Reviewer’s report

Title: Relationship Between Plasma Atherogenic Index and Final Pathology of Bosniak III-IV Renal Masses: A Retrospective, Single-Center Study

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Reviewer: Kasonde Bowa

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This is a single site study to assess the accuracy of Plasma Arthogenic Index in predicting malignancy in Renal Masses. The study recruited 169 patients with Renal Masses over a five year period (2013 to 2018). These were grouped into two based on their postoperative pathology diagnosis, as being either malignant or benign Renal Mass. There were 145 (85.8%) malignant Renal masses and 24 (14.2%) benign masses. The study found the mean PAI was significantly higher in malignant renal masses (p=0.003). The peak PAI cut off was greater or equal to 0.34. The sensitivity of this test was 88.2%, while the specificity was 45.8%. The risk of malignancy was found to be 5 times greater if the PAI was greater than 0.34. The study concluded that PAI is a good predictor of malignancy in Renal Masses.

Title: The study does not include the study design nor the study site. These tend to strengthen the study title

Abstract: This is well written concise and clear

Introduction: This is good and provides a good scientific background to the study

Objectives: This stated as determining the predictive value of PAI, the study is in fact looking to determine the accuracy of PAI in determining Renal malignancy, this may be a better term.

Study Method: This is rather brief. The case definition needs to be presented first. This appears to be radiological. The exclusion criteria is presented first followed by the inclusion criteria, this order reads better in the reverse, With the positives before the negatives. The study would have been done as a prospective study rather than a retrospective study. This needs to be justified, the method I mean. Why use a retrospective study instead of a prospective study, for the accuracy of data. The use of retrospective diagnosis by two radiologist and pathologist, suggests that a prospective study would be more suitable. However it is unclear when this model was used if the reclassification of histopathological diagnosis as well as radiological diagnosis was done. It appears unlikely that the study included all cases of renal masses, seen in the hospital over this 5 yr period. Did the two uropathologist make the diagnosis independently of each other, what happened when they disagreed with each other. Therefore 3 specialists seems more plausible. The actegory description of benign and malignat appears too clean, one would have thought that they would have been a borderline or indeterminate category. The guidelines for this histological definition should be provided. The obtaining of informed consent for retrospective data which was already in the hospital domain seems unusual, and requires some explanation.
The statistical data analysis is well described.

Results The results are well presented, though mostly use data tables, with very few graphs.

The discussion is fair, it does not discuss the very low numbers of benign tumours (24) as well as the very low specificity 45.8% of the study and the low negative predictive value 39.3%. The case definition appears to have favoured malignant tumours in using radiological Bosniak 3 & 4 this is likely to have created sampling bias rather than the clinical presence of a Renal masses.

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