DEVELOPMENT of a thoracoscopic method of performing surgical splanchicectomy has caused a resurgence of interest in this once nearly abandoned method of alleviating intractable pain of pancreatic origin. We describe a case in which comparison of the extent of relief obtained after injections of local anesthetic solution or saline through indwelling thoracic paravertebral sympathetic (splanchnic) catheters permitted successful prediction of a patient's response to videothoracoscopic splanchicectomy. This anesthetic technique may have promise as a method of screening patients considered to be potential candidates for performance of this relatively new procedure.

**Case Report**

The pain service was consulted regarding management of a 33-yr-old man with an 18-yr history of recurrent, exacerbating upper abdominal pain, believed to be of pancreatic origin. He had been admitted to the hospital because of pain, nausea, and vomiting, which were preventing eating and drinking. The patient denied risk factors for acute, chronic, or recurrent pancreatitis, and he had no symptoms of pancreatic insufficiency. Medical history was otherwise negative.

The patient was an emaciated (1.7-m, 44.5-kg), anxious man receiving total parenteral nutrition. Pertinent physical findings included a scaphoid abdomen and extreme tenderness in the epigastrium without rebound.

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blocks

Stomach
Liver
Spleen
A
S
T11

Fig. 1. Cross-section of thorax at the level of the T11 vertebral body demonstrating anatomy relevant to insertion of paravertebral sympathetic (splanchnic) catheters. The needles, although visible in their entirety in the diagram, are inserted at an acute angle to the horizontal plane shown. The initially inserted narrow, pencil-point needles are shown in dotted outline. The tips of the paravertebral catheters can be seen exiting the large-bore Tuohy needles, shown in continuous outline: A = aorta; AV = azygous vein; D = diaphragm; HAV = hemiazygous vein; IVC = inferior vena cava; RLL = right lower lobe of lung; Smn = splanchnic nerves; TD = thoracic duct; T11 = 11th vertebral body.

memory, able to drink without experiencing nausea, vomiting, or abdominal pain. Over the ensuing 5 days, four bupivacaine injections and two saline injections were administered in response to complaints of returning abdominal pain. Unfortunately, only the right catheter could be used, because the left catheter developed a kink beneath the skin. (The left-sided catheter was not immediately replaced based on reports that, at least with celiac catheters, unilateral injection sometimes provides adequate analgesia.) All injections were performed in a single-blinded fashion in an operating room. Bupivacaine injections through the catheters provided good or very good relief of 1–2 days duration. Saline injections provided no or fair relief of 0–1 day duration. Injection of contrast dye through the right catheter on the 6th day after catheter placement confirmed continued correct (though unilateral) injected spread. The right catheter was removed the following day because of solution leakage at the skin entry site. For the remainder of that day and throughout the 2 following days, the patient reported experiencing severe epigastric pain. He remained in bed with legs bent and was unable to eat or drink.

Considering (1) the patient’s continuing pain and inability to eat or drink, (2) the favorable results of local anesthetic blocks compared to saline injections, and (3) the apparent lack of applicable non-invasive analgesic options, it was recommended that the patient undergo surgical splanchnicectomy. Thoracoscopic rather than open splanchnicectomy was recommended because of the lesser perioperative morbidity.20–22 Nonsurgical neurolytic techniques (alcohol or phenol injection or radiofrequency sympahtolysis) were not selected despite the fact that these would have avoided a surgical procedure and general anesthesia, because (1) it was believed interruption of the splanchnic nerves under direct visualization offered the patient the best chance of avoiding the most common complication of splanchnicectomy: recurrence of pain; (2) neurolytic blocks often afford patients with chronic pancreatic pain relief of only a few months’ duration23,24 yet can produce complications (neuralgia and paraplegia) as objectionable as the complications of surgical splanchnicectomy; and (3) successful percutaneous radiofrequency splanchnic nerve destruction has not been reported and may entail an unacceptable risk of causing necrosis to vital structures adjacent to splanchnic nerves (fig. 1). Our recommendation for performance of thoracoscopic splanchnicectomy was accepted by the patient and the referring surgeon.

