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Case Blog

Title: Hyperdense Basilar Artery Sign: An Indicator of Basilar Artery Thrombosis

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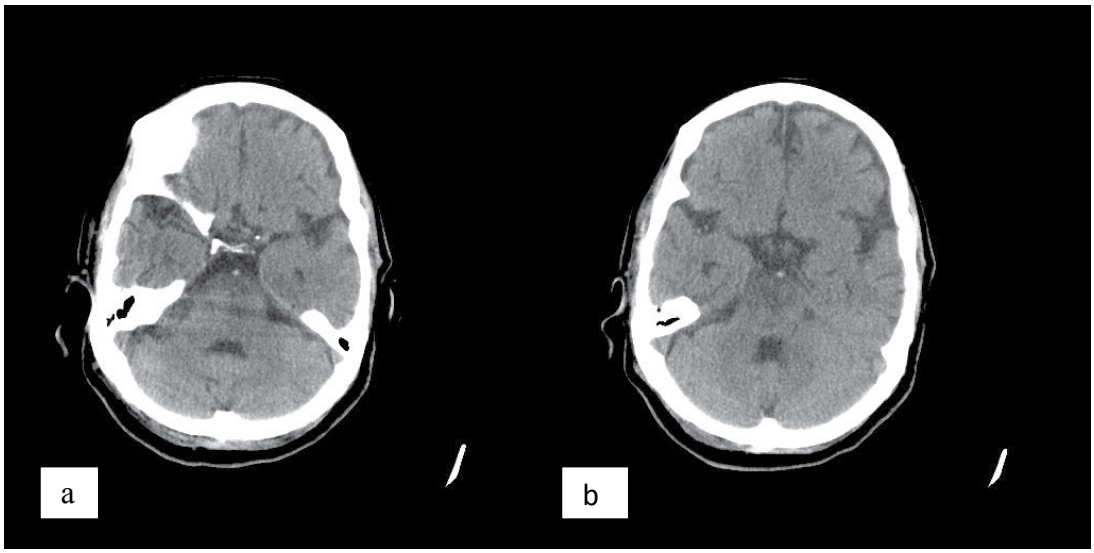

Figure 1: Non-enhanced axial brain CT scan shows hyperdense basilar artery sign (white arrow) and ischemic stroke in the pons (yellow arrows).

Posterior circulation is a vital area of brain blood supply and stroke in this territory could be fatal or result in severe disability. Many patients have preceding symptoms (vertigo or head ache) 2 weeks before [1]. Although brain CT scan is a rapid standard method to detect infarction after the first presentations, because of bony structures and artifacts, it is less sensitive for the posterior fossa and brain stem parenchyma.

As brain MRI or brain vessels imaging (CTA, MRA) are not easily available tools for patients' evaluation, fine informative changes on brain CT scan contributes to physicians' early and more effective intervention. Hyperdense basilar artery sign is a sign of basilar artery thrombosis or embolism that predicts basilar territory infarction [2]. Here, we describe a 70 year-old lady who was referred to the hospital with sudden impaired level of consciousness. One day before, she had developed the right upper limb weakness and slurred speech and in the previous week she had new onset of headache and vertigo. Past medical history was consistent with ischemic heart disease and previous ischemic stroke 2 years ago.

Brain CT showed hyper-dense signal change in the basilar artery indicative of basilar artery thrombosis and pons infarction (Figure 1a and 1b).

Impaired blood supply of the basilar artery causes devastating results and by the time the stroke develops, it is too late to approach appropriately. Non- enhanced brain CT scan is a very useful tool for early evaluation of patients with acute infarction; however, in the brain stem area and for basilar artery territory, it has some limitations because of bony artifacts in the skull base and most of the time further modalities are needed to document brain stem ischemia. So rapid and correct diagnosis just based on non-enhanced CT scan is sometimes a challenge especially for inexperienced physician.

Hyperdense basilar sign detected on non- enhanced brain CT scan is an indirect sign of basilar artery occlusion that is not seen in all patients, but it is highly specific when detected [3]. Hence, it is important to be careful about reviewing this artery in the routine posterior fossa evaluation whenever it is a doubt about brain stem ischemia [4].

In two studies on 742 patients (Goldmakher and coworkers, 2009) and 126 patients (Tan and his colleague, 2010) with acute posterior circulation stroke, it was shown that this sign is helpful both in early detection of ischemia within the basilar artery territory and prediction of short and long term outcome [5,6].

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In spite of all reports, there are frequent false positive and negative results in visual assessment of non-enhanced brain CT scan and it is necessary to follow additional investigation when there is suspicion of basilar artery occlusion [7]. For example, there are many data about value of dense middle cerebral artery (MCA) sign in the brain CT scan within first hours of acute infarction, but hyperdense basilar artery sign has been less focused due to difficulty in interpretation (no comparable artery in the opposite side, artifacts within the posterior fossa) [7].

In summary, basilar artery supplies a vital area of the brain and ischemia or infarction of this area is associated with a poor outcome, so early recognition helps choose the therapeutic choices such as thrombolytic therapy, embolectomy or antiplatelet therapy. Hyperdense basilar artery sign on un-enhanced brain CT scan could be a rapid useful diagnostic tool for every patient suspicious to posterior circulation ischemia or occlusion.

References

1. Mortimer AM, Saunders T, Cook JL (2011) Cross-sectional imaging for diagnosis and clinical outcome prediction of acute basilar artery thrombosis. Clin Radiol 66: 551-558.
2. Kumar S (2005) Calcified vertebral artery and “dense basilar artery sign” in a patient with basilar territory infarction. Neurol India 53: 125.
3. Mattle HP, Arnold M, Lindsberg PJ, Schonewille WJ, Schroth G (2011) Basilar artery occlusion. The Lancet Neurology 10: 1002-1014.
4. Jakanani GC, Aslam M, Rao B (2010) Basilar artery: another anatomic blind spot at brain imaging. Radiographics 30: 1431-1432.
5. Goldmakher GV, Camargo EC, Furie KL, Singhal AB, Roccatagliata L, et al. (2009) Hyperdense basilar artery sign on unenhanced CT predicts thrombus and outcome in acute posterior circulation stroke. Stroke 40: 134-139.
6. Tan X, Guo Y (2010) Hyperdense basilar artery sign diagnoses acute posterior circulation stroke and predicts short-term outcome. Neuroradiology52: 1071-1078.
7. Connell L, Koerte IK, Laubender RP, Morhard D, Linn J, et al. (2012) Hyperdense basilar artery sign-a reliable sign of basilar artery occlusion. Neuroradiology 54: 321-327.