

Letter to the Editor

Comments on: "Lectin-Like Oxidized Low-Density Lipoprotein Receptor-1 Levels as a Biomarker of Acute Intracerebral Hemorrhage"

Dear Editor,

We have recently read with interest the original article published by Inoue et al¹ entitled "Lectin-Like Oxidized Low-Density Lipoprotein Receptor-1 Levels as a Biomarker of Acute Intracerebral Hemorrhage." The authors described the potential use of Lectin-like oxidized Low-Density Lipoprotein Receptor-1 (LOX-1) serum level as a biomarker for intracerebral hemorrhage (ICH). They measured LOX-1 blood level within first 24 hours after symptoms onset and reported that the biomarker was able to discriminate between ischemic and hemorrhagic strokes ($P < .0001$) in a cohort of 9 and 7 patients, respectively.

In order to evaluate whether serum LOX-1 levels measurement maintains its potential as diagnostic biomarker of ICH during the hyperacute phase of the disease (<6 hours from symptoms onset), we measured serum LOX-1 levels in 13 ischemic stroke (IS) patients and 14 patients with ICH, randomly selected from our biobank.² IS and ICH patients were matched by age, sex, and baseline stroke severity, measured with the National Institutes of Health Stroke Scale. All blood samples were drawn within 6 hours after symptoms onset and before any treatment was given. The diagnosis of ICH or IS was based on neuroimaging. All the patients or relatives signed the informed consent. LOX-1 levels were determined in serum by ELISA (RayBiotech, Georgia). Samples were analyzed in duplicate, blinded to clinical data and mean intra-assay CV was less than 20% for all samples.

Mean age was 75.08 ± 11.03 years for IS and 74.07 ± 8.16 years for ICH patients, and 61.5% of IS and 57.1% of ICH patients were male. Median baseline stroke severity, measured by the National Institutes of Health Stroke Scale, was 10 (6.5-17.5) in IS and 11 (6.75-18.25) in ICH patients. Mean LOX-1 levels at hospital admission were 42.38 ± 47.94 pg/mL in IS and 42.72 ± 38.63 pg/mL in ICH, showing no differences between groups ($P = .375$; Fig 1).

Based on these results, sample size calculations to plan future studies that might find significant differences between IS and ICH patients were explored using Ene 3.0 software. By considering a power of 80% and a P value

less than .05, this calculation revealed that an extremely impractical number of patients would be required in order to find differences between IS and ICH stroke patients in LOX-1 blood levels measured by the time of hospital admission ($n = 147,880$ per condition).

Our data from this exploratory study suggests that LOX-1 does not represent a good candidate to be used as a biomarker of ICH during the hyperacute phase of the disease. Thus, our results seem not to be in accordance with the data previously reported by Inoue et al. It is worth mentioning that there exist substantial differences in time-point for blood collection between the 2 studies; while Inoue et al collected blood within the first 24 hours after symptoms onset, in our study all blood extractions were performed within 6 hours from stroke onset, before any treatment was given. In this regard, it would also be interesting to evaluate in future whether circulating levels of LOX-1 increase over time during the first hours after the onset of stroke. However, we have to bear in mind that a clinically useful biomarker to diagnose ICH has to be able to discriminate this condition from ISs within the hyperacute phase of the disease, before any treatment is given.

As a conclusion, and in the light of these results, we believe that at the moment the usage of circulating LOX-1 level as a diagnosis biomarker of ICH seems not clinically feasible during the hyperacute phase of the disease, when the discrimination of IS and ICH strokes is essential. Therefore, other biomarker candidates should be identified in order to be added to the existing ones³ in order to build a robust test to ease the decision-making processes and guide stroke patients' management and treatment.

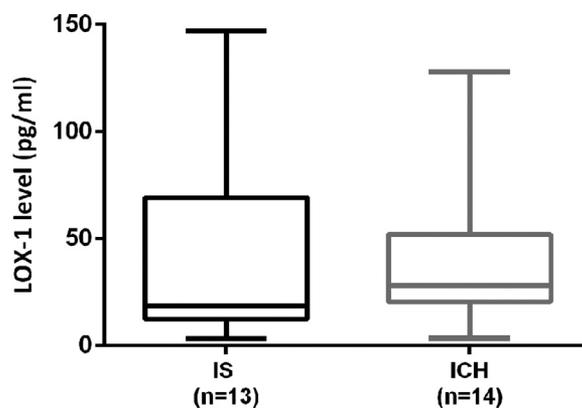


Figure 1. Serum LOX-1 levels measured within 6 hours after symptoms onset in ischemic stroke (IS) patients ($n = 13$) and patients with intracerebral hemorrhage (ICH; $n = 14$). Mean LOX-1 levels were 42.38 ± 47.94 pg/mL in IS and 42.72 ± 38.63 pg/mL in ICH, showing no differences between groups ($P = .375$).

DOI of original article: <http://dx.doi.org/10.1016/j.jstrokecerebrovasdis.2019.06.022>.

1052-3057/\$ - see front matter

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Conflict of Interest

Authors declare no conflict of interests.

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<https://doi.org/10.1016/j.jstrokecerebrovasdis.2019.06.014>

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