EDITORIAL

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Octreotide Scintigraphy

A New Method for Diagnosing Pancreatic Tumors

In this issue of *Annals of Surgery,* van Eijck et al.[1] present an intriguing series of patients with pancreatic tumors characterized by octreotide scan. Indium 111-labeled octreotide is a radioactive and stable analog of somatostatin that binds to somatostatin receptors. The bound compound can be seen with the gamma camera in a scan. Krenning and others introduced this technique in recent years.[2–4] Islet cell tumors of the pancreas should express somatostatin receptors whereas adenocarcinoma of ductal or acinar origin should not. Adenocarcinoma of the pancreas constitutes the vast majority of pancreatic malignancies and follows a grave course characterized by early metastasis and short life. Islet cell tumors are exceedingly rare but follow an insidious course characterized by slow growth and remarkable tolerance by patients of tumor burden. Endocrine syndromes may be far more serious as clinical issues than the neoplastic behavior. A tactic of proven worth to distinguish these tumors could be of great clinical value.

Adenocarcinoma of the pancreas is the fifth leading cause of death from cancer in the United States and a health problem of the first magnitude, with 24,000 new cases annually.[5] The lesion has attracted great efforts in basic biology, early detection, surgical treatment, and adjuvant therapy. These efforts have been largely frustrated, except in the matter of reducing the morbidity and mortality from radical surgical extirpation of the pancreas. The Whipple resection, dating from 1935,[6] was associated with mortality rates as high as 25% until recently, when leaders in the field steadily reduced the mortality of this formidable operation to the zero mortality rate reported by Cameron in 1993.[7–10] Even when the patient survived surgery, until recently long-term survivors were almost anecdotal. However, with proper patient selection and operative skill, Cameron now reports a 21% 5-year survival rate. This number is brightened by the 57% 5-year survival rate in patients without nodal involvement, and optimism is abated by only a 5% survival rate in the more common situation of occult nodal involvement. The current treatment of adenocarcinoma of the pancreas recently was reviewed in *Annals of Surgery* by Lillemoe.[11] Despite excellent advances in surgery and in our understanding of pancreatic malignancy, there remains a frank nihilism among certain internists and surgeons when called on to recommend treatment to individual patients with a clear or probable diagnosis of adenocarcinoma of the pancreas.

Islet cell carcinoma is a rare condition, with an incidence reported by the authors of only 0.4/100,000. Only a few hundred cases are reported in the United States each year.[5] As many as 40% of theses cases are not associated with an endocrine syndrome. These nonfunctioning tumors present with a neoplastic syndrome that relates to tumor invasion, mass, or obstruction. In other words, the presentation of this major subset of islet tumors may be indistinguishable from adenocarcinoma. However, median survival of resected patients in a large series from M.D. Anderson, as reported by Evans et al.,[12] was 3.7 years. The overall 5-year survival rate with or without resection in 73 patients was 50%.[12] Thus, the behavior of these rare tumors is at sharp variance with that of adenocarcinoma. The management of islet cell malignancies is far more rewarding than management of their ductal neighbors, and the nihilism that may be associated with the management of adenocarcinoma simply is not appropriate for malignant islet cell tumors.

The preoperative diagnosis of pancreatic cancer—adenocarcinoma or islet cell—is not always a certainty. There has been a strong motivation to make a diagnosis before making recommendations regarding treatment or palliation, but patients with potentially resectable tumors often are explored and even resected even though all efforts at tissue diagnosis have failed. However, there is a distressing assumption by many internists and

surgeons that all tumors of the pancreas are fatal and that for an individual patient there may not be enough hope even to attempt a diagnosis, let alone a resection. Although that view is countered by the best results in adenocarcinoma, it is even more contrary to the results with islet cell malignancies. Therefore, if there were a way to make a diagnosis of islet cell tumor and thereby propose a much brighter prognosis, that diagnostic test would be a great addition to our tactics for decisions in pancreatic cancer. Octreotide scan has a sensitivity rate of greater than 80% in various series and can give even better results in selected islet tumors, with the notable exception of insulinoma, which has a sensitivity rate of less than 50%.[13] In the current series, 31 of 48 patients (65%) with islet cell tumors had positive scan results. This is somewhat less than the sensitivity previously reported, but a large number of these cases are insulinoma. Metastases were demonstrated readily, as were the primary tumors. Any series of 48 islet tumors deserves our attention to better understand the management of such a rare tumor. The specificity rate remained a spectacular 100%, with none of the 26 patients with adenocarcinoma showing a positive scan result. However, among 12 patients who had survived more than 3 years after resection of the pancreas for what had been called adenocarcinoma, 5 had residual disease and all had positive scan results. Review of the original histology suggested islet cell tumor. Among the seven long-term survivors with negative scan results, there was no demonstrable residual disease by any method, and review of the histology confirmed adenocarcinoma.

Recommendations for new and expensive testing are not well received in our current era of cost containment. However, the introduction of octreotide scan to resolve diagnostic uncertainty with pancreatic malignancies and to seek better candidates for our radical surgery seems to merit a good look. Rarely does a procedure come along that addresses such a difficult and high stakes issue and delivers such clear data to support critical clinical decisions.

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