

## Poster 240

*Thyroid Nodules & Goiter Friday Poster Basic*

### **MORE INCIDENTAL THYROID MALIGNANCIES OBSERVED IN THE LOBES WITH A GEC SUSPICIOUS THYROID NODULE**

A.A. Karasinski<sup>1</sup>, A.B. Sun<sup>2</sup>, B. Jameson<sup>2</sup>, M. Signalov<sup>2</sup>, S. Meschter<sup>3</sup>, J. Kennedy<sup>2</sup>, Y. hu<sup>2</sup>

<sup>1</sup>General Internal Medicine, Geisinger Health System, Danville, PA; <sup>2</sup>Endocrinology, Geisinger Health System, Danville, PA; <sup>3</sup>Pathology, Geisinger Health System, Danville, PA

Afirma gene expression classifier (GEC) has been used in evaluating thyroid nodules with indeterminate cytology. In our experience incidental thyroid malignancies appear more commonly in the lobe with GEC suspicious nodule. This study sought to evaluate the test performance of GEC in our institution. This retrospective cohort study was approved by Geisinger Health System IRB committee (number 2015-0530). The cytology, GEC and pathology results were analyzed in patients with GEC performed at Geisinger from 11/1/2013 – 10/30/2015. Statistical analysis was performed using Chi Square. A total of 153 GEC cases were reviewed, including 123 cases with atypia of undetermined significance/follicular lesion atypia of undetermined significance (AUS/FLUS), 28 with follicular neoplasm/suspicious for follicular neoplasm (FN/SFN), and 2 with benign cytology (sent in error). The GEC results included 85 benign, 59 suspicious and 9 non diagnostic. Among 123 AUS/FLUS nodules, GEC result included 70 benign, 45 suspicious and 8 non diagnostic. Among 28 FN/SFN nodules, 14 were benign, 13 suspicious and 1 non-diagnostic. Only 14 of the 85 patients with benign GEC had surgery. All but one nodule (13/14) were confirmed to be benign. There were no incidental malignancies. Forty four patients (44/59, 74.6%) with suspicious GEC had surgery. Twenty three (23/44, 52.3%) patients had malignant pathology, including 13 cases with a cancerous nodule (13/44, 29.5%) and 10 cases with incidental microcarcinoma unrelated to the nodule. The GEC has 92.9% sensitivity and 29.5% specificity. Its negative predictive value was 92.9% and positive predictive value was 29.5%. Malignancy was found more commonly in the lobes with a GEC suspicious nodule, compared with the lobes with a benign GEC nodule (52.3% vs 7.14%,  $P < 0.01$ ). More incidental microcarcinoma were discovered in the lobes with a GEC suspicious nodule (22.7% vs 0,  $P < 0.01$ ) even after the nodule studied was excluded. Thyroid malignancy was discovered more

often in thyroid lobes with a GEC suspicious nodule than in lobes with a GEC benign nodule. Additional research is required to determine whether the GEC suspicious profile portends an adverse microenvironment for thyroid cancer tumorigenesis.