Reviewer's report

**Title:** Serum S-100beta and NSE levels after off-pump versus on-pump coronary artery bypass graft surgery

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**Reviewer:** Umberto Benedetto

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Serum S-100beta and NSE levels after off-pump versus on-pump coronary artery bypass graft surgery

Authors presented a meta-analysis of 10 retrospective studies on the impact of off and on pump CABG on Serum S-100beta and NSE levels as markers of neurological injury.

They concluded that both the strategies increased S-100beta and NSE levels but on-pump CABG was associated with a higher increase.

Overall the paper is well written and authors acknowledge limitation of such an analysis.

Major compulsory revisions

1) Authors need to better clarify that among several number of RCT comparing off-pump versus on-pump available none looked into this aspect and therefore a meta-analysis of retrospective cohort might get insights into this controversial aspect

2) Authors should state that all RCT could not demonstrated any significant impairment of cognitive function after both on-pump and off-pump and therefore studies on bio-markers are more likely to provide “academic” rather than clinical evidence

3) As shown in table, few studies reported on groups not comparable for age (see Cao and Zhai) or gender (Bayrma). No further information are provided on other baselines which might have significantly influenced markers serum levels such as renal function. Authors should provide more information of baselines and conduct a subgroup (sensitivity) analysis including only studies which included comparable groups.

4) Finally due to the small sample size of studies included, authors should propose the minimum sample size and effect size for future studies aiming to look into this aspect.

**Level of interest:** An article of limited interest

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests:

none