# Atypical presentation of Type I right common carotid artery (CCA) thrombotic occlusion: a case report

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**Background:** Common carotid artery (CCA) occlusion can be noticed while carrying out routine sonography and color flow imaging (CFI) of the carotid vessels. A complete evaluation is required when detected in these types of cases. The presenting feature may vary from minor to the major category. Internal carotid artery (ICA) and external carotid artery may or may not be the part of occlusion.

**Case Report:** We report a 39-years-old male who reported with sudden loss of vision in the right eye. He underwent carotid ultrasonography and was found to be having complete occlusion of right CCA and ICA.

**Conclusion:** Alarming stroke may not always be the finding in complete occlusion of CCA and their distal branches. There can be isolated finding of retinal artery occlusion as happened in our case. CFI is the modality of choice for clinching the diagnosis.

Keywords: CCAO, sonography, color flow imaging, ICA, ECA.

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### Background

Common carotid artery occlusion (CCAO) can be seen without any alarming stroke. But this entity may produce some clinical setting where the cross-sectional imaging leads to the diagnostic hunt. There is a paucity of literature regarding complete occlusion of common carotid artery [1]. The clinical presentation, hemodynamics, and causes may vary from case to case. CCA occlusion may be associated with the occlusion of the internal carotid artery (ICA) and external carotid artery.

#### **Case Report**

A 39-years-old hypertensive male reported to the ophthalmology outpatient department with loss of vision in the right eye. There was preceding h/o pain in right eye and headache of 2 days duration. There was no complaint of scalp swelling or jaw claudications. He was on warfarin 12 years back because of deep vein thrombosis and had no complaints now. He was chronic smoker and heavy alcoholic. There were no h/o seizures or tremors. On examination, the patient was fully conscious and of average built. Blood pressure was systolic 160 and diastolic 100 mm Hg. Pulse rate was 78 beats/minute. Temperature and respiratory rates were within the normal range. There was no weakness in any part of the body. Finger counting was not possible with 1-m distance. Fundus examination revealed the complete occlusion of the central retinal artery. Boxcar appearance was present. There were widespread whitening cherry red spots. Disc was pale with a thin neuro-retinal ring with the sloping rim. No arterio-venous crossing. Other systemic examination was non contributory. Patient was subjected to carotid ultrasonography and color Doppler investigation. Sonographic examination revealed slightly echogenic thrombus in right common carotid causing total occlusion. This thrombus was extending from the origin of right CCA to the right ICA. External carotid on the ipsilateral side was patent with the collateral filling (Figures 1–4). Right vertebral artery (VA) was significantly prominent but showed normal spectrum. Intimal media complex on both sides was well preserved (Figures 5 and 6).

Patient was referred to the higher center of cardiothoracic vascular surgery (CTVS) for further management.

#### Discussion

The incidence of CCAO is not well documented because of variable presentations. There is no complete record of the affected patients with this entity because of few being asymptomatic in nature. Parthenis et al. [2] had reported CCAO and ICAO as 0.54% and 2.8%, respectively in a large series of 6,415 cases. Similar incidences were reported by Chang et al as 0.24% in CCAO and 2.5% in ICA. The incidence in stroke cases has been reported as 1%–5% in literature [3]. Right-sided occlusion is more

19



**Figure 1.** Grayscale B-mode sonographic images. (a) Right CCA in long axis is completely occluded with slightly echogenic thrombus (white thick arrow) with normal intima-media complex (red inverted arrow). The thrombus is not firmly adherent to the vessel wall. (b) Right CCA in the axial section with complete occlusion.



Figure 2. A CFI of Right CCA. There is no flow in the vessel even in low settings. No calcification is seen in the vessel.



Figure 3. Right ICA beyond carotid bulb and bifurcation. The thrombus is seen extending in the right ICA with complete occlusion (white hollow arrow).



Figure 4. Color flow images of the right CCA and jugular vein. Right CCA shows complete occlusion (red hollow horizontal arrow) without any flow but jugular vein shows normal color flow (white vertical hollow arrow).



Figure 5. Right VA shows prominent flow (inverted white red lined arrow) without any thrombus. The adjacent rib shadowing is seen in front of the vessel (white horizontal hollow arrow).

common as compared to the left side and bilateral cases are rare. The formation of the thrombus may be retrograde in case of atherosclerosis and ante-grade in other thrombotic process and Takayasu's disease [4]. There are two types of occlusions which are as follows: Type I: Both CCA and ICA are occluded and the ischemic events are due to hemodynamical background.

Type II: CCA is occluded but ICA remains patent because of the supply of extracranial collateral flow.



Figure 6. The contralateral CCA is seen with normal flow and normal spectral analysis.

The diameter of both the sides may vary but there is no evidence of any hypoplasia of the vessels leading to the occlusion. The perfusion of the brain on the occluded side is managed by collateral circulation.

#### Conclusion

Carotid sonography and color flow imaging (CFI) are the gold standard imaging tools for the evaluation of the occlusion of the vessel. This is nonexpensive and easily available and that too without any radiation hazards.

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#### **List of Abbreviations**

CCA	Common carotid artery
CCAO	Common carotid artery occlusion
CFI	Color flow imaging
CTVS	Cardio thoracic vascular surgery
ICA	Internal carotid artery
IMC	Intimal media complex
VA	Vertebral artery

#### **Consent for publication**

A written consent of the patient was taken.

# Ethical approval

Not required.

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## Summary of the case

Patient (gender, age)	1	Male 39-years	
Final diagnosis	2	Complete thrombotic occlusion of the right common carotid artery	
Symptoms	3	Loss of vision in the right eye	
Medications	4	Planned for CTVS Intervention	
Clinical procedure	5	Thrombectomy	
Specialty	6	Intervention by CTVS Surgeon	