Prognostic Relevance of a Novel AJCC Staging Classification for Neuroendocrine Tumors of the Pancreas
Jonathan Strosberg MD, Asima Cheema MD, Jill Weber MPH, Domenico Coppola MD, Larry K vos MD
H. Lee Moffitt Cancer Center & Research Institute, Tampa, FL 33612

Background: The AJCC Cancer Staging Manual™ edition, 2010 has introduced a novel TNM staging classification for pancreatic neuroendocrine tumors which is derived from the staging system for exocrine pancreatic adenocarcinoma. This classification has not yet been validated.

Methods: Patients with pancreatic neuroendocrine tumors treated at the H. Lee Moffitt Cancer Center between 1985 and 2010 were assigned a stage (T,N,M) based on the new AJCC classification. Overall survival from time of initial diagnosis was measured and statistical significance was calculated using the log-rank test. The prognostic relevance of the AJCC staging classification and the ENETS staging classification proposed recently by the European Neuroendocrine Tumor Society (ENETS) TNM staging system was determined. Tumors were also classified according to the European Neuroendocrine Tumor Society (ENETS) TNM staging system.

Results: 425 patients with histologically proven pancreatic neuroendocrine tumors were identified. Both the novel AJCC classification and the ENETS classification were highly prognostic for survival (p<0.0001).

Conclusions: The novel AJCC 7th Edition TNM classification for pancreatic neuroendocrine tumors is highly prognostic for overall survival and should be adopted in clinical practice.

Introduction:

• In 2010, the American Joint Committee introduced a novel TNM staging classification for pancreatic neuroendocrine tumors (table 1).
• This staging classification is derived from the TNM staging of exocrine pancreatic adenocarcinoma.
• The prognostic relevance of this staging classification has not been tested.

Methods:
• A database consisting of all histologically proven cases of pancreatic neuroendocrine tumors seen at the Moffitt Cancer Center between 1985 and 2010 was used.
• Tumors were clinically or pathologically classified by stage based on the novel AJCC staging system. Tumors were also classified according to the European Neuroendocrine Tumor Society (ENETS) TNM staging system.
• Tumors were assigned a histologic grade (low, intermediate, high) based on pathologic reports. Both descriptive terms (well differentiated, moderately differentiated, poorly differentiated), and numerical terms (mitotic rate, Ki-67 index) were used for assignment of grade.
• Overall survival (OS) was measured for each patient from time of initial diagnosis to time of death, or last contact. Kaplan-Meier methodology with logrank testing was used to compare survival by stage and by grade.

Results:
• 425 patients with pancreatic neuroendocrine tumors were identified.
• Median and 5-year survival rates correlated closely with tumor stage, according to both the AJCC and the ENETS staging classifications (figure 1A and 1B, table 2).
• Tumor grade (low, intermediate, high) was highly prognostic for survival, independent of stage (figure 2).

Conclusions:
• The novel AJCC TNM classification for pancreatic neuroendocrine tumors is highly prognostic for overall survival.
• A three-tiered tumor grading system is also highly prognostic for survival and should be combined with stage for estimation of prognosis.
• Both the AJCC and ENETS staging classifications can be adopted in clinical practice.