Two Cases of Tortuous Internal Carotid Artery

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We report two cases of tortuous internal carotid artery, both involving 81-year-old women. Case 1 had an abnormal sensation in the pharynx on swallowing, while case 2 had difficulty and mild pain on swallowing. MRA was useful for diagnosis. A pulsating mass was located in the lateral lymphatic band in case 2. She was advised to undergo a biopsy at another clinic, but this would have carried a risk of bleeding.

Previously reported patients with tortuous internal carotid artery have presented with an abnormal sensation in the pharynx, so it is necessary to consider the possibility of tortuous internal carotid artery in elderly patients with this symptom. Tonsillectomy is occasionally performed in elderly patients. There is a possibility of tortuosity of the internal carotid artery, even if a pulsating mass is not seen in the pharynx, and it is important to palpate the palatine tonsil before and during surgery.

Key words: tortuosity, internal carotid artery, MRA

Introduction

The carotid artery tends to become tortuous with age. However, it is rare for this to cause symptoms that are related to an otolaryngologist.

We encountered two cases of tortuous internal carotid artery associated with pharyngeal symptoms, which we reported here with a review of the literature.

Case Reports

Case 1: On February 7, 1995, an 81-year-old woman presented to our hospital with an abnormal sensation on swallowing for 6 months. She had a past history of cardiac hypertrophy and hysterectomy for uterine myoma in her forties. On examination, she had a pulsating mass on the right posterior wall of the pharynx (Fig. 1). CT scanning was performed on February 21, and showed arteriosclerotic change of the right common carotid artery (Fig. 2 left). As there were no serious symptoms, she was followed conservatively. MRA was performed on November 6, 1996, and showed marked elongation and looping of the right internal carotid artery (Fig. 2 right). Symptoms have remained mild, and follow-up of the patient is continuing.

Case 2: An 81-year-old woman presented to our hospital with difficulty and mild pain on swallowing since June 1996. She had been referred from another clinic and consulted our hospital for investigation on August 15, 1996. She did not have any relevant past history or family history.

On examination, a pulsating mass extended from the nasopharynx to the hypopharynx on the right side (Fig. 3). We performed CT scanning on September 2, MRI on September 3, and MRA on November 27. CT scanning and MRI showed that the right internal carotid artery meandered in a medial direction (Fig. 4 left). MRA showed a tortuous right internal carotid artery and bilateral kinking of the vertebral arteries (Fig. 4 right). Laboratory tests did not detect any abnormal data. She was followed conservatively, since pain on swallowing had resolved by August 19. Ultrasonography was performed on January 6, 1997, and showed no atherosclerosis of the right internal carotid artery. There have been no symptoms of thromboembolism and follow-up is continuing.

Discussion

Our patients did not have serious complications. Therefore, we simply performed follow-up, monitoring...
Fig. 1 Case 1: A pulsating mass on the right posterior wall of the pharynx.

Fig. 3 Case 2: A pulsating mass on the right side of the hypopharynx.

Fig. 2 Left: CT scan of case 1 (Feb. 21, 1995)
Tortuosity of the right common and internal carotid artery.
Right: MRA of case 1 (Nov. 6, 1996)
Elongation and loop formation of the right common and internal carotid artery.

their progress.

Ten cases of tortuous internal carotid artery presenting with pharyngeal tumor have been reported to date (Table 1). Eight patients were female, and the average age was 65.6 years. In 8 patients (80.0%), the right side was involved.

Hypertension was present in 2 cases (20.0%).

Weibel et al. reported that congenital malformation was the principal cause of tortuous internal carotid artery, while aging led to increased tortuosity and coiling. Cairney reported that tortuosity of this vessel has even been found in the fetus. McKenzie et al. reported that it was necessary to keep in mind the possibility of a tortuous internal carotid artery at adenoidectomy. Otolaryngologists should be aware of the possibility of a tortuous internal carotid artery not only during adenoidectomy but also during tonsillectomy.

Yoshida et al. surveyed 111 neurosurgery patients by
digital subtraction angiography. Tortuous carotid artery showed a 4.5-fold female predominance, but there was no right, left predominance. The frequency of hypertension increased as curvature and meandering of the vessel became more highly developed, and all tortuous vessels were associated with hypertension. In the otolaryngology field, 20.0% of tortuous internal carotid arteries are associated with hypertension (Table 1).

Yoshida et al. reported that eight of nine patients with a tortuous carotid artery also had a tortuous internal carotid artery, and 7 had neurological symptoms such as transient ischemic attacks (TIA) or hemiplegia. However, neurosurgical complications were not found in the cases reported by otolaryngologists. When a patient with
tortuous internal carotid artery presents to the otolaryngology department, the disease is likely to be in the early stage. Even if neurosurgical complications are not present, careful follow-up is necessary. The current medical practice is early diagnosis and early treatment. Otolaryngologists must approach pharyngeal disease while keeping the tortuous internal carotid artery in mind. It is also necessary to involve neurosurgeons and handle this disease in a manner by which neurosurgical complications are prevented.

Digital subtraction angiography is done by Seldinger’s method, but MRA only requires intravenous injection. If the imaging results are similar, considering possible complications of Seldinger’s method, MRA may be recommended for the diagnosis of tortuous internal carotid artery.

The pulsating mass was located in the lateral lymphatic band in case 2. Including our cases, a pulsating mass had been found in 80% (8/10 patients) as shown in the Table 1. Case 2 was advised to undergo biopsy at another clinic, but this would have been associated with the danger of bleeding. When the presence of a pulsating mass is confirmed by palpation, it is necessary to remember the possibility of this condition.

We occasionally perform tonsillectomy even in the elderly, e.g. for focal infection. There is a possibility that such patients will have a tortuous internal carotid artery, even if a pulsating mass is not found in the pharynx, so it is wise to frequently palpate the palatine tonsil before and during surgery.

**Conclusion**

We reported two cases of tortuous internal carotid artery. In each case, a pulsating mass of the pharynx was observed, and we could diagnose this condition by MRA. Follow-up is necessary even when neurological complications are not present.

**References**

7) Ishizu Y: Pharyngeal discomfort due to tortuous internal carotid artery. Pract Otol (Kyoto) 89: 63 ~ 65, 1996.