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Case Report

Aneurysm or Tumor? Successful Endovascular Management of a Ruptured Cervical Internal Carotid Artery Aneurysms: A Case Report

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Abstract:

Cervical internal carotid artery (ICA) aneurysms are rare, often mimicking neoplastic lesions and leading to misdiagnosis. Misguided surgical or biopsy interventions can result in catastrophic hemorrhage. We report a case of adolescent female with ruptured cervical ICA aneurysm initially misdiagnosed as neck tumor, which was successfully treated with endovascular occlusion techniques using N-butyl cyanoacrylate (NBCA) glue. This case highlight the importance of vascular imaging in suspicious cervical masses and reinforce the safety and efficacy of endovascular exclusion in selected cases

Keywords:

ICA, Aneurysm, NBCA, Endovascular

Introduction:

Extracranial internal carotid artery aneurysms are uncommon, accounting for less than 1% of all arterial aneurysms (Fankhauser et al., 2015). Their presentation may overlap with neoplastic or infectious neck pathologies, potentially leading to mismanagement. This diagnostic challenge may result in life-threatening complications, particularly when invasive procedures like fine needle aspiration cytology (FNAC) or surgical excision are attempted. Endovascular therapy has emerged as a preferred modality for managing such lesions in selected patients due to its minimally invasive nature and reduced morbidity (Wang et al., 2017). Herein, we present one case where early endovascular intervention successfully managed ruptured cervical ICA aneurysm.

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Case Report

Presentation

A 17-year-old female presented with difficulty in swallowing since her early childhood. Initially she visited an ENT specialist. ENT evaluation suggested a right tonsillar lesion, and surgical resection was attempted. Intraoperatively, uncontrolled bleeding occurred, which was temporarily controlled. She was subsequently managed in an intensive care unit. After adequate hemodynamic resuscitation she was referred to a neurosurgeon.

Examination

She had moderate anaemia with haemoglobin level 8.2mg/dl. A right high cervical pulsatile swelling(within the red circled area in the figure 1B) was noted in the anterior triangle of the neck . The swelling also involved the right tonsillar region (red arrow in Figure 1A). There was palpable thrill and bruit over the swelling. It was also associated with dysphagia along with dysphonia. She had lower motor type of right hypoglossal nerve palsy(Figure 1A). Other neurology was intact.

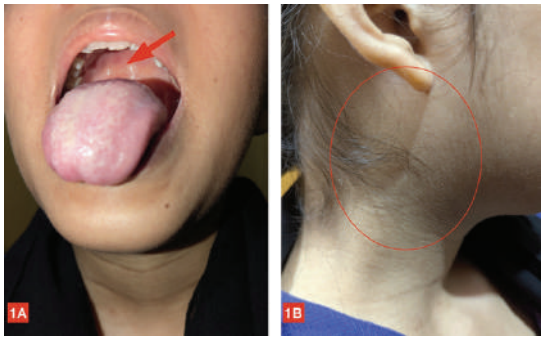

Figure 1: 1A showing deviation of tongue on protrusion towards right and right paratonsillar swelling. 1B showing a neck swelling in the right upper cervical region.

Investigation

MRI showed a large flow void in the region of the right carotid sheath in figure 2A and 2C marked with a red triangle. There is a huge hematoma marked by a red star adjacent to the flow void indicating a pseudoaneurysm due to rupture of the aneurysm. Both the nasopharynx and oropharynx (red arrow in Figure 2B and 2D) is compressed by the lesion which was responsible for her dysphagia along with dysphonia. Right tonsillar area is bulged giving an impression of tonsillar growth from oral cavity (orange arrow in Figure 2B)

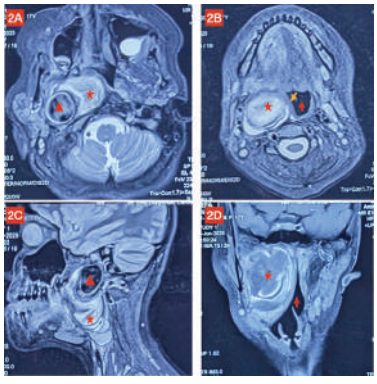

Figure 2: This is the magnetic resonance imaging(MRI) of neck T2WI. Figure 2A and 2B is axial section, 2C is sagittal section and 2D is coronal section.

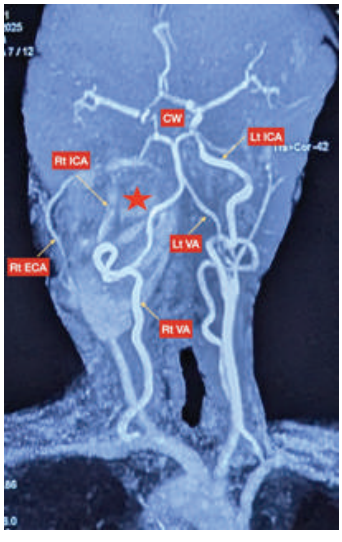

Figure 3: MR arteriogram(MRA) of neck and cerebral vessels in coronal view

MRA of neck and cerebral vessels reveals that Right cervical ICA (Rt ICA) is not visible beyond the pseudoaneurysm(marked by a red star if Figure 3). However supraclinoidal Rt ICA is formed by branches of Circle of Willis (CW) which explains her intact neurology and IS indicating a long lasting pathology in Rt ICA. Right vertebral artery ((Rt VA) is dominant and almost similar in diameter with the left ICA (Lt ICA). There is a functional Circle of Willis (CW) which maintains blood supply to the right cerebrum.

