QUALITY OF LIFE AFTER INTRAPERITONEAL CHEMOTHERAPY FOR PERITONEAL CARCINOMATOSIS

*Al-Ahwal MS**

ABSTRACT

***Objective*:** To assess the functional status and quality of life (QOL) of 12 patients with disseminated peritoneal cancer before and after intraperitoneal chemotherapy (IPCT).

***Design*:** Patients with confirmed diagnosis of malignant ascites originating from gastrointestinal tract, gynecologic or other malignancies with peritoneal implants were enrolled in this study. Twelve patients completed the Functional Assessment of Cancer therapy scale to assess quality of life and the Visual Analogue scale to assess common symptoms before and after palliative abdominal paracentesis with intraperitoneal chemotherapy (IPCT).

***Results*:** Twelve patients enrolled, 8 gastrointestinal, 3 gynecologic malignancies and 1 with pseudomyxoma peritonie. All with terminal advanced stage malignancy. Mean number of days required for palliative abdominal paracentesis before (IPCT) was 6.7 days (3-20 days) while mean number of days after IPCT was 18.9 days (10-35 days). Eleven out of 12 patients had relief of their symptoms and improvement in QOL. Side effects were minimal and tolerable.

***Conclusion*:** Intraperitoneal chemotherapy improves QOL and increase the duration required for palliative abdominal paracentesis for terminal cancer patients with malignant ascites with minimal toxicity.

KEY WORDS: Intraperitoneal, Chemotherapy, Cancer, Quality of life, Saudi Arabia

Pak J Med Sci January-March 2005 Vol. 21 No. 1 22-25

INTRODUCTION

Most cancers that occur within the abdomen or pelvis will disseminate by three different routes. These are: hematogenous, lymphatic metastasis and implants on peritoneal surfaces. Malignant ascites is a common squeal after failure of systemic treatment. Patients will end up with terminal stage cancer with massive malignant ascites causing a lot of symptoms such as: shortness of breath, weakness, discomfort, pain, nausea, vomiting, loss of appetite, disturbance of sleep and finally poor QOL. Palliative abdominal paracentesis is a widely used procedure to relieve patients symptoms which may be required once per week or even more. The frequency of such procedure is inconvenient and distressing to the patient which eventually leads to poor quality of life. Systemic chemotherapy has generally been ineffective due to poor peritoneal penetration and low response rates (10%-15%)[1,2] and it rarely provides any benefit to patients with bowel obstruction or ascites.

The theoretical advantages of IPCT have been proposed and supported for the past 25 years.

* Dr. Mahmoud Shaheen Al-Ahwal, FRCPC
Associate Professor/Consultant Oncologist
Department of Medicine
King Abdulaziz University Hospital
Jeddah, Saudi Arabia

Correspondence:

Dr. Mahmoud Shaheen Al-Ahwal
E-mail: msa1959@hotmail.com
medconf@yahoo.com

* Received for publication: October 22, 2004
Accepted: November 20, 2004

Histologically, the mesothelium is a hydrophobic cell layer separating the peritoneum from systemic circulation[3,4]. Thus, molecules with an increased size and hydrophilic nature will not penetrate the mesothelium easily, resulting in much larger concentrations in the peritoneal cavity with minimal systemic effect[5,6]. The effective peak peritoneal-to-plasma ratios for Mitomycin C, Cisplatin, 5-fluorouracil, and Paclitaxel are 25:1, 50:1, 500:1 and 350:1, respectively[7].

In addition, IPCT may be metabolized by the liver to varying degrees before systemic exposure[8]. It is also possible that obstruction of lymphatics due to carcinomatosis may decrease systemic absorption of the chemotherapeutic agent[9].

For the above reasons, we elected to infuse IPCT using Cisplatin 50-100mg/ post palliative abdominal paracentesis to delay fluid accumulation to the abdominal cavity which will prolong the duration and decrease the need for such procedure and hence improvement in QOL.

METHODS

Between April 2000 – October 2002, all terminal cancer patients at King AbdulAziz University Hospital, Jeddah with the diagnosis of stage III or IV Gastrointestinal tract, Gynaecology malignancies or pseudomyxoma peritonie with confirmed diagnosis of malignant ascites post failure of systemic treatment with normal renal function were enrolled in this study. Twelve patients participated in this study. Once patient is admitted to the Day Care Unit, A big tail catheter is inserted under ultrasound guidance in the Radiology department. Intraperitoneal chemotherapy using Cisplatin 50-100mg is infused after aspiration of 3-4 liters of malignant ascites. Catheter is removed after flushing with 50cc of normal saline. Patients are then discharged to be followed in the out-patient department for further assessment and follow-up on a weekly basis. The frequency of this procedure was variable ranging from 1–6 times (Table-I) because of patients exclusion once they develop

