

Role of Next Generation Sequencing With Percepta Brushing in Re-classifying Lung Nodule Risk After a Non-Diagnostic Bronchoscopy

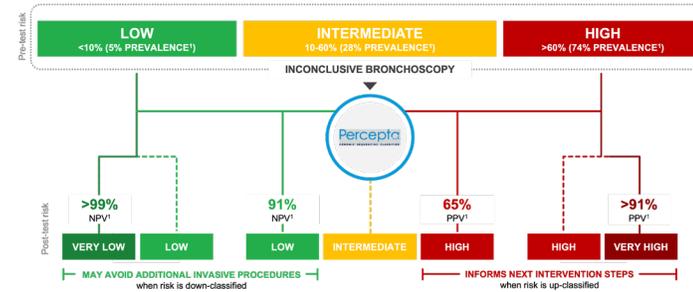
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PURPOSE

- Lung cancer is most common cancer in the world and the most common cause of death from cancer in the United States.
- With the recent expansion of eligibility for lung cancer screening and expanded acceptance of screening, we are likely to see a growing number of patients with pulmonary nodules.
- Current ACCP Guidelines recommend non-surgical biopsy for nodule with a risk of malignancy between 5% and 65%, however up to 60% of lung cancer bronchoscopy results are inconclusive.
- Percepta Genomic Sequencing Classifier (GSC) is an RNA-seq based genomic classifier using cells from a bronchial brushing of benign-appearing mucosa to assess risk of lung cancer in a lung nodule in a patient with a history of smoking when the bronchoscopy is inconclusive.
- The test can reclassify risk.
- From a pre-bronch intermediate risk, GSC can up-classify to high risk with a 65% PPV or down-classify to low risk with a 91% NPV.
- We sought to identify the frequency with which Percepta GSC helps to reclassify malignancy risk in intermediate risk nodules to guide further decision-making.

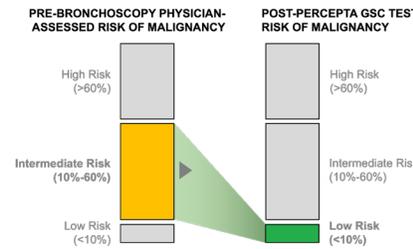
Percepta GSC Stratifies the Risk of Primary Lung Cancer to Guide Patient Management When Bronchoscopy Is Inconclusive

1. Mazzoni P et al. Oral Presentation CHEST Annual Meeting 2019.
2. Choi et al. BMC Medical Genomics 2020, 13 (Suppl 10):15.
3. Bhorade S et al. Poster presented at Second conference of the AABIP, August 15-17, 2019, Denver, CO.



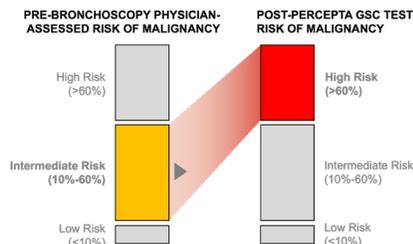
Percepta GSC Can Help Intermediate Pre-test Risk Patients Avoid Further Invasive Procedures When the Risk is Down-classified

1. Bhorade S et al. Accuracy of the next generation Percepta GSC for the diagnosis of suspicious indeterminate pulmonary nodules. Poster presented at AABIP second conference, August, 2019.



Percepta GSC Results Can Inform Next Intervention Steps for Intermediate Pre-test Risk Patients When the Risk is Up-classified

1. Bhorade S et al. Accuracy of the next generation Percepta GSC for the diagnosis of suspicious indeterminate pulmonary nodules. Poster presented at AABIP second conference, August, 2019.



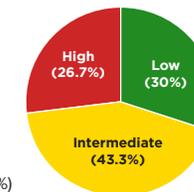
NPV and PPV are calculated based on the prevalence of malignancy (ROM) observed in the validation cohort for each pre-test risk group.

METHOD

- This was a retrospective review of all inconclusive bronchoscopies in ever smokers with a lung nodule from January 2019 to October 2020.
- All nodules were intermediate risk determined by physician-assessed risk (PAR).
- Right mainstem bronchial brushings for Percepta GSC had been performed in all cases, with the genomic classifier analysis initiated at the time of the non-diagnostic result.
- The frequency of up and down classification was analyzed.

RESULTS

- Out of 30 patients classified as intermediate per PAR, 13 (43.3%) patients had an Intermediate GSC result.
- 8 (26.7%) patients were re-classified with a High GSC result.
- 9 (30.0%) patients were re-classified with a Low GSC result.
- In total, in 17 of 30 (56.6%) of patients with a non-diagnostic bronchoscopy, the classifier provided new information to guide further decision-making.
- For the patients with a Low GSC result, we observed a significant reduction in additional invasive procedures compared to the pre-test management plan.
- It is interesting to note that out of 9 patient that got reclassified in low category, 1 patient lost to follow up.



- Seven patients had at least 12 months follow up on their CT chest with nodule size remaining stable.
- Interestingly one patient on biopsy showed granulomas with culture growing aspergillus and patient treated with voriconazole which resulted in resolution of nodule.

CONCLUSION

- Within this group of patients with a PAR of Intermediate, Percepta GSC provided additional information in the majority of cases where bronchoscopy was non-diagnostic and has helped our lung nodule work up algorithm.
- Down classification allowed for consideration of deferring CT-guided fine needle aspiration or surgical lung biopsy and pursuing a plan of CT surveillance, helping to avoid unnecessary procedures.
- Patients with Intermediate results proceeded on the standard diagnostic pathway, and patients re-classified as high risk were considered for more aggressive evaluation to avoid missing a false negative bronchoscopy result.

CLINICAL IMPLICATION

- Bronchoscopy is frequently used for evaluation of pulmonary lesions, but its sensitivity for detecting lung cancer can be limited.
- Use of the Percepta GSC bronchial genomic classifier can provide additional information when bronchoscopy is inconclusive, with a high NPV for a Low result and a high PPV for a High result, helping to guide decision making.