B-14

A Blood-Based Neuroendocrine Tumor Mrna Signature Identifies Residual Tumor and Accurately Predicts Recurrence After Surgery

I. Modlin[1], M. Falconi[2], P.L. Filosso[3], A. Frilling[4], A. Malczewska[5], M. Kidd[6], K. Oberg[7]; [1]Yale University School of Medicine, CT/United States of America, [2]Pancreatic Surgery Unit, Pancreas Translational & Clinical Research Center, IRCCS San Raffaele Scientific Institute/Italy, [3]University of Turin/Italy, [4]Imperial College London/United Kingdom, [5]Medical University of Silesia/Poland, [6]Wren Laboratories, CT/United States of America, [7]Department of Endocrine Oncology, University Hospital, Uppsala/Sweden

BACKGROUND: A key issue in surgical resection of neoplasia is the need to identify residual disease. Histology only assesses what is resected and imaging is insensitive post-surgery. NETest, a 51gene blood biomarker test identifies NETs with >90% accuracy. We examined whether alterations in NETest level correlated with surgical resection and if elevated scores post-surgery would predict recurrence. We evaluated: 1) if resection decreased NETest levels; 2) if elevated postoperative levels predicted disease recurrence.

METHODS: A multicenter evaluation of 153 resected lung, small bowel, duodenal, gastric and pancreas NETs. 1ml blood collected at D0 and POD30. Transcript measurement: real-time quantitative PCR and multi-analyte algorithmic analysis (NETest: scale 0-100).

Standard follow-up to 12 months post-surgery.

Analyses: Mann-Whitney U-test, Chi 2 , AUROC, Odd's Ratio. Mean±SEM.

RESULTS: Cohort: 27 lung, 57 pancreatic, 62 small bowel, 4 duodenal, 3 gastric.

Surgery: R0 (n=102), R1/R2 (n=51). Follow-up: mean=12months.

Preop all NETest-positive (69±4.3); 153/153 (100%).

R0 (n=102): At POD30 significantly decreased 62±4.1 to 24±1.9 (p<0.0001). Post-operatively, 31/102 (30%) were positive: 7 lung, 12 pancreas, 12 small bowel and 1 gastric.

R1/R2 resection decreased score (72±4 to 52±6). At POD30, 51/51 (100%) were positive (p<0.0001).

R0 Recurrence: 28/31 (90%) with an elevated score (54±5) at POD30 developed image-positive recurrence within 12 months. For lung: 6/7 (86%) recurred, and 22/24 (92%) GEP-NETs recurred. The NETest was 100% sensitive for predicting 12-month recurrence, 96% specific, AUC = 0.98 and overall, 97% accurate. The Odd's ratio for recurrence was 1,164 (95%CI: 58-23,269, (p<0.0001).

CONCLUSION: NETest was elevated pre-op in 100% BP and GEPNET. After R0, NETest decreased significantly. R1/R2 resection decrease was less. At POD30, an elevated NETest score is significantly predictive of recurrent disease. Post-resection NETest levels in blood provide an objective genomic stratification criterion for intensive post-surgical follow-up in BP and GEPNETs and may facilitate additional therapy.

ABSTRACT ID: 148