Table-I: Summary of study population before and after Intraperitoneal Chemotherapy (IPCT) for peritoneal carcinomatosis and its impact on quality of life

Patients	*Diagnosis*	*Stage*	*Number of IPCT after paracentesis*	*Duration for requirement of abdominal paracentesis*		*Relief of symptoms (Y/N)*	*Improvement in quality of life*	*Side effects*
				Before IPCT	*After IPCT*			
1	Ovarian CA	IV	2	5 days	20 days	Y	Y	Nausea
2	Colon CA	IV	3	4 days	15 days	Y	Y	None
3	Ovarian CA	IV	1	7 days	14 days	N	N	Allergic reaction
4	Rectal CA	IV	4	5 days	10 days	Y	Y	Nausea
5	Colon CA	IV	2	7 days	20 days	Y	Y	None
6	Endometrial CA	IV	3	6 days	15 days	Y	Y	None
7	Ovarian CA	III	1	7 days	21 days	Y	Y	Weakness
8	Gastric CA	IV	4	3 days	14 days	Y	Y	Nausea
9	Colon CA	IV	6	5 days	20 days	Y	Y	Infection
10	Pseudomyxoma Peritonie	III	3	20 days	35 days	Y	Y	None
11	Colon CA	IV	1	5 days	15 days	Y	Y	Nausea
12	Gastric CA	IV	3	6 days	28 days	Y	Y	Weakness

IPCT (Intra Peritoneal Chemotherapy); Y (Yes); N (No).

loculated ascites, large tumor masses within the abdomen or patients death.

Visual Analogue Scale (V.A.S.) was used to assess patients symptoms and questionnaire using physical and practical subscale from the Functional Assessment of Cancer Treatment-General (FACT-G) to assess QOL before and after IPCT[10]. All responses were collected and analyzed by simple descriptive statistical methods (frequencies, mean) using SPSS statistical program then comparisons were made before and after IPCT.

RESULTS

Twelve (12) patients enrolled in this study, 8 with GIT, 3 Gynae malignancies and 1 with pseudomyxoma peritonie . Two patients with stage III disease and 10 pts with stage IV. Summary of all patients characteristics, duration for requirements of abdominal paracentesis, before and after IPCT, assessment of their symptoms and QOL and finally side effects are summarized in (Table-I). Mean number of days required for abdominal paracentesis before IPCT was (6.7 days) while Mean number of days after IPCT was (18.9 days) with an average increase of 12.2 days per patient. 11 out of 12 patients had relief of their symptoms and improvement in QOL. Six patients developed mild side effects in the form of nausea or vomiting, one patient developed simple peritonitis which was treated with antibiotics, one patient (Number 3) developed severe allergic reaction which was treated immediately and recovered one day after admission. Four patients developed no significant side effects. All patients died within 1–6 months after diagnosis of malignant ascites.

DISCUSSIONS

Debilitating malignant ascites is a common end stage of terminal cancer patients secondary to many gastrointestinal or gynecologic tumors. This usually causes many distressing symptoms like shortness of breath, pain and weakness which leads to poor QOL. In this study, IPCT using cisplatin 50–100 mg after each palliative abdominal paracentesis was done to delay fluid re-accumulation by increasing drug concentration to the site of cancer which in turn will lead to delay in fluid re-accumulation and requirements for frequent abdominal paracentesis. Chemotherapy not only directly destroys tumor cells but also eliminates viable platelets, neutrophils and monocytes from peritoneal cavity. This diminishes the promotion of tumor growth[11]. Cisplatin chemotherapy is used because of its area under the curve (AUC) ratios of intraperitoneal to intravenous exposure are favorable[12]. Many chemotherapeutic agents were used intra peritoneally and were found to be effective not only in controlling malignant ascites but also improves survival. Commonly used chemotherapeutic agents are: 5-Fluorouracil, Doxorubicin, Cisplatin[11], MitomycinC13 and CPT-11.[14]

In this study we noticed prolonged duration for requirements of abdominal paracentesis after IPCT for most of our patients ranging from 10–35 days which is 2–4 times longer than duration before IPCT (Table-I). This relieved most of our patients symptoms and improved their QOL. It also reduced the number of admissions to the hospital. Quality of life was also improved in many other studies after intraperitoneal hyperthermic chemotherapy for peritoneal carcimatosis especially after cytoreductive surgery[15].

