IS PROPHYLACTIC USE OF OCTREOTIDE BENEFICIAL IN PREVENTING COMPLICATIONS AFTER PANCREATIC SURGERY?

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ABSTRACT

Major complications following pancreatic surgery are related to the digestive exocrine secretions of the gland. Octreotide, a potent inhibitor of the pancreatic secretions may be of value in reducing the complication rate, particularly fistula formation and possibly the mortality after pancreatic surgery. Between Jan 97 and Jun 99, 19 patients who underwent pancreatic surgery were given perioperative Octreotide in a dose of 100 micrograms eight hourly for 7 days starting from the morning of the surgery. The post operative complications were compared with the results of 17 patients who underwent similar pancreatic surgery between Jan 94 to Dec 96 and who were not given perioperative Octreotide. The surgeries conducted in the Octreotide group were pancreatico-duodenectomy 6, lateral pancreatico-jejunostomy 7, pancreatic biopsy 4 and surgery for pancreatic trauma 2. In the non Octreotide group the surgeries done were pancreatico-duodenectomy 7, lateral pancreatico-jejunostomy 6, pancreatic biopsy 3 and surgery for pancreatic trauma 2. Only 1 out of 19 patients in the Octreotide group developed pancreatic fistula. This was after a pancreatico-duodenectomy and closed spontaneously after 7 days. In the non Octreotide group 5 out of 17 patients developed pancreatic fistula. Of these 5, 1 patient died while in remaining 4 the mean fistula closure time was 23 days. Octreotide reduces the incidence of pancreatic fistula after pancreatic surgeries. However, a larger prospective study is required to convincingly prove the efficacy of Octreotide in prevention of pancreatic fistula after pancreatic surgery.

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Key Words: Octreotide; Pancreatic fistula.

Introduction

Despite improvement in surgical technique, the mortality of elective pancreatic surgery remains between 3% and 10% [1,2]. The major complications following elective pancreatic surgery are related to the digestive exocrine secretions of the gland and include pancreatic fistulae, abscess formation and sepsis. Postoperative complications following major pancreatic surgery are mainly due to the difficulties of performing a safe and proper anastomosis between the stomach or small intestine and the pancreas. Continuous pancreatic juice secretions and often the soft structure of the pancreatic parenchyma are major risk factors. Octreotide is a potent inhibitor of pancreatic secretions and it would appear logical that it may be of value in reducing the complication rate, and possibly mortality following elective pancreatic surgery. An early open study suggested that somatostatin reduced the complication rate after Whipples resection [3]. More recently, two double blind randomized controlled trials have evaluated the effects of perioperative Octreotide on the complications and mortality rates of elective pancreatic surgery [4,5]. We undertook a study to evaluate the efficacy of Octreotide in the prevention of pancreatic fistula after

pancreatic surgery.

Material and Methods

Between Jan 97 to Jun 99, 19 patients who underwent pancreatic surgery were given perioperative Octreotide in a dose of 100 micrograms eight hourly for seven days starting from the morning of the surgery. The post operative pancreatic fistula rate of this Octreotide group was then compared with the fistula rate of 17 patients who underwent similar pancreatic surgery between Jan 94 to Dec 96 and who were not given perioperative Octreotide. Post operatively the pancreatic drain fluid was assessed for amylase levels and a finding of amylase more than 250 IU/L was confirmatory of pancreatic fistula. Pancreatic fistula was treated by Octreotide and Total Parenteral Nutrition (TPN) in the Octreotide group and with only supportive treatment and TPN in the patients operated before Jan 97.

Results

19 patients undergoing a variety of pancreatic surgeries, between Jan 97 and Jun 99 were given perioperative Octreotide and the post operative pancreatic fistula rate was compared with a control group of 17 patients who underwent similar pancreatic surgeries and were not given Octreotide between Jan 94 and Dec 96. The two groups were age and sex matched. The surgeries undertaken in the two groups are as shown in (Table 1).

