Author’s response to reviews

Title: ACR TI-RADS and ATA US scores are helpful for the management of thyroid nodules with indeterminate cytology

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Reviewer reports:

Carl Christofer Juhlin, MD, PhD, BSc (Reviewer 1): This manuscript by Madsen Barbosa is an effort to correlate radiological findings using findings from thyroid ultrasound with cytological and histological outcomes. The authors included 140 nodules with Bethesda III-V status from FNAC examinations, and reviewed the radiology using static images from various national centers. The authors found clear correlations between higher TI-RADs/ATA scores and malignancy rates. Although not precisely novel, the data is sound and the results match the conclusions drawn. The paper is well-written overall, with clear illustrations and tables. As such, it is a nice addition to the scientific field.

Major comments:

1. The inclusion of patients is not entirely clear to me in terms of how many centers that were involved. Radiology images were retrieved from various centers, but how many different centers
performed the cytology and pathology (rows 120-123)? Could this be clarified even further in the text? And how come 80% (!) of the indeterminate nodules were excluded from the studies because of lack of final histopathology (Figure 1)? Please add an explanation to the m.s. text.

- The study was conducted at the Clinical Hospital of the Federal University of Parana (HC-UFPR), a public health service. Initially, we searched for the patients in our institution, but the sample was small. The pathologist from HC-UFPR suggested to include her external private pathology center to increase the sample. After approval of the Ethics Committee to include the CITOLAB (Laboratório de Citologia Clínica e Histopatologia) situated in Curitiba-Paraná, we started to search in this private pathology center (Methods section, lines 120-123, page 5). The cytological and histopathological results were retrieved from our institution and from CITOLAB. The lack of final histopathology is due to two different points: loss of clinical and outpatient follow up and lack of thyroidectomy in our institution due to the administrative issues for a period of time; and difficulty of retrieving histopathological results from the external pathology center (CITOLAB), once the patient had the cytological analysis in this center, but the surgery was performed in a hospital with a private pathology center that we could not access (Methods section, lines 134-139, page 6).

2. The re-investigation of all radiology images was static (based on photos rather than real-time videos I assume), this is clearly a weakness compared to manual handling by the same radiologist (as technical quality might vary between users) - please elaborate on this.

- Radiologic images are statics, with most in digital databases without loss of image quality. We believe this has not compromised the classification.

3. The Discussion is meticulous, but a bit hard to follow given the numerous studies brought up here. I urge the authors to discuss their own findings to a greater extent and if possible to reduce the text regarding previous studies, at least not reporting the exact numbers from so many different publications - which makes this section hard to read through.

- The Discussion is revised and some articles that are not directly correlated with the main objective of the study were removed to make easier to read this section.

Minor comments:

1. A few typos are present, for example row 190 "warthin-simili", et.c. Please read through the m.s. carefully.
- The correction was performed in Results section, line 193, page 8. In addition, the manuscript was edited for proper English language, grammar, punctuation, spelling and overall style by native English speaking editors at American Journal Experts (AJE), please check the certificate on files.

Tommaso Aversa, Ph.D., M.D. (Reviewer 2): In this retrospective study, authors evaluated the aspects at ultrasound scan of 140 thyroid nodules with indeterminate cytology of 139 patients that underwent surgery and had histopathological result.

The main aim of this study was to combine two ultrasound scoring systems (TI-RADS and ATA) with the Bethesda System for helping the clinical management and determining the necessity to perform molecular testing.

Paper is well written and results are reported in details. Discussion is quite long and could be shortened.

- Discussion is revised and shortened to make easier to read this section.