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REVIEW ARTICLE

Pancreatic carcinoma: Palliative surgical and endoscopic treatment*

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Abstract
The majority of patients with pancreatic carcinoma (hepaticojejunostomy) unfortunately will have palliative treatment and palliation of symptoms is important to improve Quality of Life. The most common symptoms that require palliation are jaundice, gastric outlet obstruction and pain. Obstructive jaundice should be treated with a biliary bypass, the optimal palliation in relatively fit patients and endoscopic stenting is preferred in patients with short survival (3–6 months). To prevent gastric outlet obstruction a prophylactic gastroenterostomy should be performed routinely during bypass surgery. Symptomatic patients after earlier stenting of the bile duct can be treated nowadays by duodenal stenting. Pain management is according to the progressive analgesic ladder but a (percutaneous) neurolytic celiac plexus block may be indicated. Currently a R1 (palliative) resection is acceptable in high volume centres but so far there is a very limited role for planned R2 palliative resections.

Key Words: *pancreatic carcinoma, palliative treatment, jaundice, gastric outlet obstruction, pain management*

Introduction

Pancreatic tumors are the fifth most common cause of cancer-related death in the Western world [1,2]. The incidence in the US is around 10 per 100 000 per year. The majority of these tumors are pancreatic adenocarcinomas and the survival is poor [1–4]. Despite surgical treatment with or without radiotherapy and chemotherapy, the overall 5-year survival is around 4% and has hardly improved during recent decades [3]. Unfortunately the majority of patients will present with 'incurable' disease due to extensive local disease or metastases at the time of diagnosis. There is confusion about the terminology, as the terms 'incurable', 'inoperable', and 'unresectable' have a variety of interpretations. The term unresectable is also partly dependent on the local surgical philosophy, for example, including a resection of the mesenteric or portal vein, as well as the acceptance of macroscopically nonradical resections. This surgical philosophy is not only a country-related pattern or 'part of the world'-related pattern but may also be influenced by the experience per center as well as local tradition of surgeons. The strong relation between outcome and mortality may play a role in the indication for resection and acceptance of palliative resections [5–7]. It has even been questioned whether cure is possible at all in patients with pancreatic cancer [3]. There is, however, consensus that patients who undergo resection have the best chance for long-term survival [3,4,8].

Thus overall the majority of patients will have palliative treatment and therefore palliation of symptoms will still be an important focus. The three most important symptoms that should be treated in advanced pancreatic cancer are obstructive jaundice, duodenal obstruction, and pain.

The decision to aim for palliative treatment can be made at two different time points during the disease. The first point is generally after the staging procedures and a selection is made for potential curative surgery, palliative surgery or nonsurgical (endoscopic) palliation. A second time point for selection of a treatment strategy is during surgical exploration and a decision can be made for a curative resection, a resection for optimal palliation or other surgical procedures for palliative treatment.

Thus, accurate initial staging remains the crucial step for the selection of surgical and nonsurgical

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(palliative) treatment. Contrast-enhanced spiral computed tomography (CT), magnetic resonance imaging (MRI), and endoscopic ultrasonography have enhanced the accuracy of radiological imaging, and noninvasive staging procedures are currently first choice [9–11]. Patients who are found to have a resectable tumor at preoperative noninvasive diagnostic work-up (dependent on local philosophy) should undergo an exploratory laparotomy directly. Patients with unresectable or incurable disease found during exploration (11–50%) are generally considered to be best treated with surgical palliation [12–14].

The current knowledge of different aspects of surgical and endoscopic palliative treatment for the above-mentioned symptoms (i.e. obstructive jaundice, duodenal obstruction, and pain) will be summarized in this review.

Obstructive jaundice

At the time of diagnosis up to 90% of patients with pancreatic tumors present with obstructive jaundice. More severe consequences are liver dysfunction and eventually hepatic failure due to bile stasis and cholangitis. Cholangitis is more frequently found in patients with ampullary lesions than in patients with pancreatic cancer. Relief of the obstructive jaundice causes a dramatic increase in the quality of life of patients and should therefore always be accomplished [15].

Biliary drainage can be achieved nonsurgically by placement of a biliary stent (endoscopic or percutaneous) or surgically by performing a biliary bypass. The success rate for short-term relief of biliary obstruction is comparable for both surgical and nonsurgical biliary drainage procedures and varies between 80 and 100%.

In the past, endoscopic biliary drainage was widely performed using plastic (Teflon and polyethylene) stents. Plastic stents can give rise to complications such as migration and occlusion, reported up to 40%. A new stent type for endoscopic treatment is the self-expandable (covered) metallic stent; occlusion will lead to cholangitis. Compared with plastic stents, expandable stents have a longer patency, but cannot be removed after placement [16,17].

Internal biliary drainage is generally preferred and performed by a cholecystojejunostomy, choledocho(hepatico)jejunostomy or choledochoduodenostomy [18]. In this extensive review the success rate of cholecystojejunostomy to relieve obstructive jaundice was lower than that for choledochojejunostomy. A randomized controlled trial (RCT) also confirmed that the technically more difficult choledochojejunostomy is preferred over a cholecystoenterostomy, due to the lower rate of recurrent jaundice and cholangitis and a better patency of the bypass [19].

A choledochoduodenostomy is not recommended because it is generally thought that this drainage procedure frequently results in recurrent jaundice due to local tumor ingrowth into the duodenum and the distal common bile duct.

In our institution (AMC, Amsterdam) a side-to-side Roux-en-Y hepaticojejunostomy is performed after removal of the gallbladder in case of detection of advanced disease or metastases. According to the extension of dissection and in an attempt to dissect locally advanced disease, the common bile duct may be transected in an early phase of the exploration and an end-to-side bilio-enteric anastomosis is made by a one layer running suture [20].

Results of surgical or endoscopic/percutaneous drainage

Five prospective RCTs have been performed, of which four compared surgical biliary drainage and endoscopic drainage [12,21–24]. In the first trial by Bornman et al. percutaneous biliary drainage was used and no differences were found between percutaneous and surgical palliation [22] (Table I). The other studies are relatively old studies and were performed between 1988 and 1994, except for the study by Nieveen et al. in which patients underwent a diagnostic laparoscopy as a final staging procedure and randomization for stent versus bypass was performed after proven metastasis [12]. The studies by Shepherd et al. [23] and Andersen et al. [21] were both hampered by the small number of patients that were randomized. Furthermore, the length of follow-up in both studies is unclear and the registration of complications and the re-admission rate are rather limited. In the study by Smith et al. [24] 201 patients were randomized. A higher procedure-related mortality was found after bypass compared with stenting (14% versus 3%, respectively). Interestingly, the 30-day mortality was not significantly different (15% versus 8%, respectively) but was still relatively high. Major complications after bypass versus stenting were significantly different, 29% versus 11%, respectively, and the minor complications rates were comparable, i.e. 29% versus 18%. The recurrence of jaundice and cholangitis during follow-up was significantly higher after stenting (36% versus 2%) and survival was comparable in both groups [24]. Taylor et al. [25] conducted a meta-analysis using the three above-mentioned studies and concluded that more treatment sessions were required after stent placement than after surgery, with a common odds ratio estimated to be 7.23.

The more recent randomized study by Nieveen et al. analysed the value of a diagnostic laparoscopy in 297 patients with a periampullary carcinoma [12]. A relatively small number of patients who were found to have uncurable disease due to metastases were allocated to either surgical (double bypass) or endoscopic palliation by a Wallstent. There was no difference in procedure-related morbidity or number of re-admitted patients between the surgically and