

LETTER

Large carotid body paraganglioma: triumphing over the perioperative challenges with a multidisciplinary approach

Dear Editor,

A 33-year-old female, with a palpable, non-throbbing Shamblyn II (7 x 3.5 x 3.5 cm), non-functional (negative values of plasma metanephrines and urine catecholamines), left carotid body tumor (CBT) presented in our hospital (Figure 1). A decision was made to proceed to surgical excision with a multidisciplinary approach. Invasive arterial blood pressure, cerebral oximetry, depth of consciousness, and nociception monitoring, an electromyographic cuffed endotracheal tube, and motor evoked potentials were applied. Internal carotid artery clamping for 29 minutes was applied. The continuous communication of anesthetists with the surgeons ensured the absence of any cardiovascular, cerebrovascular, or neurological incidents perioperatively. Hence, the intra- and postoperative periods were uneventful. The patient was extubated and admitted to the post-anesthesia care unit for 24 hours and was discharged 72 hours later. Of note, the postoperative brain imaging confirmed the absence of any mini infarct. One and half years later, the patient remains asymptomatic and in stable condition.

CBTs are rare, non-chromaffin paragangliomas, arising from the chemoreceptors of the bifurcation of the carotid artery¹. The estimated median doubling time is 4.2 years, with a reported malignant transformation of 5-7%. The majority of patients are asymptomatic¹. Early excision is crucial, as lesions >5 cm may result in life-threatening complications and noteworthy mortality².

Even so, perioperative management remains challenging, as CBTs excision is associated with substantial perioperative morbidity (cerebrovascular and cardiovascular incidents, airway compromise, and cranial nerve palsy)². Moreover, although CTBs are usually non-functional, hypertensive crises may still occur¹. Notwithstanding, tumor manipulations may lead to severe bradycardia and hypotension, requiring urgent interventions¹. Hence, we established invasive blood pressure monitoring before the induction. As carotid artery clamping intraoperatively may lead to cerebral hypoperfusion, cerebral oximetry and depth of consciousness monitoring were also applied. Interestingly, using inhaled agents, such as desflurane, may lead to vasodilation of cerebral vessels and improved perfusion². During artery clamping, the team's communication proves to be essential in order to counteract any complication.

This case highlights the value of the effective multidisciplinary experts' approach and the significance of an individualized strategy, applying advanced intra- and post-operative monitoring in patients undergoing surgery for CBT.

Conflict of interest

Authors declare no conflicts.

References

1. Goyal VD, Gupta S, Misra G, Sharma R, Bera S, Khandelwal R. Successful patient outcome following surgery of carotid body tumor and temporary hypoglossal nerve dysfunction. *Indian J Thorac Cardiovasc Surg.* 2021; 37: 458-462.
2. Ng DW, Yam CI, Wong LT, Koh DL. An anaesthesia perspective on carotid body tumour (CBT) excision: A twenty-year case series at the Singapore General Hospital. *J Perioper Pract.* 2017; 27: 228-233.

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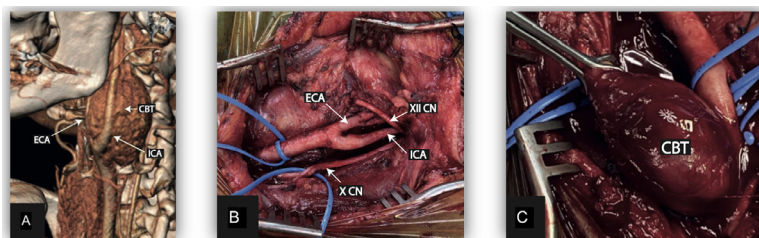


Figure 1: A) 3D computed tomography reconstruction of the carotid body tumor, B) relations to the neighboring tissues (tumor excised), and C) mobilization of the carotid body tumor before the final resection.

CBT: carotid body tumor, ECA: exterior carotid artery, ICA: internal carotid artery, X CN: vagus nerve, XII CN: hypoglossal nerve.