An audit of percutaneous biliary stenting for the palliation of pancreatic cancer — results, post-procedural survival period, and comparison of plastic and mental stents

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Abstract

The purpose of this retrospective study was to assess the patient survival period after palliative biliary stenting and to compare different kinds of stents used.

During a 27-month period, 60 patients received palliative percutaneous biliary stents for obstructive jaundice due to carcinoma of the head of the pancreas. During the first procedure 17 patients received (metal) Wall stents (mean age 59.8 years, range 32 - 77 years), and 43 patients received (plastic) Carey Coons stents (mean age 62.3 years, range 31 - 87 years). In 12 patients the stent had to be replaced due to complications and 1 patient had a second replacement. All replacement stents were plastic except in 2 cases. Two out of 17 (11.7%) metal stents and 10 out of 43 (23.2%) plastic stents had to be replaced. The median post-procedural survival period was determined between the date of procedure and the date of death.

There was a marked clinical improvement of jaundice in all patients with their follow-up within a few days. More plastic stents were replaced. The average post-procedural survival period for 41 patients was 85.6 days, which is on par with internationally accepted survival periods.

The most cost-effective biliary stent must be used for palliation because of the very short survival rate of this disease. For patients with no surgical options this procedure yields excellent results in comparison with the high morbidity and mortality rates of palliative surgical bypass procedures.

Introduction

Pancreatic carcinoma, cholangiocarcinoma, ampullary or duodenal carcinoma, metastatic disease of the stomach, pancreas, lung, breast, colon and lymphoma cause malignant obstructive jaundice.[1,2] The most common cause, however, remains carcinoma of the head of the pancreas. Adenocarcinoma of the pancreas is one of the deadliest forms of cancer because of its relatively late clinical presentation and diagnosis.[3,4] Pancreatic ductal adenocarcinomas are responsible for 80 - 95% of non-endocrine neoplasms. Radiological diagnosis is usually made by a combination of investigations, including ultrasound, barium investigation, and computed tomography (CT) scanning.[4] Percutaneous transhepatic cholangiography (PTC) and endoscopic retrograde cholangio-pancreatography (ERCP) are also helpful in intraductal tumours. Adenocarcinoma of the pancreas affects about 10 individuals per 100 000 population per year in Western countries. Surgical excision of the tumour is attainable in 10 - 15% of patients.[4] For those patients without a clear curative option, surgical palliative procedures can be performed.[5] These procedures have, however, a high morbidity and mortality rate.

Biliary stents have become an accepted alternative method for palliation of malignant biliary obstruction.[4] In cases where endoscopic placement of stents is not possible, the percutaneous method is a good alternative.[6,7] The percutaneous method is, however, believed to have a higher incidence of complications.[6,8] Plastic stents are used more than metal stents, especially for patients with metastatic disease.

In this study we report on patients with pancreatic cancer who were treated by the percutaneous placement of plastic and metal stents. In these patients curative and other palliative options were not possible. We analysed the patency between plastic and metal stents and determined the post-procedural survival period.

Methods

Setting

The angiography/intervention suite in the Department of Radiology at Universitas Hospital, Bloemfontein.

Percutaneous procedure

The procedure was performed under general anaesthesia, except in high-risk cases where local anaesthetic and sedation was used. After a diagnostic PTC was performed to evaluate the intra- and extrahepatic ducts, as well as the obstruction, a peripheral intrahepatic duct was selected and a 22 G,15 cm Shiba needle was inserted percutaneously into the selected duct. A guide wire was then placed into the duct whereafter a 5.5 French micropuncture set was inserted. The guide wire was then removed, after which a 5 French renal double curve diagnostic catheter and a 0.035 inch Terumo were used to cannulate the stenotic duct in the area of the obstruction. An Amplatz guide wire (180 or 260 cm length) replaced the Terumo. The distal end of the guide wire was positioned in the duodenum. The diagnostic catheter was removed and a dilator was used to dilate the area of obstruction. The size of the dilator correlated with the size of the stent. A 12 French Carey Coons plastic stent was placed in the area of obstruction. All stents were evaluated for effectiveness after one week. In cases where the area of obstruction could not be cannulated, an 8 - 14 French biliary drainage catheter was placed so that bile could drain externally.

Patients

From November 1998 to January 2001 (27-month period) 60 patients received percutaneous biliary stents for malignant biliary obstruction due to pancreatic carcinoma. The patients' ages ranged from 32 to 87 years, with a mean age of 61.9 years. All patients were presented because surgical and endoscopic procedures were not possible. Details, including treatment indication, special investigative results and clinical diagnosis were supplied. Diagnosis of pancreatic carcinoma was made on typical clinical findings and investigations. These patients' radiological reports and files were drawn from the computer database and retrospectively investigated. The percutaneous procedure was then performed. All patients received a cholangiogram within one week of stent placement to evaluate its position and effectiveness. Successful stenting was defined as passage of the prosthesis across the obstruction with good radiological positioning, non-obstructive bile flow and clinical improvement of jaundice. With the first procedure 17 patients received metal stents (mean age 59.8 years), and 43 patients received plastic stents (mean age 62.3 years). Plastic stent sizes 12-14F were used. One patient died the same day after the first procedure. In 12 patients the first stent had to be replaced due to complications, mainly caused by blockage of the stents and a repeat obstruction of bile flow. All replaced stents were plastic except in 2 cases where metal stents were used. One patient received a third placement. Stent patency was considered on the basis of the type of stent and the time interval between first and second placement. Price differences between different stents used were also considered. Patient survival period was determined retrospectively between the date of the first procedure and the date of death. Incomplete or unavailable personal data in some cases made the investigation difficult, as some of these patients were from rural areas and without identification numbers and addresses. Survival period was measured 6 months after the last procedure and again 6 months later.

Results

Clinical improvement could only be evaluated after the first procedure, because no bilirubin values were available when the study was undertaken. More plastic stents were replaced than metal stents. Only 2 metal stents had to be replaced out of a total of 17 (11.7%), but 10 plastic stents out of a total of 43 (23.2%) had to be replaced. All replaced stents were plastic except in 2 cases. The time period between the placement-replacement dates of the different stents could not be compared because some of the patients died before their first stents had to be

replaced. The median survival period for patients who received plastic stents was 37 days, and for those who received metal stents 72 days.

Discussion

An audit or retrospective study always compromises an investigation because only the available information can be used. To make useful assumptions from available data can be very difficult. Although fewer metal stents were replaced a combined investigation between the surgeon and interventionalist, with clinical and biochemical information and proper staging of the disease, is needed. There is, however, a significant price difference between metal (very expensive) and plastic stents (less expensive). As patients have very short mean survival periods, the most cost-effective stents should be used. All patients with metastatic disease must be considered for plastic stents if percutaneous biliary stenting is indicated. Percutaneous biliary stenting is invaluable to patients with no surgical or endoscopic options and yields excellent palliation for these patients in comparison with the high morbidity and mortality rates of conventional surgical bypass procedures.

References

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