Despite opinion that unilateral splanchnicectomy is sometimes adequate to control intractable pancreatic pain,1 our patient’s surgeon chose to perform a bilateral procedure. Surgery and anesthesia were uneventful, and postoperatively, the patient described complete freedom from abdominal pain and tolerated a normal diet. He complained of right hypochondrial dyspnea (possibly the result of an electrocautery injury to an intercostal nerve) for several months postoperatively. Twenty-five months after surgery, the patient remains asymptomatic, takes no medications, has gained 20 kg, remains fully employed in his original profession as a manual laborer, and engages in outdoor sports.

Discussion

In 1942, Mallet-Guy performed the first splanchnicectomy to alleviate intractable pancreatic pain.14 Forty years later, the same surgeon reported that, among the 215 patients (most with advanced chronic pancreatitis)
for whom he performed open splanchnicectomy and who survived at least 5 yr postoperatively, 89% obtained prolonged pain relief.13 Success was even higher in the subset of patients who were not alcoholic. Mallet-Guy,15 and subsequently other investigators,2,3,16 emphasized that splanchnicectomy can produce such favorable results only in patients who are not candidates for a specific therapeutic procedure such as drainage of a pseudocyst or clearance of a blockage within the pancreaticobiliary drainage system.

After the many early favorable accounts of benefit from splanchnicectomy, the procedure fell from favor in the 1960s after reports that the relief it affords patients with chronic pancreatitis (especially alcohol-induced) is often short-lived.1,10,16–19 Recently, because of the development of a minimally invasive technique for its performance, there has been a resurgence of interest in performance of splanchnicectomy to alleviate intractable pancreatic pain. The relatively minor morbidity associated with performance of even bilateral thoracoscopic splanchnicectomy11,12 is enhancing the attractiveness of pancreatic denervation even though the long-term results from this new procedure may be no better than those from open splanchnicectomy.

The concept of performing prognostic (usually celiac) blocks to help select patients for splanchnicectomy is not new, but the usefulness of this technique before (either open or thoracoscopic) splanchnicectomy has never been validated experimentally.18,20 There are some problems inherent in attempting to use splanchnic blocks to predict surgical benefit (table 1). That our patient did not have alcohol-induced chronic pancreatitis made him a good candidate for performance of thoracoscopic splanchnicectomy. Variables other than the nature of the disease process, however, can influence patient satisfaction with splanchnicectomy. These include coexistence of opioid dependency or somatization disorder, presence of secondary gain, technical adequacy of the operative procedure, and occurrence of operative complications. Relevant medical information, in addition to a patient’s differential response to local anesthetic and placebos, must be considered, therefore, before recommending pancreatic denervation over alternative methods of providing analgesia.

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References


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Skin Burn Associated with Pulse Oximetry During Perioperative Photodynamic Therapy

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It was reported in 1967 that tumor destruction could be accomplished with the use of a porphyrin substance when exposed to light.1 Individually, the light and the chemical may be relatively innocuous, whereas the combination can have significant effects. This principle has been applied to cancer treatment with a technique called photodynamic therapy (PDT).2,3 PDT is a relatively new cancer treatment modality undergoing clinical trials in the United States. The treatment involves a drug (photosensitizer) that accumulates preferentially in tumor cells and subsequently kills cells on activation by light. We present a case in which the use of conventional perioperative monitoring with a pulse oximeter during PDT resulted in the loss of skin integrity at the site of the pulse oximeter probe.

Case Report

The patient is a 15-year-old girl with recurrent parietal malignant ependymoma who presented for excision of her tumor and PDT. The patient had undergone multiple attempts at surgical excision, in addition to chemotherapy and radiation therapy. After patient and parental consent, she became the first subject in a study designed to determine the side effects of PDT and the maximum tolerable dose of phototoxin in children with brain tumors.