

Catheter-related Complications in Postoperative Intraperitoneal Chemotherapy for Gastric Cancer

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ABSTRACT

Objective: To analyze catheter-related complications during postoperative Intraperitoneal chemotherapy (IPCT) for gastric cancer. **Methods:** From December 2003 to April 2007, 80 patients with gastric cancer were treated with postoperative IPCT using central venous catheters (CVCs), during which the complications that occurred in association with CVCs were documented and analyzed. **Results:** Catheter-related complications were seen in 10 out of the 80 patients, yielding a total complication rate of 12.5%. Main complications included abdominal pain (3.8%), local infection (1.3%), catheter obstruction (2.5%), leakage (2.5%) and dislocation (2.5%). All patients successfully finished their IPCT, the success rate was 100%. There occurred no severe complications or treatment-related deaths. **Conclusion:** It is convenient and safe to carry out postoperative IPCT for gastric cancer using CVCs, which, with a low catheter-related complication rate, should be recommended for more clinic use.

Key words: Gastric Cancer; Intraperitoneal chemotherapy; Catheterization; Central venous; Complication

Gastric cancer is the fourth most common cancer worldwide, with an estimated 934,000 new cases in the year of 2002. It is the second most common cause of death from cancer^[1]. The only potentially curative treatment for gastric cancer is complete surgical resection. However, the long term results for respectable gastric cancer are still poor. More than 50% of the patients will develop local recurrence and metastasis within 5 years after surgery. The resection site, peritoneal surface and liver are the most common sites of recurrence and metastasis^[2, 3]. Recently, IPCT has become one of hotspots of gastric cancer research. Many studies have demonstrated that IPCT is effective in reducing recurrence and metastasis in sites above-mentioned and in improving survival^[4]. Some catheter-related complications have been reported by using Tenckhoff catheters and other catheter systems in IPCT^[5, 6]. In this article, 80 patients with gastric cancer in our department received postoperative IPCT using CVCs. We now report our experience with catheter-related

complications of postoperative IPCT for gastric cancer as follows.

MATERIALS AND METHODS

Patients

From December 2003 to April 2007, 80 patients with gastric cancer in our department received postoperative IPCT. As confirmed by postoperative pathology all patients has serosal invasion with or without lymph node metastasis. There were 52 males and 28 females aged between 36 to 76 y (median 55), including 12 stage II, 48 stage IIIA, 16 stage IIIB and 4 stage IV.

Peritoneal Catheterization

A single cavity CVC (produced by Arrow Raulerson Syring Ltd USA), 3 M transparent protecting patches and heparin cap (produced by 3 M Health Care Ltd USA) were used in peritoneal catheterization. Bilateral McBurney's point was chosen as the puncture site. After the abdomen was prepared with antiseptics and covered with sterile

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drapes, 2% lidocaine was used for local anesthesia. Then a conducting needle was punctured into the peritoneal cavity obliquely. After a steel string was put into the peritoneal cavity through the conducting needle about 30 cm in length, the needle was taken out and the CVC was inserted into the peritoneal cavity about 10–15 cm following the steel string after the abdominal wall was dilated. Then 100 ml normal saline was administrated through the catheter rapidly after taking out the steel string. If no discomforts were observed, a heparin cap was put on the top of the catheter and the catheter was fixed to the abdominal wall by 3 M transparent protecting patches.

Intraperitoneal Chemotherapy

IPCT was given 2–4 weeks after surgery, and was repeated every 4 weeks. All patients received intravenous oxaliplatin 100 mg on day 1 plus CF 200 mg on day 1 to day 5 plus 5-FU 450 mg/m² on day 1 to day 3, and intraperitoneal 5-FU 600/m² on day 4 to day 5 plus DDP 40 mg/m² on day 5. Before IPCT 100 ml normal saline with 10 mg DXM was instilled into the peritoneal cavity, 5-FU and DDP was dissolved in 1000 ml and 500 ml normal saline respectively, and another 500 ml normal saline was instilled into the peritoneal cavity following the chemotherapeutic agents. The total fluid volume for IPCT was 1500–2000 ml. All fluids were warmed to 37°C by an extracorporeal transfusion warmer before instilled rapidly into the peritoneal cavity through the CVC. Patients were asked to change their body position every 15 min for 2 h after intraperitoneal administration. During the peritoneal catheterization and IPCT, catheter-related complications were documented and analyzed. The CVC was taken out within 24 h after the IPCT was completed each cycle, and a new one was placed just prior to the next administration of IPCT.

RESULTS

The incidence of catheter-related complications of IPCT in this series is shown in Tab. 1. A total of 80 patients received 331 cycles of IPCT, and catheter-related complications were seen in 10 of them, with a total complication rate 12.5% (10/80). All patients successfully finished their IPCT, the success rate was 100%. Three patients out of the 80 (3.8%) had mild to moderate abdominal pain, which was relieved after catheters were pulled out

partly in two patients, and the other one became better after 50 mg of indomethacin suppositories was given rectally. One (1.3%) patient experienced redness around the insertion site which was suspected as local infection, and after being sterilized by povidone iodine daily, became better after the removal of the catheter at the end of IPCT. Two (2.5%) patients had catheter obstruction, one of them got recanalization after flushed by Heparinized normal saline, and the other had the catheter removed and a new catheter replaced on the opposite side. Two (2.5%) patients experienced leakage at the insertion site, and were dealt with gelatin sponge strip locally, both finished their IPCT successfully. Two (2.5%) patients experienced catheter dislocation and had the catheters replaced on the opposite side. No severe complications and treatment-related deaths were observed.

Tab. 1. Catheter-related complications of IPCT using CVCs

Complications	Number of patients (%)
Abdominal pain	3 (3.8%)
Infection	1 (1.3%)
Obstruction	2 (2.5%)
Leakage	2 (2.5%)
Dislocation	2 (2.5%)
Total	10 (12.5%)

DISCUSSION

In Japan and western countries, the curative resection rates for gastric cancer are 58.6% and 17.8%, respectively. More than 50% of patients who have undergone curative resection including extended lymphadectomy develop locoregional recurrence and metastasis in 1–3 y after surgery, and the 5-year survival rates are only 60.5% and 39.4%, respectively. The resection site, peritoneal surface and liver are the most common sites of recurrence and relapse. These statistics suggest that surgery alone is not an adequate treatment for gastric cancer^[7].

Analysis has shown that serosal invasion and lymph node metastasis are risk factors for all recurrence patterns and early recurrence and metastasis^[2]. How to reduce and prevent the recurrence and metastasis is an important and troublesome issue in gastric cancer research