Author's response to reviews

Title: Usefulness of Multimodal MR Imaging in the Differential Diagnosis of HaNDL and Acute Ischemic Stroke

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COMMENTS TO REVIEWERS

REVIEWER: Marcel Aries

We welcome the new comments of the reviewer, and regret that the response we made to the prior review has not been entirely satisfactory to him. Now he asks us details about what we believe most appropriate complementary test to distinguish stroke and HaNDL syndrome. As we said in our original response, “We have no definitive arguments to recommend CT or MRI; although CT perfusion techniques are faster, probably brain hemisphere circulation and a potential ischemic damage are best assessed by means of multimodal MRI”. We base this comment on the following:

There is no Type A level of evidence to recommend CTA or Multimodal MRI at detecting acute ischemia, but the American Heart Association, in its Recommendations for Imaging of Acute Ischemic Stroke (Stroke 2009; 40: 3646-3678) stated that “the ideal would be to use the more sensitive and specific imaging modality, MRI, to detect haemorrhage and ischemic tissue, if this examination does not unduly delay the administration of intravenous tPA”. If the AHA statement recommends to use MRI in cases of clinical diagnosis of stroke, we think that in cases of clinical doubt (potential stroke mimics), if we have to choose between CTA or MRI, we also prefer Multimodal MRI. However, probably the choice of either test will depend on concrete experience to properly perform and interpret Multimodal CT or Multimodal MRI in each hospital. Anyway, as we say in the case report, a clinical suspicion is of paramount importance in HANLD diagnosis, and only if the clinician suspects it, multiparametric neuroimaging – a time consuming tool-, should be performed. We have added a new reference that exemplifies this principle.

Published experience seems to show that treating stroke mimics with intravenous alteplase does not involve a high risk of cerebral hemorrhage (Neurology 2010;74:1340-5) and thrombolytic therapy is more effective the sooner it is administered (Lancet Neurol
2009;8:1074). For this reason, the recommendation of experts (Neurology 2010;74:1340-5), is not to delay treatment seeking additional complementary tests if you have a previous cranial CT scan and this does not show any contraindication to thrombolytic therapy. However, this recommendation can not ignore the fact that in any medical case, clinical suspicion should be the guiding principle of action; therefore, if doctors suspect that the case is really a stroke mimic, they should use -if available- additional tests, that is to say, multimodal CT or MRI. In our patient, we used multimodal MR imaging not to additional investigation of a stroke mimic suspicion, but to assess the mismatch in a stroke patient who had more than three hours of evolution. The results of this test made us think we faced a stroke mimic. So, in our particular case, Multimodal MR Imaging was the clue in the differential diagnosis of HaNDL and acute ischemic stroke.

- Referring to TCD, this is a tool to measure blood flow, and it is unable to appreciate the cerebral parenchyma. In addition, TCD is subject to many variations that do not depend only on the existence of arterial occlusions, but also of situations or vasospasm or functional alterations. For that reason, we do not consider this test to be useful to distinguish HANDL and stroke. Moreover, as it has already been previously published, TCD findings may be altered in case of migraine with aura or HANDL syndrome (Headache 1997; 37:516-8, Neurol Sci 2010;31 Suppl 1:S165-6), situations in which there is no arterial occlusion. These alterations are probably of functional nature, but they are difficult to distinguish to the pattern of distal arterial occlusion (TIBI 3 pattern), which is frequently found in cases of acute stroke.

- On the “stroke code” expression, although is sometimes used in medical literature and is very common in our national health organization, we accept that it is not universally known. For this reason we have deleted it from the text.