In the Octreotide group 1 out of 19 patients (5%) developed a pancreatic fistula following a pancreatico duodenectomy. This patient was treated with Octreotide, TPN and other supportive measures and the fistula closed spontaneously after 7 days. In the non Octreotide group 5 out of 17 patients (28%) developed pancreatic

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TABLE 1
Surgeries undertaken

Surgery	Octerotide group	Non octreotide group
Whipples	6	7
Lateral pancreatico-jejunostomy	7	6
Pancreatic biopsy only	4	3
Pancreatic trauma	2	1
Total	19	17

fistula in the post operative period. Of these 5 patients, 2 developed pancreatic fistula after whipple's procedure, 1 after lateral pancreatico-jejunostomy, 1 after a pancreatic biopsy, and 1 after surgery for pancreatic trauma. These patients were treated with TPN and other supportive measures only. 1 of these 5 patients who developed pancreatic fistula following whipple's procedure died because of fulminant sepsis while in the remaining 4 patients the fistula closed after a mean period of 23 days (range 14-30 days).

Discussion

Postoperative complications following major pancreatic surgery are mainly due to the difficulties of performing a safe and proper anastomosis between the stomach or small bowel and the pancreas. Continuous pancreatic juice secretions and the often soft structure of the pancreatic parenchyma are major risk factors. Bartoli et al [6] after review and meta-analysis found a postoperative pancreatic fistula rate of 5% in chronic pancreatitis and 15% in ampullary cancer. The mortality rate in patients with a fistula was 9% in chronic pancreatitis and 27% in periampullary cancer. In the present study, only 1 out of 13 patients (7%) operated for chronic pancreatitis developed a pancreatic fistula while 3 out of 13 patients (23%) operated for periampullary cancer developed a pancreatic fistula. These findings support the hypothesis that postoperative complications following major pancreatic surgery are closely related to the morphology of the pancreatic remnant [7].

Postoperative complications following pancreatic surgery are often caused by pancreatic juice that leaks from the pancreatic remnant and reaches the peripancreatic region. Based on this hypothesis, inhibition of exocrine pancreatic secretions should improve the postoperative course and the complication rate. The concept of inhibiting exocrine pancreatic secretions to prevent postoperative complications originated in 1979 [3]. In this study the authors reported a reduction of postoperative complication rate by periopera-

tive use of somatostatin -14 infusion. The synthetic somatostatin analogue Octreotide is known as a potent inhibitor of exocrine pancreatic secretions. Due to its longer serum and biological half-life, it is more convenient than native somatostatin for clinical use [8]. The value of perioperative administration of Octreotide has been investigated in five randomized, placebo-controlled, double blind, multicentric trials and meta-analysis of their results showed that Octreotide was most effective in prevention of secretion related complication like pancreatic fistula [9]. In the present study the pancreatic fistula rate in the patients given perioperative Octreotide was only 5% as compared to 28% in the non octreotide group ($p < 0.05$).

This study demonstrates that inhibition of perioperative pancreatic secretions is a viable treatment concept in patients undergoing pancreatic surgery. The perioperative and prophylactic application of Octreotide in patients who undergo pancreatic surgery reduces the postoperative complication rate significantly.

References

1. Moosa AR. Surgical treatment of chronic pancreatitis, an overview. *Br J Surg*, 1987;74:661-7.
2. Peters JH, Carey LC. Historical review of pancreaticoduodenectomy. *Am J Surg*, 1991;16:215-25.
3. Klempa J, Schwedes U, Usadel KH. Verhuetung von post-operative pancreatischen komplikationen nach duodenopancreatektomie durch somatostatin Chirug, 1979;50:427-32.
4. Buchler M, Friess M, Klempa I. Role of Octreotide in the prevention of postoperative complications following pancreatic resection. *Am J Surg* 1992;163:125-31.
5. Pederzoli P, Bassi C, Falconi I, Camboni MH. Efficacy of Octreotide in the prevention of complications of elective pancreatic surgery. *Br J Surg* 1994;81:265-9.
6. Bartoli FG, Arnone GB, Ravera G, Bach V. Pancreatic fistulas and relative mortality in malignant disease after pancreaticoduodenectomy. Review and statistical meta-analysis regarding 15 years of literature. *Anticancer Res* 1991;11:1831-48.
7. Al Sharaf Ch, Ishe I, Dawiskiba S, Andren-Sandberg A. Characteristics of gland remnant predict complications after subtotal pancreatectomy. *Dig Surg* 1997;14:101-6.
8. Chaudhry R, Singh B, Subhas P. Octreotide in gastroenterology. *MJAFI*, 1997;53:293-4.
9. Berberat PO, Friess H, Uhl W, Buchler MW. The role of Octreotide in the prevention of complications following pancreatic resection. *Digestion* 1999;60(Suppl 2):15-22.