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Treatment Comparisons in the Management of MEN1-Related and Sporadic Pancreatic Neuroendocrine Neoplasms: A Retrospective Study

Sontoria D. King, MS[1], Yan Bi, MD, PhD[2]

[1]Mayo Clinic Graduate School of Biomedical Sciences, Jacksonville, FL 32224, USA; [2]Division of Gastroenterology and Hepatology, Mayo Clinic, Jacksonville, Florida, USA

BACKGROUND

Pancreatic neuroendocrine neoplasms (pNENs) are a major source of morbidity and mortality for individuals with multiple endocrine neoplasia type 1 (MEN1). MEN1 pNEN management studies are limited; thus, current treatment guidelines are heavily derived from sporadic pNEN clinical data although differences exist between etiologies. While there is an interest in etiology specific guidelines, data directly comparing treatment patterns and response between etiologies are limited. We conducted a multicenter observational cohort study to compare treatment utilization and outcomes between MEN1 and sporadic pNENs.

METHODS

We identified patients with MEN1-related pNENs (n=189) and sporadic pNENs (n=378) who were treated at Mayo Clinic. Sporadic cases were matched across disease stage. Electronic medical records were reviewed to confirm diagnoses. Data involving patient demographics, tumor characteristics, treatment interventions, progression, recurrence, therapy-related endocrine insufficiency status, and therapy-related exocrine insufficiency status were collected.

RESULTS

Patients were seen at the Mayo Clinic from 1977-2025. Individuals with MEN1 were diagnosed earlier and included more women than the sporadic group. 36% of patients lacked a family history indicative of MEN1 syndrome. 74% of MEN1 patients had localized disease and 80.4% of pNENs were nonfunctional.

For localized disease, MEN1 pNENs were less likely to receive surgical or minimally invasive interventions compared to sporadic pNENs (55% vs. 66%). Decreased treatment implementation was observed for MEN1 pNENs under 2cm and functional pNENs. There were no cumulative differences found in the utilization of parenchyma-sparing surgical approaches compared to traditional approaches across etiology groups; however, those with MEN1-related pNENs were more likely to undergo a total pancreatectomy ($p < 0.001$)

although rare for localized disease. High rates of post-resection disease stability were found in both etiology groups (73% *MEN1 vs.* 87% *sporadic*).

For metastatic disease, MEN1 pNENs were less likely to receive systemic therapy compared to sporadic pNENs (64% vs. 91%). Treatment patterns and response were highly heterogeneous. No differences in treatment duration or odds of progression were identified between groups. More individuals with MEN1 pNENs developed therapy-related endocrine insufficiency (16% vs 8%) and exocrine insufficiency (31% vs 25%) compared to their sporadic counterparts.

CONCLUSIONS

MEN1-related pNENs are less likely to receive interventional treatment for both localized and metastatic disease than sporadic pNENs. Minimal differences in treatment approach for localized disease were identified, reflecting largely aligned guidelines. Treatment for metastatic disease was highly heterogeneous. Larger retrospective or prospective studies are needed to further evaluate differnces in systemic therapy response between etiology groups.

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