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Nasopharyngeal Carcinoma Presenting as a Dual Territory Stroke: The Hyperdense Artery Sign

This 63-year-old Chinese female with both diabetes and hypertension underwent CT imaging of the brain after presenting with a progressive left sided hemiplegia.

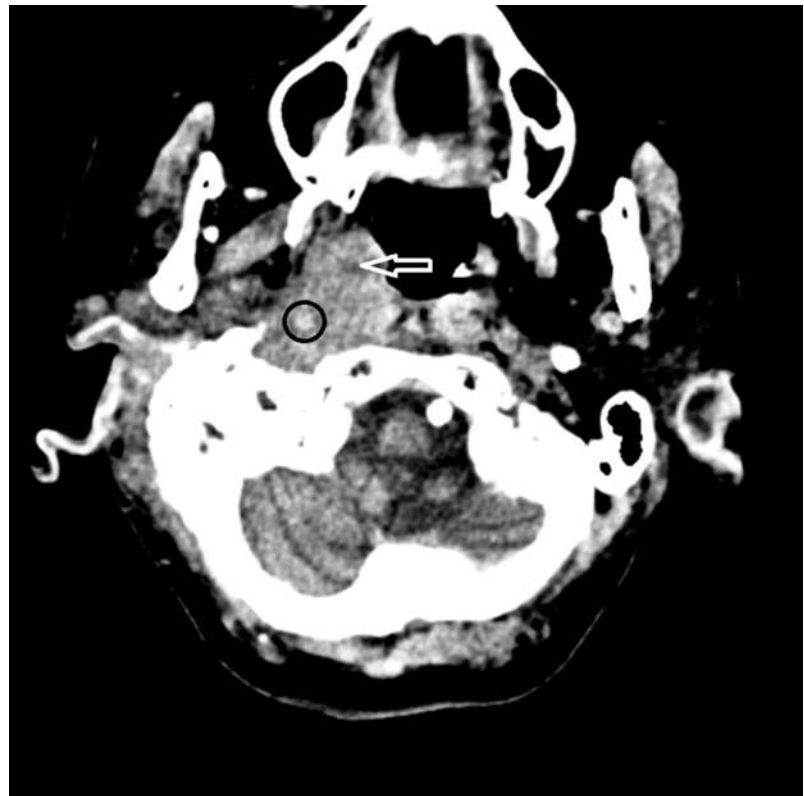


Figure 1a. Axial Unenhanced CT of the Brain: Thrombosis in the right internal carotid artery (black circle) with surrounding tumour in the nasopharyngeal recess (white arrow).

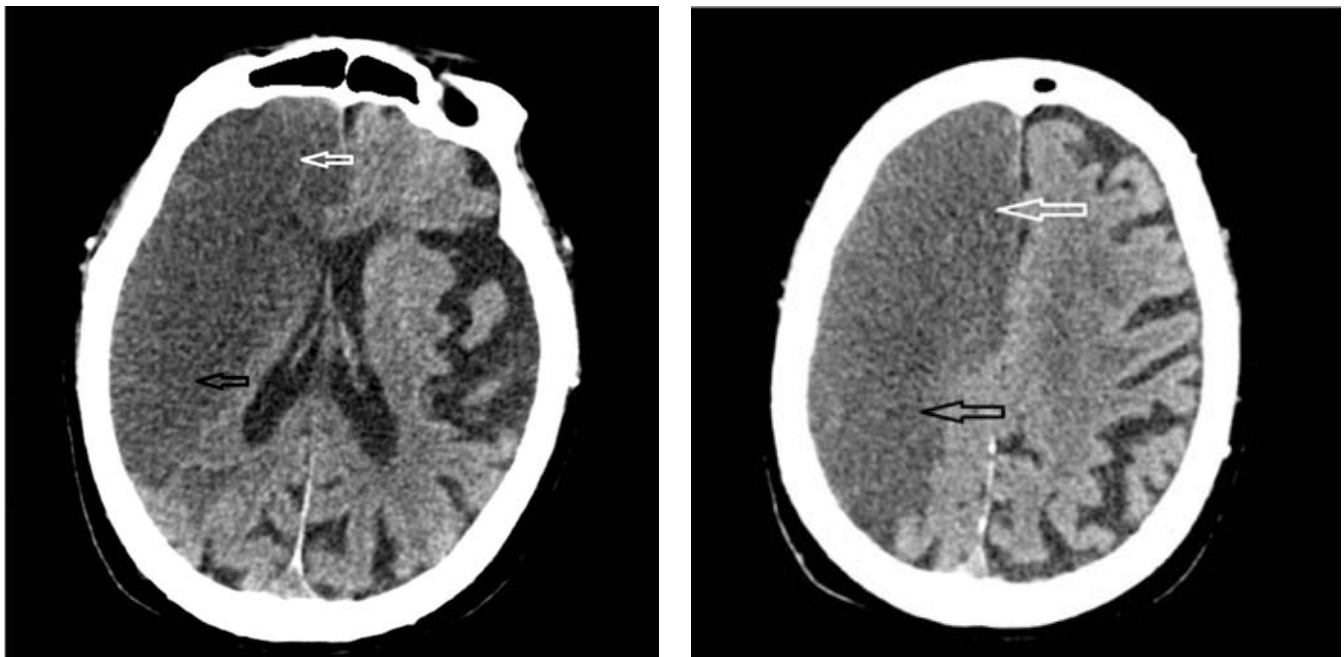
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The 'hyperdense artery sign' is a generic description that can be evident in any artery of the body on unenhanced CT occurring due to the presence of intraluminal thrombosis (*Figure 1*). It is a well-established sign most commonly described in CT imaging of the brain where it is visualised in the vast majority of cases in the middle cerebral artery in the context of an acute cerebral infarction.¹ It occurs uncommonly elsewhere with the internal carotid artery (ICA) and basilar artery being other clinically significant sites. The 'hyperdense ICA' sign has been reported to be a reliable and highly specific marker of thromboembolic occlusion of the internal carotid artery.² The 'hyperdense artery sign' is related to the attenuation value of intraluminal thrombus. The CT attenuation value (Hounsfield unit or HU) of normal blood is dependent on the haematocrit ranging from 20 to 30 HU. As the process of thrombus retraction occurs, its water content decreases increasing the concentration of haemoglobin within the clot. As a result, this raises the attenuation value of the thrombus to 50–80 H. So the term 'hyperdense' is given.³

In this case, it proved to be the presenting symptom for an undiagnosed nasopharyngeal tumour, the thrombus likely developing as a complication of the surrounding tumour within the nasopharyngeal recess. The resultant outcome was a dual territory cerebral infarction of the anterior and middle cerebral artery territories both supplied by branches of the internal carotid artery (*Figures 2a & 2b*).



Figures 2a & b. Axial Unenhanced CT of the Brain: Anterior cerebral artery territory (white arrow) and middle cerebral artery (black arrow) infarctions.

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