The presence of ascites was associated with poor prognosis and survival with no patients surviving past 30 days especially non gynaecologic malignancies[16]. Historically, patients with peritoneal carcinomatosis have had very few treatment options to prolong survival. Intraperitoneal chemotherapy was found to improve survival in patients with colorectal cancer spread to the peritoneal cavity[17]. Improvement in survival was found better after proper surgical debulking with residual tumor <2cm[11].

Complications of IPCT was minimal due to poor systemic absorption. In our study complications were minimal to all patients except patient number 3 who developed severe aller-

gic reaction secondary to cisplatin which is very rare complication. All of our patients died within 1-6 months from developing malignant ascites secondary to their illness.

From this study, we conclude that IPCT after palliative abdominal paracentesis is an option to consider to relieve patients symptoms, prolong duration and decrease number of abdominal paracentesis required for palliation, improves QOL with minimal toxicity. Surgical debulking to patients with good performance status and IPCT is an option to consider these days for many patients with gynecologic or gastrointestinal malignancies not only to improve QOL but also to improve survival.

REFERENCES

1. Sugarbaker PH. Rationale for post operative intraperitoneal chemotherapy as a surgical adjuvant for gastrointestinal malignancy. Reg Cancer Treat 1988; 1: 66.
2. Schabel FM Jr. Concepts for systemic treatment of micrometastases. Cancer 1975; 35: 15–24.
3. Markman M. Intraperitoneal chemotherapy. Semin Oncol 1991; 18: 248–54.
4. Jacquet P. The peritoneal plasma barrier. In Sugarbaker P, ed. Peritoneal carcinomatosis: Principles of Management. Boston: Kluwer Academic publishers, 1996:53–63.
5. Dedrick RL. Interspecies scaling of regional drug delivery. J Pharm Sci 1986; 75: 1047–52.
6. Cho HK, Lush RM, Bartlett DL, et al. Pharmacokinetics of cisplatin administered by continuous hyperthermic peritoneal perfusion (CHPP) to patients with peritoneal carcinomatosis. J Clin Pharmacol 1999; 39: 394–401.
7. Los G, Mutsaers PH, Van der Vijgh WJ, Baldew GS, de Graaf PW, McVie JG. Direct diffusion of cis-diamminedichloroplatinum (II) in intraperitoneal rat tumors after intraperitoneal chemotherapy: a comparison with systemic chemotherapy. Cancer Res 1989; 49: 3380–4.
8. Dedrick RL. Theoretical and experimental bases of intraperitoneal chemotherapy. Semin Oncol 1985;12(3 suppl 4):1–6 .
9. Bartlett D. Peritoneal carcinomatosis. In DeVita VT Jr, Hellman S, Rosenberg SA Jr, eds. Cancer: Principles and Practice of Oncology. 5th ed. Baltimore: Lippincott Williams & Wilkins, 2001: 2561–73.
10. Winstead-Fry P, Schultz A. Psychometric Analysis of the Functional Assessment of Cancer Therapy-General (FACT-G) Scale in a rural sample. Cancer 1997; 79: 2446-52.
11. Sugarbaker PH. Management of peritoneal surface malignancy using intraperitoneal chemotherapy and cytoreductive surgery. A manual for Physicians and Nurses. Michigan: The Ludann Company Grand Rapids, 1998.
12. Sugarbaker PH, Graves T, DeBruijn EA, et al. Rationale for early postoperative intraperitoneal chemotherapy (EPIC) in patients with advanced gastrointestinal cancer. Cancer Res 1990; 50: 5790-4.
13. Link KH, Roitman M, Holtappels M, et al. Intraperitoneal chemotherapy with mitoxantrone in malignant ascites. Surg Oncol Clin N Am 2003; 12(3): 865-72.
14. Maruyama M, Nagahama T, Ebuchi M, Yuasa Y. Experimental study on intraperitoneal versus intravenous CPT for peritoneal seeding and liver metastasis. Gan To Kagaku Ryoho 2000; 27 (12): 1855-7.
15. McQuellon RP, Loggie BW, Fleming RA, et al. Quality of life after intraperitoneal hyperthermic chemotherapy (IPHC) for peritoneal carcinomatosis. Eur J Surg Oncol. 2001; 27(!): 6 -73.
16. Chu DZ, Lang NP, Thompson C, Osteen PK, Westbrook KC. Peritoneal carcinomatosis in nongynecologic malignancy. A prospective study of prognostic factors. Cancer 1989; 63(2): 364-7.
17. Mahteme H, Hansson J, Berglund A, et al. Improved survival in patients with peritoneal metastases from Colorectal Cancer: A preliminary Study. Br J Cancer 2004; 90: 403-7.