



Hyperdense Basilar Artery Sign

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Clinical Image

Posterior circulation arteries occlusion causes one fifth of all strokes with presentation ranging from mild transient symptoms to devastating strokes. Basilar artery occlusion (BAO) accounts for 1% of all strokes and it yields 80% to 90% of mortality if recanalization of vessel is not achieved [1]. A non-contrast enhanced computerized tomography (NCCT) of brain routinely serves as the initial investigation tool in acute stroke to rule out hemorrhage so that patient can be planned for thrombolysis if presented in window period. One of the earliest signs of acute ischemia though with relatively poor sensitivity is hyper dense artery sign which reflects the presence of intra luminal thrombus which is a surrogate of arterial obstruction. The hyperdense basilar artery (HBA) sign is, however, far less established than the hyperdense middle cerebral artery sign because artifacts within the posterior fossa may alter the vessel density, atherosclerotic disease in this location is frequent and there is no comparable (paired) artery to evaluate asymmetry [2]. Connell et al. identified optimal cut off points for region of interest in basilar artery region was 40 HU to 42 HU (sensitivity, 68.29% to 78.05%; specificity, 75.61% to 82.93%; accuracy, 74.39% to 80.49%) [3].

Here we are describing a case of acute basilar artery thrombosis which was identified as hyper dense basilar artery sign on NCCT. A 31 year old male patient with no comorbidities presented to emergency department (ED) with history of headache and shortness breath for few hours. On arrival to ED, he became unconscious and GCS was E1V1M1. He was intubated and Immediate NCCT brain was done to rule out cerebro vascular accident. The scan was suggestive of a linear hyperdense structure in the region extending from middle of the basilar artery to the top of artery with mean hounsfield units of 63 which was suggestive of hyperdense basilar artery sign (Figure 1). In the axial sections it was seen as hyperdense basilar dot sign (Figure 2). Rest of the brain parenchyma looked grossly normal. Immediate CT cerebral with neck vessel angiogram was done suggestive of thrombus of size 2.3 cm extending from middle of basilar artery to the basilar top (Figure 3). Patient underwent immediate mechanical thrombectomy, further managed in intensive care unit and has been discharged out of hospital with GCS of E2VTM4.

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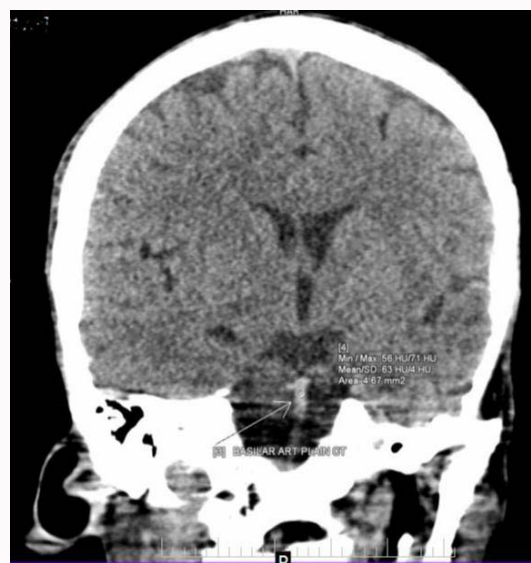


Figure 1: Hyperdense basilar artery sign with mean HU of 63.



Figure 2: Hyperdense basilar artery (Dot sign).

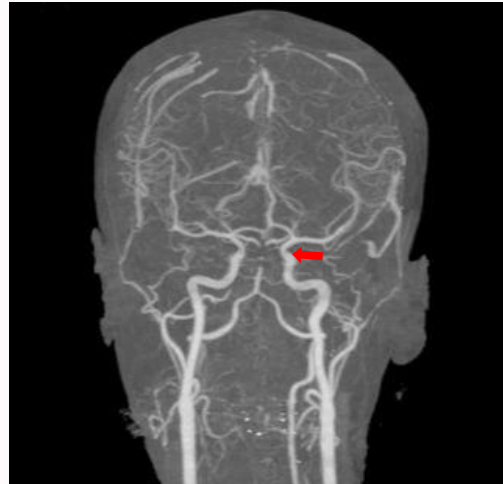


Figure 3: Angiogram suggestive of Basilar artery thrombosis.

Learning Points

1. During the past few decades, BAO has evolved from an almost uniformly fatal disease to a treatable disorder. Prompt recanalisation of the basilar artery can substantially enhance a patient's chances of survival and good functional recovery.
2. Hyperdense basilar artery sign is one of the initial signs of acute ischemic stroke identified in NCCT brain with relatively low sensitivity and specificity and it needs confirmation by angiography.
3. Presence of hyperdense basilar artery (HDBS) signs warns the need for early endovascular intervention within window period for good neurological recovery as tissue plasminogen activator is not very effective. Early endovascular intervention has been given the highest recommendation in the recently updated 2018 American Society of Stroke guidelines.

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