

Epiglottic Cyst With Slurred Speech Misdiagnosed as Acute Cerebral Infarction

A Case Report

Xiaoyi Hou, MD,* Nanqu Huang, MD,† Xin Zhang, MD,* Xudong Liu, MD,*
and Yong Luo, MD*

Introduction: Epiglottic cysts are cysts that occur under the mucosa of the epiglottis. Patients with severe cysts may have difficulty in breathing. Slurred speech usually occurs in cerebrovascular diseases, especially with slurred speech as the starting symptom.

Case Report: We describe the case of a patient with slurred speech as the first symptom. The patient was a 53-year-old man with slurred speech as the first symptom, and he was initially considered to have an acute cerebral infarction. However, the results of the cranial magnetic resonance imaging examination did not support the diagnosis. The possibility of neck tumor recurrence was considered based on past medical history. The findings of a computed tomography examination of the neck suggested an epiglottic cyst. The effect of anti-inflammatory and surgical treatment was significant, and speech returned to normal.

Conclusion: This case emphasizes that neurologists need to be vigilant when dealing with patients with slurred speech, which may be one of the clinical manifestations of epiglottic cysts.

Key Words: epiglottic cyst, slurred speech, cerebral infarction, case report
(*The Neurologist* 2023;28:39–41)

The epiglottis is a sheet-like tissue composed of cartilage and mucosa located at the back of the tongue. Chronic inflammation, mechanical irritation, and trauma can cause mucus gland ducts to become blocked, and secretions in the glands can be retained to form cysts. Cysts of the vallecula (space between the base of the tongue and epiglottis) are frequent, often asymptomatic, and mostly do not require particular treatment. In contrast, epiglottic cysts have a larger risk of impairing the airways, particularly when they are infected, and removal is advised.¹ We report the case of a patient diagnosed with acute cerebral infarction due to slurred speech, but no cerebral infarction lesions were found on head magnetic resonance imaging (MRI). On the basis of

both the medical history and auxiliary examination results, the final diagnosis was an epiglottic cyst.

CASE DESCRIPTION

A 53-year-old Chinese male patient suddenly developed a speech disorder. Four hours before admission, the patient experienced a sudden speech disorder while quietly resting. The patient mainly showed dysarthria, could understand the meaning of others and could express his own meaning correctly. Without any treatment, the patient's weakness of the limbs was relieved after 1 hour, and he could walk slowly on his own but still had obvious slurred speech. The patient arrived at our hospital ~4 hours after the onset of the illness. The weakness of the limbs was significantly relieved at the time of the consultation. The muscle strength in the 4 limbs was grade 5, and he could walk, turn, and stop according to the instructions. No obvious gait abnormality was seen, but the symptom of slurred speech was not significantly relieved. In addition, the patient reported that he had undergone a "resection of epidermal adenoid carcinoma of the right neck" at an external hospital 5 years ago.

The vital signs were within the normal range. The findings of a physical examination were as follows: an 8 cm surgical scar from the previous surgery on the neck, slurred speech, normal cognitive function, no cranial nerve abnormalities, no meningeal irritation, limb muscle strength level 5, normal muscle tone, tendon reflex (++) , physiological reflex, and pathologic signs were not elicited. Cardiovascular, respiratory, gastrointestinal, and thyroid examination results were normal.

The patient was seen in the neurology department. Cranial computed tomography (CT) revealed a widening of the right lateral ventricle, and MRI was recommended. The preliminary diagnosis was acute cerebral infarction. However, the head MRI was not performed immediately but 3 days after the treatment, when the patient's condition was stable, and only the symptoms of dysarthria remained. The time window for intravenous thrombolysis was exceeded when the patient visited the department, and the National Institutes of Health Stroke Scale score was 2 points; therefore, intravenous thrombolysis was not performed. Only temporary treatment for stabilizing plaques, dual antiplatelet aggregation, protecting gastric mucosa, and intravenous drugs to improve cerebral vascular circulation were needed. The patient's symptoms of dysarthria did not improve.

After the patient's condition was stable, we performed related checks. No new infarct lesions were found on MRI of the brain. No abnormality was seen in brain magnetic resonance angiography (MRA), and cerebral infarction could not be diagnosed. The patient had a history of neck tumor surgery; therefore, it was possible that the tumor had recurred to form a space-occupying lesion and was causing the slurred speech. In view of the above considerations, a CT examination of the neck was performed, and the results showed a cystic lesion on the right side of the epiglottis. An otolaryngologist was asked for consultation as the patient's slurred speech was possibly related to the epiglottis cyst; therefore, the patient was transferred to the otolaryngology department. The epiglottic cyst was clear in fiber laryngoscopy. Plasma excision of the epiglottic cyst was performed after anti-inflammatory treatment. During the operation, a pathologic examination of tissues was performed to confirm the diagnosis of chronic inflammation of mucosal tissue with the formation of horn cysts. Speech returned to normal on the third day after surgery. No abnormality was seen in the reexamination 2 months after the operation.

