30-day mortality (11.8%)
RESULTS FOR PREDICTIVE FACTORS

Baseline Hypertension

**RR 4.90**

Patients with baseline hypertension were 4.90 times more likely to have pseudoaneurysmal rupture. (RR = 4.90, 95% CI 1.04 - 23.04, p=0.044)

- **No pseudoaneurysm**
- **Pseudoaneurysm**

<table>
<thead>
<tr>
<th>Number of episodes</th>
<th>Hypertension baseline</th>
<th>Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10</td>
<td>20</td>
</tr>
</tbody>
</table>

Hypotensive on arrival

**RR 6.00**

Patients with hypotension on presentation (SBP ≤ 90 mmHg) are 6 times more likely to have pseudoaneuerysmal rupture. (RR = 6.00, 95% CI 1.04 - 34.75, p=0.046)

- **No pseudoaneurysm**
- **Pseudoaneurysm**

<table>
<thead>
<tr>
<th>Number of episodes</th>
<th>Hypotensive on arrival</th>
<th>Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10</td>
<td>20</td>
</tr>
</tbody>
</table>
RESULTS

Hb Drop

The degree of hemoglobin drop was not significantly different between pseudoaneurysmal rupture and tumor bleeding (2.11 g/dL vs 1.58 g/dL, p = 0.234).

CTA Predictive Value

CTA showed 85% positive predictive value and 50% negative predictive value in our series.

Cardiac arrest

Cardiac arrest on presentation was likely to suggest pseudoaneurysmal rupture (p=0.064).

CONCLUSION

We have identified baseline hypertension and hypotension on arrival as predictive factors for carotid artery pseudoaneurysm rupture among patients who received previous radiation for head and neck cancers.

References