Bilateral thoracic sympathectomy-splanchnicectomy in the treatment of intractable pain due to pancreatic carcinoma

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In 1967 Heisey and Dohn[1] reported on splanchnicectomy for the treatment of abdominal pain. Thirty-nine cases were reported, 15 of which included bilateral thoracic sympathectomy and splanchnicectomy for intractable pain secondary to carcinoma of the pancreas. Since that time an additional 41 patients with pancreatic carcinoma and intractable abdominal or back pain or both have undergone this procedure at the Cleveland Clinic. This report summarizes the postoperative course of this group of 56 patients and emphasizes the effectiveness of this treatment for the relief of pain.

Surgical splanchnicectomy, described by Peet[2] in 1935, consists of resection of the proximal 12.7 cm of the 11th rib to gain access to the extrapleural space where the ganglionated sympathetic chain and the splanchnic nerves (greater, lesser, and least) lie adjacent to the costovertebral articulations and the vertebral bodies. The length of the nerve structures resected is determined by the available exposure.

Patient population

Forty men and 16 women comprised the group of 56 patients in this study. The average age of the men was 56 years and that of the women was

57 years. Forty-two patients (75%) were followed until death, an average of 4 months after splanchnicectomy. Almost all patients underwent exploratory laparotomy with associated biliary or gastric decompression or both when indicated, followed by bilateral splanchnicectomy at the same time.

Results

The results of surgical relief of pain were classified into one of four groups. Placement into one of these groups was based on both the subjective comments of the attending physicians and the objective changes in the specific medication and dosage required for the relief of pain. Whenever doubt existed, the patient was listed in the category of the less satisfactory surgical results.

Group I. *Complete relief.* Patients classified as having complete relief required either no analgesics or dextropropoxyphene for relief of pain. Complete relief was achieved in 21 patients (36%). Of these patients, recurrent pain developed in six, but only one patient required narcotics for relief. The average survival of those with recurrent pain after complete relief was 11 months, in contrast to the mean survival of only 4 months for those in all groups.

Group II. *Good relief.* These patients were improved but did require medication for relief of pain; codeine was the analgesic most frequently prescribed in this group. Good relief was accomplished in 19 patients (34%). Only three of these patients had recurrent discomfort; only one required morphine.

Group III. *Slight relief.* These patients were believed to have improved, but still required either morphine or meperidine hydrochloride (Demerol) without any objective decrease in the amount of analgesic required. Slight relief was obtained in eight patients (14%).

Group IV. *No relief.* Four patients (7%) had no relief of pain. In one of these patients,[1] the tumor so involved the operative site that the operation was considered technically impossible.

Five patients (9%) are classified *unknown results,* because of lack of follow-up or immediate death postoperatively. Any relief of pain could not be determined because of the patient's clinical condition.

Morbidity and mortality

Minor complications included two cases of pneumothorax. Both patients were treated with a chest tube. A superficial wound infection developed in a third patient.

The only major complication was an extrapleural empyema in a patient who had complete relief of pain. Twenty days after surgery he suffered cardiac arrest and died.

Four operative deaths occurred, a mortality of 7%. Two deaths occurred within 3 days of surgery and were secondary to respiratory difficulties in chronically debilitated patients. A third chronically ill patient had an unexplained cardiac arrest on the 5th postoperative day during a satisfactory convalescence and apparently benign course. The fourth death was of the patient noted before with extrapleural empyema complicating an already debilitating illness.

Discussion

The treatment of patients with carcinoma of the pancreas has provided philosophical and practical problems

to all physicians involved in their care. Despite diagnostic advances, including arteriography and endoscopic pancreatography, earlier diagnosis has not yet been achieved and the prognosis remains poor.

Since resection for cure may be attempted in fewer than 15% of patients with pancreatic carcinoma, attempts at palliation must be offered to the remaining 85% of patients who usually have jaundice, gastric outlet obstruction, or deep abdominal or back pain alone or in combination. Jaundice and gastric outlet obstruction may be relieved by a biliary enteric bypass and gastroenterostomy. However, the retroperitoneal pain secondary to tumor invasion causes the greatest disability for the majority of patients.

Attempts to relieve this pain have included the use of medications given orally,[3, 4] chemical splanchnicectomy,[5, 6] vagotomy,[7] and resection of splanchnic nerves and sympathetic plexi. Assessing relief of pain after any one of these measures may be difficult because of (1) rapid tumor progression or (2) lack of objective indicators.

The placebo effect of oral medications may account for more than 20% of patients experiencing more than 50% relief, as defined by Moertel et al[3] in a double-blind comparative evaluation of marketed analgesic drugs in 100 patients with pain due to cancer. The pain experienced by all patients in our study proved refractory to all analgesics prior to splanchnic resection.

Chemical splanchnicectomy using either a 50% solution of alcohol or a 6% solution of phenol has been successful in relieving pain due to pancreatic carcinoma. Copping et al[6] reported relief of pain in 7 of 10 patients after splanchnic injection of phenol, and Gorbitz and Leavens[5] noted good relief of pain in 10 of 11 patients for as long as 4 months after injection of alcohol. Our present experience with these techniques has been too limited to allow evaluation.

The role of vagotomy in the relief of pain secondary to pancreatic carcinoma has been mentioned infrequently and has been combined with gastroenterostomy, which by itself may relieve pain. It has therefore been difficult to evaluate vagotomy alone for relief of pain.

The results of this study indicate that bilateral splanchnic resection is effective in achieving complete relief of pain in 36% of cases, almost complete relief in 34%, and slight relief in 14% of cases.

Except for one death due to extrapleural empyema, the remaining three patients who died were debilitated and cachectic.

Whether splanchnic resection should precede injection of the splanchnic plexus with phenol or alcohol cannot be answered by this study, but will depend on existing facilities and previous experiences at each institution treating these patients.

Summary

Fifty-six patients with intractable abdominal or back pain or both due to pancreatic carcinoma underwent bilateral thoracic sympathectomy and splanchnicectomy. Seventy percent of these patients had good or complete relief of pain as defined in this study. Twenty-three percent of those with good or complete relief, experienced some recurrence or increase in pain, but this was usually in the long-term survivors (average 11 months) and was

not usually severe. Overall operative mortality in this series of patients subjected to both bilateral splanchnicectomy and at least to exploratory laparotomy was 7%.

References

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