Treatment

We planned and counselled the patient for therapeutic Digital Subtraction Angiography (DSA) under local anaesthesia. Both groin was prepped and drapped. Right femoral access was ensured with an 8 FR short sheath. Patient was heparinized with 5000IU of fractionated heparin. Then 6-vessels (bilateral ICA, VA and ECA) DSA were performed with a 5FR H1 diagnostic catheter. We found that the right ICA terminated in the aneurysm(figure 4A) and there was no distal flow beyond the aneurysm. Right ICA territory was supplied by branches of Circle of Willis(figure 4B and 4C) and there was no flow delay. So we planned Rt ICA embolisation with 30 % NBCA glue. A 6F 85cm long sheath(Balast) was advanced into the right cervical ICA(figure 4D). Using a floppy microwire(0.014) we advanced a finecross microcatheter(figure 4D) through the long sheath into the aneurysmThen the aneurysm and proximal ICA were embolized with 30% NBCA glue (figure 4E) under fluoroscopy. Post-procedure angiography showed complete occlusion of the aneurysm and cervical ICA segment(figure 4E). Post-procedure DSA findings of other vessels were also normal. The patient remained neurologically intact post-operatively. Then we removed the short sheath and applied firm pressure bandage over the femoral puncture site. There was approximately 20 ml of blood loss throughout the procedure.

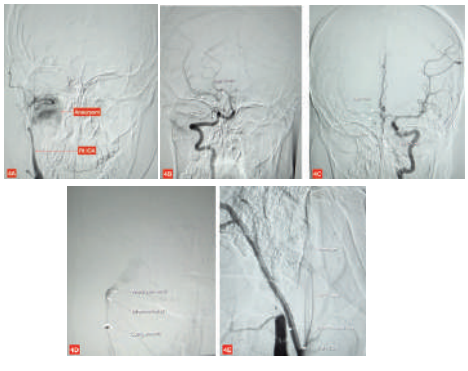

Figure 5: 4A is the right Common Carotid DSA showing aneurysm. 4B showing right vertebral injection AP view. 4C is the left ICA injection AP view. 4D showing hardwire in situ. 4E is after embolisation and there is no filling of aneurysm

Outcome

Postoperative period was uneventful. From the 1st postoperative day her dysphagia was reduced and she could make sound with less effort. On the 2nd postoperative day(POD) her tongue deviation became normal(Figure 5B). She was discharged with advice on the 2nd POD. She is under our follow up.

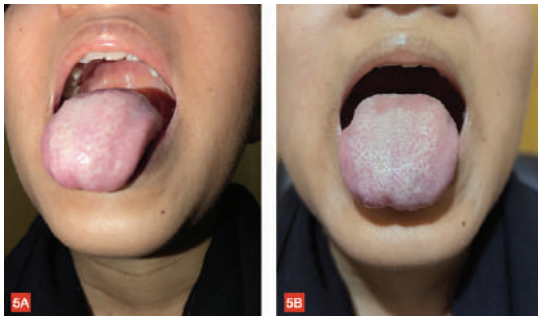

Figure 5: 5A is a preoperative picture with deviated tongue. 5B is a postoperative picture on the 2nd POD with normal tongue position.

Discussion

Cervical ICA aneurysms in the young are rare and may be congenital, traumatic, or infective in origin (Welleweerd et al., 2015). In our case it is congenital as it is present since her early childhood and there are good cerebral collaterals supplying the right ICA territory. Therefore, there is no neurological deficiency even after discontinuation of the right cervical ICA. Misidentification as tumors may lead to catastrophic interventions, as demonstrated in this case. Accurate diagnosis hinges on appropriate imaging — MRI and DSA are invaluable tools for identifying vascular lesions.

Endovascular treatment remains a cornerstone in the management of extracranial ICA aneurysms, especially when vessel sacrifice is feasible with adequate collateral flow. Parent artery occlusion with coils and NBCA glue, as performed in this case, offers an effective and safe treatment alternative with minimal procedural morbidity (Griessenauer et al., 2013).

Though we did not remove the hematoma, her discomfort and hypoglossal palsy reduced due to absence of pulsation of the aneurysm after embolisation of right ICA.

Conclusion

These cases underscore the need for high suspicion of vascular pathology in pulsatile cervical masses, particularly in young patients. Early imaging and prompt endovascular intervention can prevent potentially fatal complications and yield excellent outcomes.

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Wang, Z., Leng, B., Zhang, Y., Xu, Q. and Tian, Y., 2017. Endovascular treatment of extracranial carotid artery aneurysms and pseudoaneurysms: A systematic review. World Neurosurgery, 99, pp.520-529.

Welleweerd, J.C., den Ruijter, H.M., Nelissen, B.G., Bots, M.L. and Rinkel, G.J., 2015. Management of extracranial carotid artery aneurysm. European Journal of Vascular and Endovascular Surgery, 50(2), pp.141-147.uently On referral, the patient was stable but mildly anemic and had a right-sided lower motor neuron hypoglossal palsy.