Endoscopic ultrasound evaluation is associated with improved outcomes in pancreatic cancer patients

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A new study has found that endoscopic ultrasound (EUS) is associated with improved outcomes in patients with localized pancreatic cancer, possibly due to the detection of earlier cancers and improved stage-appropriate management, including more selective performance of curative intent surgery. This is the first study to analyze a large population-based cancer registry and demonstrate that EUS evaluation is associated with improved pancreatic cancer survival. The study appears in the July issue of *GIE: Gastrointestinal Endoscopy*, the monthly peer-reviewed scientific journal of the American Society for Gastrointestinal Endoscopy (ASGE).

Pancreatic cancer is common and highly lethal. The only chance of long-term survival in pancreatic cancer is if complete resection (surgical removal) can be performed. The symptoms of pancreatic cancer are non-specific and usually occur late in the course of the disease; less than 20 percent of patients have resectable disease at the time of diagnosis. Endoscopic ultrasound is considered to be one of the most accurate tests for detecting pancreatic masses and for the staging of pancreatic cancer. EUS has proven to have the highest sensitivity in detecting pancreatic tumors, especially when the results of other cross-sectional imaging modalities are inconclusive. It is equivalent and complementary to CT for staging pancreatic cancer and predicting vascular invasion and local resectability.

Endoscopic ultrasound consists of a flexible endoscope which has a small ultrasound device built into the end. The ultrasound component produces sound waves that create visual images of the digestive tract which extend beyond the inner surface lining. EUS can be used to evaluate an abnormality below the surface such as a growth that was detected at a prior endoscopy or by X-ray. EUS is also used to diagnose diseases of the pancreas, bile duct, and gallbladder when other tests are inconclusive, and can be used to determine the stage of cancers. Tissue samples, using a fine needle aspiration technique (FNA), can be obtained in real time with EUS guidance should an abnormality be seen.

"We hypothesized that undergoing EUS was associated with improved overall survival in pancreatic cancer patients, probably related to early pancreatic cancer detection and accurate preoperative staging by EUS and improved stage-appropriate treatment," said study lead author Saowanee Ngamruengphong, MD, Mayo Clinic Arizona, Scottsdale. "In this study, we analyzed the Surveillance Epidemiology and End Results (SEER) - Medicare-linked database to study the association of undergoing EUS with overall survival in a cohort of patients with pancreatic adenocarcinoma and found that EUS is associated with improved survival in pancreatic cancer patients, most probably as a result of improved stage-appropriate management, including more selective performance of curative intent surgery and perioperative adjuvant therapy."

Patients and Methods

Using the SEER-Medicare database, researchers identified a total of 8,616 patients aged 65 and older with primary pancreatic cancer from January 1994 to December 2002 who fulfilled the inclusion and exclusion criteria. The study population was divided into two groups based on whether or not they underwent EUS evaluation. Group I consisted of patients who underwent EUS during the peridiagnostic

period, Group II did not undergo EUS. Overall, 610 patients or 7.1 percent, underwent EUS for tumor evaluation and staging.

Results

There were more patients with early-stage disease in Group I than in Group II, 69.3 percent locoregional (localized and regional stage) disease in Group I vs. 36.2 percent in Group II. Curative-intent surgery, chemotherapy and radiation therapy were also performed more frequently in Group I. In patients with locoregional pancreatic adenocarcinoma, the median survival in Groups I and II were 10 months and 6 months respectively. The researchers found that receipt of EUS was an independent predictor of improved survival. Younger age at diagnosis, curative-intent surgery, chemotherapy and radiation therapy were also significantly associated with improved survival.

The researchers noted that improved survival related to undergoing EUS in this study is likely due to many factors because EUS is purely a diagnostic imaging modality and carries no direct therapeutic impact. Therefore EUS evaluation may help identify patients who would most likely benefit from undergoing attempts at curative resection. On the other hand, EUS evaluation might help to identify patients with advanced or metastatic pancreatic cancer who would not benefit from curative resection and therefore avoid the morbidity and mortality related to unnecessary surgery.

Researchers also looked at sociodemographic and geographic factors with undergoing EUS evaluation and found in multivariate analysis that younger age, white race, being married, locoregional disease, living in the Midwest region, and more recent year of diagnosis were significant predictors of undergoing EUS. The rate of EUS use in the study patients increased from .6 percent in 1994 to 13.1 percent in 2002. Although EUS evaluation is still performed in a minority of patients with

pancreatic cancer, there is an increasing trend in the use of EUS in these patients. This may reflect increasing availability with dissemination of EUS technology from select academic centers to the community.

In an accompanying editorial, Bryan G. Sauer, MD, MSc, and Vanessa M. Shami, MD, Division of Gastroenterology and Hepatology, University of Virginia, Charlottesville, stated that they believe the study "provides further evidence of the value of EUS in pancreatic cancer. Although EUS is not currently used to treat cancer, its association with improved survival is most likely a surrogate for multiple factors that improve survival, such as earlier detection of cancer; more accurate staging; and multidisciplinary, stage-appropriate treatment. We believe that individuals with localized pancreatic masses should undergo EUS for diagnostic and staging purposes, so that stage-appropriate treatment can be pursued. Furthermore, we anticipate earlier detection of pancreatic cancer through improved imaging and effective screening."

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