

## BACKGROUND

- Paragangliomas are sporadic, hypervascular, and typically benign neuroendocrine neoplasms arising from extraadrenal neural crest cells.
- Carotid body tumors (CBT) commonly present as slow-growing, asymptomatic unilateral neck masses between the third and sixth decades of life, or as incidental findings on imaging studies.
- When symptomatic can cause pain, dysphagia, odynophagia, hoarseness and stridor, while functional CBTs may cause palpitations, flushing and headaches, related to catecholamine production.



## CURRENT EVIDENCE

- Carotid body tumors are rare occurrence, and infrequently bilateral. Contrast-enhanced CT or MRI are keys to characterizing extent of disease and invasiveness. In a retrospective study involving 204 patients, 14 patients (6.9%) had bilateral CBTs, their mean age was  $49 \pm 11.9$  years, 57.1% were females, and all of the tumors were non-secreting and benign.<sup>1,2</sup>
- Although <4% of CBTs are biochemically active, plasma catecholamines and metanephrines should be obtained to detect a functional CBT or a concomitant pheochromocytoma.<sup>2</sup>

## CLINICAL CASE

- An 18-year-old female patient presented with four days of odynophagia and fever. Drooling and trismus along with right submandibular swelling was noted, the oropharynx was erythematous, the right tonsil was swollen and medially displaced, and the right submandibular and anterior cervical lymph nodes were enlarged and tender.
- A contrast-enhanced CT of the neck showed two separate abscesses in the right tonsil. Additionally, bilateral avidly enhancing lesions (left: 14 mm, right: 10 mm) were noted adjacent to the carotid bulbs, suspicious for CBTs (Red arrows).
- Incision and drainage of abscesses was performed. Steroids and antibiotics were initiated, and within 24 hours her symptoms significantly improved. ENT and vascular surgery were consulted for staged excision of the CBTs.

- Surgical excision is the gold standard treatment for CBTs. Patients with bilateral CBTs should undergo staged excision, removing the largest tumor first to prevent perioperative labile blood pressure.<sup>3</sup> Preoperative  $\alpha$ -Adrenergic blockade can prevent or block the effects of acute catecholamine release during anesthesia and surgery and prevent intraoperative hypertensive crises for functional and non-functional CBTs.<sup>2,3</sup>
- Radiotherapy is an alternative treatment for patients with extensive involvement, multiple tumors or high perioperative risk. One third of patients may have persistent or recurrent tumors. Annual follow-up for at least 10 years with metanephrines levels for surgically treated functional CBTs, or imaging for silent CBTs is recommended.<sup>2,3</sup>

## CONCLUSION

Bilateral CBTs are uncommon and can represent management challenges. Staged surgical excision with preoperative  $\alpha$ -Adrenergic blockade is the gold standard of treatment, followed by annual follow-up for at least 10 years.

## REFERENCES

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