From the Departments of *Neurology; and †Drug Clinical Trial Institution, The Third Affiliated Hospital of Zunyi Medical University, The First People's Hospital of Zunyi, Zunyi, Guizhou Province, China.

Supported by grants from the Guizhou Provincial Health Commission (gzwj2019-1-064) and the Guizhou Province Science and Technology Plan Project (ZK[2021]-570).

The authors declare no conflict of interest.

Correspondence to: Yong Luo, MD, Department of Neurology, The First People's Hospital of Zunyi, The Third Affiliated Hospital of Zunyi Medical University, Zunyi 563000, Guizhou Province, China. E-mail: luoyongtt@163.com.

Copyright © 2022 The Author(s). Published by Wolters Kluwer Health, Inc.

This is an open access article distributed under the terms of the Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 (CCBY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.

ISSN: 2331-2637/23/2801-0039

DOI: 10.1097/NRL.0000000000000429

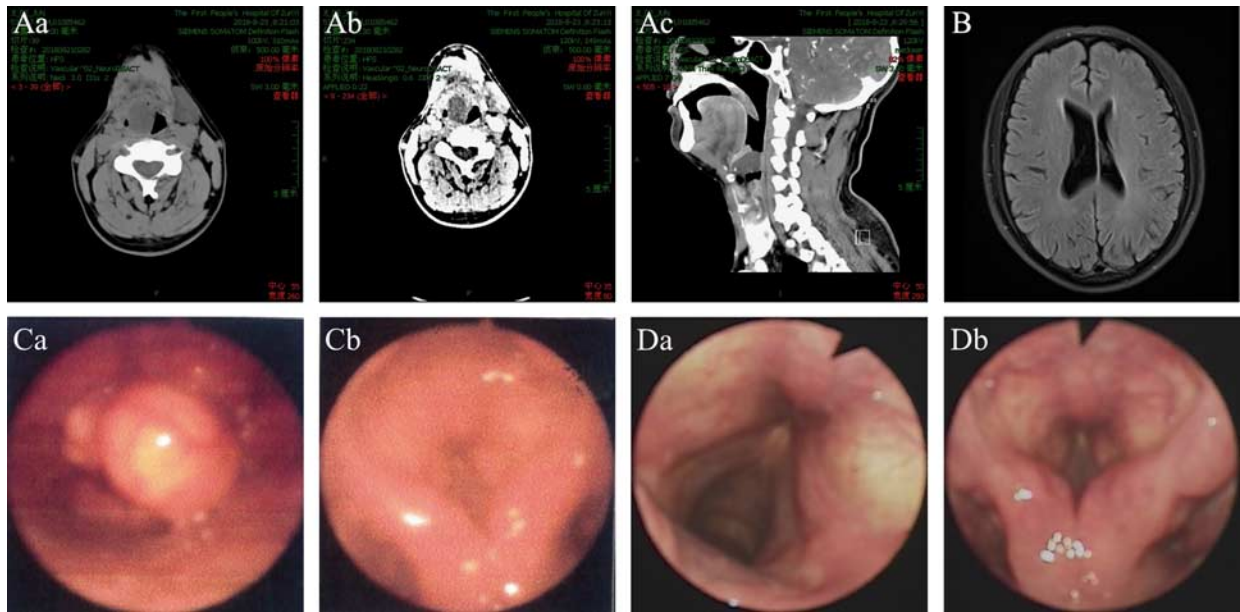


FIGURE 1. (A) Computed tomography results of the neck: a, plain scan cross-section; b, enhanced cross-section; c, sagittal plane. (B) Magnetic resonance imaging results of the brain. (Ca and Cb) Preoperative laryngoscopy. (Da and Db) Laryngoscopy 2 months after surgery.

DISCUSSION

Slurred speech usually occurs in cerebrovascular diseases, especially when slurred speech is the initial symptom. Clinicians will consider dangerous illnesses first. Therefore, slurred speech is easily misdiagnosed as stroke. However, vocal cord polyps, vocal cord cysts, laryngeal paralysis, laryngeal granuloma, epiglottic cysts, and laryngitis can also cause speech disorders. In addition, studies have pointed out that people with perceived dysphonia are more likely to suffer from throat disease.² The patient, in this case, had a large cyst but no symptoms such as progressive dysphagia or sore throat, but his speech was suddenly slurred, which may have been related to the patient's poor perceived dysphonia. While a large epiglottic cyst can result in a change in phonation, it is usually a quality change rather than slurring. Slurring is a result of the restriction of the movement of the tongue in the oral cavity. An epiglottic cyst can limit the movement of the base of the tongue. Therefore, the nature of the speech change is different. Unfortunately, because the patient was unwilling to cooperate, we lacked an assessment by speech therapists. Transient ischemic attack (TIA) was a possibility in this case, given that there were ischemic changes in the MRI but no infarct (Fig. 1).

