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Applicant Type:
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Category Preference:
Cytopathology

Title:
Atypia of Undetermined Significance Rate and ThyroSeq V3 Results as Quality Control Metric for Cytopathology Lab Performance

Background:

The Bethesda System (TBS) for reporting thyroid cytology recommends a 10% rate of the indeterminate category atypia of undetermined significance (AUS). As molecular testing becomes more innocuous, recent data suggest that the use of AUS category might be overused. Because overcalling benign cases as TBS III or under calling TBS IV or V into TBS III directly impacts disease prevalence which can affect molecular testing predictive values. We calculated the AUS and ThyroSeq V3 (TSeq) benign and positive rates for our lab and for each cytopathologist (CP) as a quality metric to understand overall and individual performance.

Design:

A retrospective review of the laboratory database was performed from January 2018 to July 2022 for all thyroid fine needle aspirations (FNA). Cases were stratified by TBS category and TSeq results were collected for indeterminate categories. TSeq results were grouped as negative (risk of malignancy [ROM]=3%), currently negative (ROM=5-10%), and positive (ROM > 30%). We excluded 4 out of 10 CPs who had <50 signed out cases (total cases excluded = 131). The remaining 6 CPs signed out between 380 to 913 cases each. AUS rate was calculated for each CP and for the

lab by dividing the number of TBS category III cases by the total number of cases. The benign call rate (BCR) is the percentage of indeterminate cases with negative TSeq and the positive call rate (PCR) is the percentage of indeterminate cases with a molecular alteration detected by TSeq.

Results:

The cohort includes 3,665 thyroid FNAs from 2,459 patients with a median age of 57 years (range 14-92) and female predominance (81%). TBS category rates after excluding the 131 cases were: I (323, 9%), II (2,549, 70%), III (521, 14%), IV (102, 3%), V (25, 1%), and VI (145, 4%). The AUS rate for each CP ranged from 5-29% and the laboratory AUS rate was 14%. TSeq BCR for each CP ranged from 50-69% and for the lab was 63%. The PCR ranged from 30-48% for CPs and was 35% for the lab.

Conclusion:

While our laboratory AUS rate of 14% is above the recommended rate, both AUS and BCR rates are within an acceptable range when compared to published data from other labs. The AUS rate in combination with molecular testing results of thyroid FNA is a useful metric to assess lab and CP performance that directly impacts TSeq predictive values. Continuous feedback of this metric could help improve and maintain CPs performance.