Reviewer’s report

Title: Radiological evaluation in Patients with Clinical Suspicion of Cerebral Venous Sinus Thrombosis Presenting with Nontraumatic Headache - a Retrospective Observational Study With a Validation Cohort

Version: 0 Date: 19 Jan 2020

Reviewer: Shouxian Tang

Reviewer's report:

Dural venous sinus thrombosis (DVST) is a condition that ranges from being undiagnosed to leading to serious morbidity and mortality. DVST may occur spontaneously and it may be caused by a wide variety of underlying conditions including hormone replacement therapy, oral contraceptive medication, dehydration, hematological disorders, and pregnancy. DVST has a highly variable clinical presentation, from asymptomatic to acute or subacute headaches, signs or symptoms of increased intracranial pressure, focal neurologic deficits, or seizures. neCT is frequently the first examination to evaluate DVST because it is rapid and widely available. And when DVST is suspected, the current criterion standard for diagnosis is either contrast-enhanced MRV or CTV. Although it helps to rule out other common pathologies, it nevertheless fails to consistently provide an unequivocal diagnosis of DVST. The most important finding of acute DVST on neCT is a hyperattenuating dural sinus, reflecting an occluded vein consisting of a newly formed thrombus. Buyck et al. proposed the measurement of dural sinus attenuation in patients having a suspicion for sinus thrombosis as it may increase the diagnostic value of the CT examination. The attenuation of blood on neCT scans is predominantly caused by the protein factor of hemoglobin within the red blood cells. As a result, a linear relationship existed between the attenuation of blood and hemoglobin and hematocrit levels in a large series of 166 patients. The most common cause of false-positive interpretation of CVST on neCT scans is a high hematocrit (eg, in patients with polycythemia vera), causing a hyperattenuated sinus. And the attenuation of blood on neCT scans can be numbered by CT values.

HU as a unit of CT values, it is not appropriately being used in someplace of this manuscript. Being a unit, HU itself can not be measured or referred to a number.

Please refer to some references below:

CT density measurement and H:H ratio are useful in diagnosing acute cerebral venous sinus thrombosis. AJNR. 2013 Aug;34(8):1568-72.


Diagnostic Performance of Routine Brain MRI Sequences for

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

No

**Are the conclusions drawn adequately supported by the data shown?**
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No

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If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

Not relevant to this manuscript

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