According to the patient's performance, impaired function of the glossopharyngeal nerve and vagus nerve could have been considered, and the lesion may have been located in the medulla oblongata, or incomplete Wallenberg syndrome may have been present. Because the patient's head CT showed no obvious abnormalities, intracranial hemorrhage, and intracranial space-occupying lesions could be ruled out. Acute ischemic stroke and hypokalemia were considered. However, the time window for intravenous thrombolysis was exceeded when the patient visited the department, and the National Institutes of Health Stroke Scale score was 2 points; therefore, intravenous thrombolysis was not performed. After explaining his condition to the patient, he was given conservative treatment with drugs and potassium supplementation. After treatment, the patient's limb muscle strength returned to normal, with only symptoms of slurred speech. The patient had no obvious headache, nausea, vomiting, or other symptoms of intracranial hypertension. No

long-term drinking or exposure to toxic substances was reported. The patient could engage in daily work before admission and had no history of genetic disease. After admission, there were no abnormalities in routine blood test results, coagulation parameters, troponin I, renal function parameters, or the myocardial enzyme spectrum. Pretransfusion examination, liver function parameters, fasting blood sugar, and thyroid hormones were normal. In addition, an electroencephalogram showed no obvious abnormalities. Combining the above, TIA, central system infection, and poisoning could be eliminated, as well as neuromuscular junction and muscle diseases, neurodegenerative diseases, and genetic diseases. Head MRI (plain scan+MRA+diffusion-weighted imaging) identified old deep white matter ischemic lesions, but there was no abnormality in brain MRA. Therefore, the acute ischemic cerebrovascular disease was excluded, and it was considered that the patient's slurred speech was caused by a non-neurological disease.

Overall, the duration of TIA symptoms usually does not exceed 24 hours. After the removal of the cyst, the patient's slurred speech improved. In addition, the patient was treated with potassium supplementation after admission, and the symptoms of limb fatigue were significantly relieved and did not reappear. However, the symptom of slurred speech persisted for >24 hours. When these findings were combined with those of MRI, where no responsible lesions were found, and normal MRA findings, TIA was ruled out. Therefore, the slurred speech was still considered to be related to epiglottic cysts.

Following the relevant examinations of the patient, laryngoscopy revealed an epiglottic cyst, and the pathologic diagnosis was chronic inflammation of the mucosal tissue with the formation of horn cysts. The diagnosis of an epiglottic cyst was clear. Epiglottic cysts are benign tumors, accounting for ~4.3% to 6.1% of all benign tumors of the larynx.³ Congenital cysts can cause neonatal respiratory distress and death, but airway obstruction due to acquired cysts in adults is rare. Studies have shown that epiglottic cysts will block the outflow of air from the mouth due to the interruption of the backward movement of the tongue, resulting in sound changes.⁴ In this

case, the patient's slurred speech may have been due to the cyst blocking the airway and causing a change in pitch. Regarding the examination of epiglottic cysts, video laryngoscopy can lift the epiglottis and large epiglottis cysts, thereby improving the patient's ventilation and determining the cause of airway obstruction.⁵ The potential complications of epiglottic cysts are infection and abscess. Early intervention depends on size and symptoms. Small asymptomatic cysts are mostly left alone. At present, most epiglottic cysts are treated by surgical resection, but this kind of treatment has a high risk of bleeding. Investigations and studies have shown that the excision of epiglottic cysts using radiofrequency devices has the advantages of less bleeding, less damage, and less postoperative tissue response than surgical resection.⁶

CONCLUSIONS

Although the clinical manifestations of epiglottic cysts may be different, the clinical manifestation of slurred speech as the first symptom can easily cause confusion and affect diagnosis and treatment. This case highlights the impact of throat

disease on speech function, especially with slurred speech, and the possibility of epiglottic cysts should be considered.

REFERENCES

1. Borner U, Landis BN. Epiglottic cyst: rare, but potentially dangerous. *Thorax*. 2016;71:294.
2. Byeon H. Prevalence of perceived dysphonia and its correlation with the prevalence of clinically diagnosed laryngeal disorders: The Korea National Health and Nutrition Examination Surveys 2010-2012. *Ann Otol Rhinol Laryngol*. 2015;124:770-776.
3. Collins AM, Chapurin N, Lee WT. Epiglottic cyst causing dysphagia and impending airway obstruction. *Am J Otolaryngol*. 2015;36:492-493.
4. Lee Y, Kim G, Wang S, et al. Acoustic characteristics in epiglottic cyst. *J Voice*. 2019;33:497-500.
5. Sugita T, Arisaka H. AirWay Scope™ for difficult ventilation in a patient with epiglottic cyst. *Anesth Prog*. 2018;65:204-205.
6. Qiu SY, Liu DB, Huang ZY, et al. Application of minimally invasive technique of coblation in 30 infants with epiglottic cyst. *Zhonghua Er Bi Yan Hou Tou Jing Wai Ke Za Zhi*. 2012;47:496-498.