52

Diagnosis and Clinical Staging of Pancreatic Cancer

Gregory G. Tsiotos and Michael G. Sarr

Pancreatic ductal adenocarcinoma is the most common malignancy of the exocrine pancreas. Its incidence in the western world has increased in the last 4 to 5 decades for unknown reasons, and, for equally unknown reasons, now appears to be leveling off (1). Twenty-eight to 30 thousand new patients will be diagnosed with this disease in the United States next year, and an almost equal number will eventually succumb to it. Of these newly diagnosed patients, only 10–15% will be determined to have "clinically" resectable disease preoperatively, but only half (or less) of this subgroup will actually undergo a curative resection. Unfortunately, the very aggressive behavior of this neoplasm is reflected in the fact that it represents the fourth and fifth most common cause of cancer-related deaths in men and women, respectively, and the second most common cause of death due to gastrointestinal malignancy.

During the last decade, improvements in patient care, surgical technique, possibly earlier diagnosis, and concentration of patients in centers of excellence with a major interest in pancreatic surgery have led to a marked decrease in the operative morbidity and mortality of major pancreatic resections. Currently, the operative mortality of pancreatic resections in major, high-volume, experienced centers with an interest in pancreatic surgery is consistently under 5%. There is also evidence to suggest an improvement in the 5-year survival after resection at such institutions, with reports of actuarial or actual survivals in the neighborhood of 12–24% (2–6) that may be even higher in certain subgroups of patients (4, 5, 7). Despite past nihilistic views and even some current pessimistic views that may involve a cost awareness in the modern era of cost containment (8), it remains unequivocal that surgery offers the only possibility for cure of this dread disease.

As operative resection reaches its limit in the management of this disease, attention has turned to earlier diagnosis and accurate preoperative determination of resectability. With the current explosion of new "star wars" technology, a great array of sophisticated, interventional, and expensive tests have been suggested for diagnosis and clinical staging; their roles are currently under evaluation, but much remains to be defined before they are applied appropriately and rationally.

This chapter *(a)* discusses the clinical characteristics and presentation of pancreatic cancer; *(b)* analyzes the roles of the various imaging and laboratory modalities currently available or under investigation, as they relate to both diagnosis and staging; and *(c)* outlines the authors suggested approach to this challenging problem, based on current information. The chapter focuses on ductal adenocarcinoma of the exocrine pancreas. Neoplasms arising from other cells of origin (cystadenocarcinoma, islet cell neoplasms, etc.) may be referred to, but ductal adenocarcinoma is emphasized, with concentration on the recent literature dealing with its diagnosis and clinical staging. Diagnosis and staging are discussed separately in an attempt to separate the two concepts rationally and to emphasize the different roles of the imaging and invasive procedures in the workup of the patient. The final section presents a diagnostic and staging algorithm based on cost, efficacy, safety, and currently accepted concepts of management.

DIAGNOSIS OF PANCREATIC CANCER

Most patients with pancreatic cancer have the diagnosis made when they develop jaundice. This means that the pancreatic neoplasm arising in the main pancreatic duct has become large enough to involve (and obstruct) the intrapancreatic portion of the common bile duct. In retrospect, many or most of these patients will have had vague symptoms for several weeks to months prior to the development of jaundice. To have an impact on the natural history of this disease (and there is solid reason to believe that earlier diagnosis at a smaller size does lead to an increased 5-year survival), we must make inroads into recognizing patients with these vague symptoms weeks prior to the onset of biliary obstruction. The physician must maintain a high index of suspicion for the diagnosis of pancreatic cancer in patients with these vague, nonspecific symptoms prior to the onset of jaundice. A heightened awareness of this neoplasm and its symptoms is imperative, not so much in the surgical arena, but more importantly, in the primary care environment where these patients enter the health care field.

Clinical Presentation

Although many patients with pancreatic cancer first present with painless jaundice, the earliest and most common clinical features are a vague, poorly localized, abdominal discomfort often associated with an inconsequential weight loss, anorexia, and fatigue. The latter complaint can be especially insidious because most patients are over 60 years of age and attribute these symptoms to getting older. Because they are nonspecific, these vague, nonlocalizing symptoms are usually either overlooked by both patient