

Stroke in Association with Thyroid Goitre: A Case Report

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Ischaemic stroke secondary to isolated internal carotid artery thrombus without risk factors is uncommon. A 55-year-old woman presented to the acute stroke unit with acute right middle cerebral artery territory infarction secondary to right internal carotid artery occlusion. There were no risk factors for cerebrovascular disease, but mediastinal imaging showed the presence of a large retrosternal goitre which was displacing the mediastinal structures including the brachiocephalic and common carotid artery. Intraluminal thrombus is visible in the displaced innominate artery and is the underlying cause for the stroke in our patient. This case highlights the importance of appropriate imaging of the mediastinum in cases with thyroid goitre.

Key Words: Thromboembolic stroke—Internal carotid artery thrombosis—Thyroid goitre

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Case

A 55-year-old woman presented to the accident and emergency department with sudden onset left sided weakness. There was no speech disturbance but the patient was drowsy. Past medical history was unremarkable apart from asthma and a benign multinodular thyroid goitre identified several years ago, for which the patient had never had any medical or surgical treatment. She was a nonsmoker and no other risk factor for stroke was identified. Examination revealed a dense left hemiparesis with sensory inattention to the left. CT scan of the head in the emergency department suggested early appearances of right middle cerebral artery territory infarction. She started treatment with high-dose aspirin,

300 mg, and was admitted to the acute stroke unit. Initial blood tests were unremarkable with no evidence of diabetes, hyperlipidaemia, or coagulopathy. CT scan of the head repeated the next day demonstrated the right middle cerebral artery infarction and the patient underwent CT angiogram (Fig. 1, A).

The angiogram showed complete occlusion of the right internal carotid artery with a filling defect noted in the innominate artery, in keeping with thrombus (Fig. 1, B,C). The left carotid artery appeared normal. In addition a large thyroid mass with significant retrosternal extension was demonstrated. The patient proceeded to CT scan of thorax which showed the goitre causing lateral deviation of the brachiocephalic artery and the right common carotid artery (Fig. 2). Abdominal imaging showed no evidence of metastases and there was no thrombus on echocardiogram. A 72-hour tape showed no evidence of arrhythmia. The patient continued treatment with clopidogrel and atorvastatin as part of secondary prevention. She proceeded to have thyroid function testing which was normal and there was no evidence of malignant transformation of the multinodular goitre on imaging. Therefore, the patient continued with conservative management for the goitre.

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Discussion

Cerebrovascular disease caused by external compression of the common carotid artery has been reported in the literature, presenting as recurrent transient ischaemic

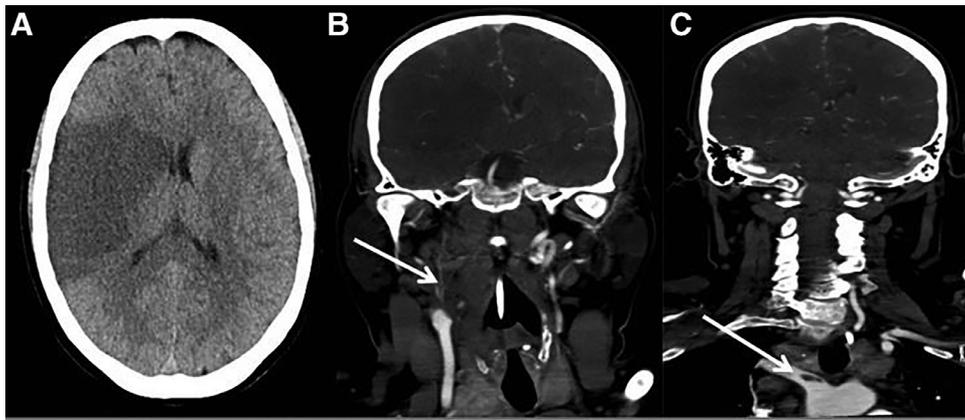


Figure 1. (A) CT scan of the head showing large volume right MCA territory infarction with effacement of the right cerebral sulci and the right lateral ventricle. (B) Coronal section CT angiogram showing right ICA occlusion (arrowed). (C) Coronal section showing thrombus in the innominate artery (arrowed). Abbreviations: MCA, middle cerebral artery; CT, computed tomography; ICA, internal carotid artery.

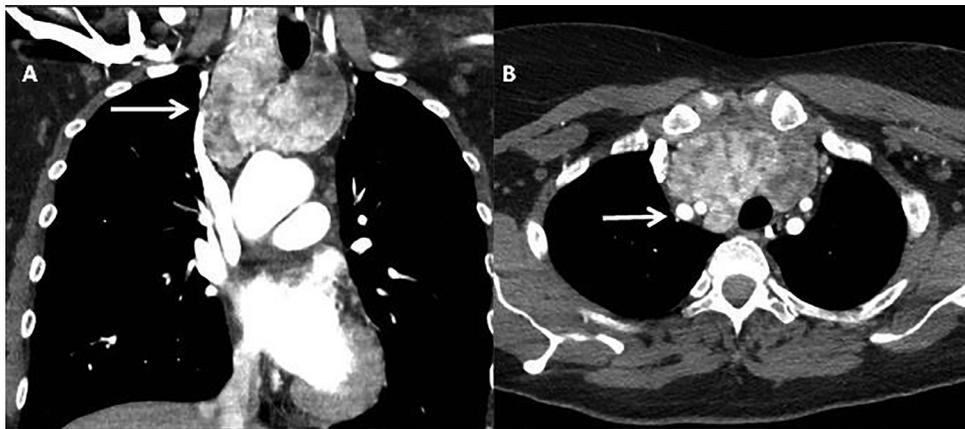


Figure 2. (A) CT scan of the chest demonstrating large retrosternal goitre which is predominantly within the right thyroid lobe (arrowed). The goitre extends inferiorly to the level of the upper sternal body. (B) Axial section showing the extent of the goitre and lateral deviation of the brachiocephalic artery and common carotid artery (arrowed).

attacks.¹ Cerebral venous sinus thrombosis has also been associated with thyroid goitre in Grave's disease.² The underlying mechanism for thrombosis in the arterial or venous system in these reported cases is likely due to a combination of hypercoagulability and venous stasis. Although superior vena cava obstruction is an uncommon but recognized complication of a mediastinal mass, carotid artery obstruction has rarely been reported.

In our case the underlying mechanism was thought to be an alteration in arterial blood flow dynamics leading to thrombus formation in the innominate and internal carotid artery. Our patient was managed with high-dose antiplatelet therapy, but the definitive management is to determine the nature of the goitre followed by surgical resection if appropriate.

External compression of the carotid artery is a rare cause of stroke, and arterial imaging in such cases is necessary to evaluate the extent of thrombus and location of external compression. Retrosternal goitres usually present with dysphagia, dyspnoea and dry cough, but compression of other mediastinal structures should be considered especially in a patient with a history of goitre.

References

1. Braakman HM, Knippenberg SA, de Bondt BJ, Lodder J. An unusual cause of transient neurologic deficits: compression of the carotid artery by a thyroid cystic nodule. *J Stroke Cerebrovascular Dis* 2010;19(1):73-74.
2. Anders HJ. Compression syndromes caused by substernal goitres. *Postgraduate Med J* 1998;74:327-329.