

**P-2:**

## **A Novel Form of Familial Multiple Carcinoid Tumors Affecting the Small Intestine, Lung, Pancreas and Colon**

**Ehsan Chitsaz<sup>1</sup>**; Bryan Curtain<sup>1</sup>; Joanne Forbes<sup>1</sup>; Derek Tang<sup>1</sup>; Martha Quezado<sup>2</sup>; Clara Chen<sup>3</sup>; Marybeth Hughes<sup>2</sup>; Stephen Wank<sup>1</sup>

<sup>1</sup>National Institute of Diabetes Digestive and Kidney Diseases, National Institutes of Health; <sup>2</sup>National Cancer Institute, National Institutes of Health; <sup>3</sup>Clinical Center, National Institutes of Health

**BACKGROUND:** We reported a familial form of SI-NETs and demonstrated its heritable basis and the utility of screening for occult disease. Currently, Familial SI-NETS, describes families with tumors limited to the small bowel, however, we have since noted the co-occurrence of other neuroendocrine tumor types. Here we report seven families with neuroendocrine tumors both within and outside of the small intestine suggesting a novel form of Familial Multiple Neuroendocrine Neoplasia due to single gene mutation.

**METHODS:** A single-center prospective study from 2008 to 2017 was conducted to evaluate families with  $\geq 2$  cases of SI-NET. Evaluation included biochemical markers, 18-fluorodihydroxyphenylalanine and Gallium 68 Dotatate PET/CTs, CT of C/A/P with IV contrast, and wireless capsule endoscopy.

**RESULTS:** Three hundred and seven members from 65 families were evaluated. Seven families were identified in which there were both small intestinal and either pancreatic, pulmonary or colonic carcinoid tumors. In one family, there was an individual with synchronous SI-NETs and a pancreatic neuroendocrine tumor. In three families, there were individuals with metachronous SI-NETs along with either pulmonary or colonic carcinoids. In two families there were separate

individuals in the same family with either SI-NETs or a pulmonary carcinoid. In a large family with a previously described mutation in the IPMK gene, there was a nuclear family consisting of a father and brother with SI-NETs, a second brother with pulmonary carcinoid and a third brother with pancreatic carcinoid. In all cases, the carcinoids occurring in tissues of multiple embryonic origins were primary tumors.

**CONCLUSION:** A subset of families with SI-NETs can have primary carcinoids of varying embryonic origin. Co-occurrence of primary tumors of multiple embryonic origin suggests a novel form of Familial Multiple Neuroendocrine Neoplasia due to a single gene mutation. Families with familial neuroendocrine tumors of any type should undergo screening for primary neuroendocrine tumors of other embryonic origin.