Reviewer's report

Title: The prognostic value of total T3 after acute cerebral infarction is age-dependent: a retrospective study on 768 patients

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Reviewer: Adomas Bunevicius

Reviewer's report:

I have read with great interest a study that explored possible prognostic value of thyroid hormone concentration in 768 patients with acute ischemic stroke. The authors found that lower T3 concentrations were independently associated with worse functional outcome at 2-4 weeks independently from other clinical prognostic indicators. Thyroid hormones were not associated with functional outcomes in patients <65 years old.

*My major concern is that it remains unclear reading the manuscript why the age cut-off of 65 years was selected. Authors should justify why age cut-off score of 65 years was selected?

*Did authors explore prognostic value of thyroid hormones in the total sample of patients adjusting for age as covariate?

*Did any of the study patients die? It would be interesting to see

*It would be also interesting to see if prognostic value thyroid hormones as function of stroke severity upon admission.

*What was the association between thyroid hormone concentrations with stroke severity (NIHSS score)? It was previously shown that greater stroke severity is associated with lower T3 concentrations independently of other parameters in independent cohort studies and in recent meta-analysis (for example, doi: 10.1016/j.clineuro.2018.03.025). I would recommend including and discussing these results because T3 can potentially serve as an indicator of stroke severity thus helping to risk-stratify patients.

*More information is needed how the ischemic stroke was diagnosed. For example, do all patient undergo non-contrast head CT? What is the standard treatment protocol of ischemic stroke patients (thrombolysis etc), since some of the blood drawn might have happened after ischemic stroke treatments.

*Is assessment of thyroid hormone concentrations in patients presenting with ischemic stroke a standard practice at the authors' institution?

*Do authors have information about cerebral arteries involved in the ischemic stroke?
*It would be interesting to see area under the ROC curve analyses exploring prognostic value of thyroid hormones vs. NIHSS score for stroke prognosis.

*T3 to T4 ratio is sometimes used as biomarker of peripheral T4 to T3 conversion representing peripheral deiodinase activity. Did authors explore the association of T3/T4 ratio with stroke outcomes?

*The authors should also discuss that patient-centered outcomes and cognitive outcomes were not evaluated in the study because these complications are common in stroke patients. One previous study has shown that reduced T3 concentrations can serve as an independent biomarker of worse cognitive outcomes of ischemic stroke (doi: 10.1007/s12020-013-9958-2).

*Minor corrections; Line 169, please correct TT3 to total T3.

**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?**
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Yes

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Yes

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