Simultaneous extensive intraperitoneal lavage and intraperitoneal cisplatin chemotherapy may be considered as a treatment option for far advanced gastric cancer who undergone surgery.

Eunju Lee, M.D.[1], Yongjoon Won, M.D.[3], So Hyun Kang, M.D.[1], Sangjun Lee, M.D.[1], Young Suk Park, M.D.[1,2], Sang-Hoon Ahn, M.D.[1,2], Yun Suhk Suh, M.D., Ph.D. [1,2], Hyung-Ho Kim, M.D., Ph.D.[1,2]

[1] Department of Surgery, Seoul National University Bundang Hospital, Seongnam, Korea

[2] Department of Surgery, Seoul National University College of Medicine, Seoul, Korea

[3] Department of Surgery, Seongnam Citizens Medical Center, Seongnam, Korea

COI Disclosure

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Introduction

- Peritoneal metastasis is the most common type of recurrence in gastric cancer. It shows poor prognosis, and median overall survival is 6 to 10 months. The 5-year survival rate is less than 5%.
- Peritoneal carcinomatosis in gastric cancer is considered as stage IV, including cytology positive without gross dissemination.
- Systemic chemotherapy is a standard treatment for gastric cancer patients with peritoneal metastasis. There have been many previous attempts at intraperitoneal chemotherapy for local drug delivery to peritoneal carcinomatosis, but they have not yet been established.

Kodera, Yasuhiro, et al. "Peritoneal washing cytology: prognostic value of positive findings in patients with gastric carcinoma undergoing a potentially curative resection." *Journal of surgical oncology* 72.2 (1999): 60-64.
Yonemura, Yutaka, et al. "Multidisciplinary therapy for treatment of patients with peritoneal carcinomatosis from gastric cancer." *World journal of gastrointestinal oncology* 2.2 (2010): 85.

Purpose

- Aim of this study is evaluate the effect of intraperitoneal (IP) cisplatin chemotherapy with extensive intraoperative peritoneal lavage (EIPL) on the survival rate and oncological results of advanced gastric cancer patients who have undergone surgery.

Patients and method

Conventional Group

IP chemotherapy Group

- After diagnostic laparoscopy, IP chemotherapy was performed on patients who removed all visible lesions (cytoreductive surgery), patients who underwent only palliative surgery for reasons such as pain or obstruction, and patients who had only diagnostic laparoscopy and did not attempt gastrectomy.

- In the IP chemotherapy group, 100mg of cisplatin was administrated intraperitoneally after extensive intraoperative peritoneal lavage with 10L of normal saline after surgery, followed by clamping for 24 hours, and draining .

- Single center (Seoul National University Bundang Hospital), retrospective study
- From January 2014 to December 2018
- A total 1373 patients who diagnosed with advanced gastric cancer (AGC) and received surgery were analyzed.

Inclusion criteria	Exclusion criteria
▪ Patients diagnosed with AGC of T2 or higher of adenocarcinoma by pathological examination. ▪ Patients who underwent surgery.	▪ Patients who were diagnosed with AGC before surgery, but whose diagnosis was changed to EGC by pathology examination.

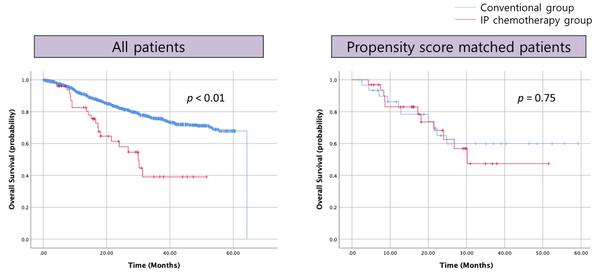
Results

Table 1 Baseline characteristics

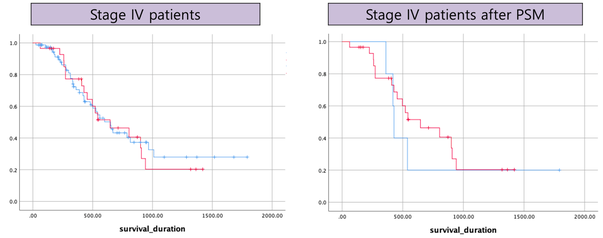
	All patients			Propensity score matched patients		
	Conventional group (n=1323)	IP chemotherapy group (n=50)	p value	Conventional group (n=32)	IP chemotherapy group (n=32)	p value
Age (yr)	62.0 ± 13.0	54.3 ± 12.1	<0.001	56.2 ± 13.7	56.8 ± 11.7	0.853
Sex						
Male	901 (68.1%)	25 (50.0%)	0.011	19 (59.4%)	18 (56.2%)	1.000
Female	422 (31.9%)	25 (50.0%)		13 (40.6%)	14 (43.8%)	
Body mass index (kg/m2)	23.3 ± 3.4	22.7 ± 3.7	0.204	23.0 ± 3.1	22.3 ± 2.9	0.328
ASA classification						
I	423 (32.0%)	19 (38.0%)		14 (43.8%)	13 (40.6%)	
II	762 (57.7%)	29 (58.0%)	0.117	18 (56.2%)	17 (53.1%)	0.559
III	130 (9.8%)	1 (2.0%)		0 (0.0%)	1 (3.1%)	
IV	6 (0.5%)	1 (2.0%)		0 (0.0%)	1 (3.1%)	
Surgical approach						
Open	63 (4.8%)	0 (0.0%)		1 (3.1%)	0 (0.0%)	
Laparoscopy	1093 (82.6%)	44 (88.0%)	0.427	26 (81.2%)	26 (81.2%)	0.580
Robotic	6 (0.5%)	0 (0.0%)		0 (0%)	0 (0%)	
Convert to open	161 (12.2%)	6 (12.0%)		5 (15.6%)	6 (18.8%)	
Tumor location						
Upper	303 (22.9%)	14 (28.0%)		7 (21.9%)	7 (21.9%)	
Mid	320 (24.2%)	20 (40.0%)	0.002	10 (31.2%)	14 (43.8%)	0.721
Lower	677 (51.2%)	13 (26.0%)		14 (43.8%)	10 (31.2%)	
Other	22 (1.7%)	3 (6.0%)		1 (3.1%)	1 (3.1%)	
Type of operation						
Distal gastrectomy	786 (59.4%)	19 (38.0%)		16 (50.0%)	15 (46.9%)	
Total gastrectomy	452 (34.2%)	23 (46.0%)		16 (50.0%)	15 (46.9%)	
Proximal gastrectomy	65 (4.9%)	1 (2.0%)		0 (0.0%)	1 (3.1%)	
Pylorus preserving gastrectomy	6 (0.5%)	0 (0.0%)	<0.001	0 (0%)	0 (0%)	0.559
Wedge resection	2 (0.2%)	0 (0.0%)		0 (0%)	0 (0%)	
Gastrojejunostomy	2 (0.2%)	0 (0.0%)		0 (0%)	0 (0%)	
Biopsy	2 (0.2%)	5 (10.0%)		0 (0%)	0 (0%)	
others	8 (0.6%)	2 (4.0%)		0 (0.0%)	1 (3.1%)	
Lymph node dissection						
D0	9 (0.7%)	2 (4.0%)		0 (0.0%)	1 (3.1%)	
D1	44 (3.3%)	1 (2.0%)		5 (15.6%)	0 (0.0%)	
D1+	337 (25.5%)	7 (14.0%)	<0.001	3 (9.4%)	4 (12.5%)	0.138
D2	838 (63.4%)	29 (58.0%)		22 (68.8%)	22 (68.8%)	
D2+	46 (3.5%)	3 (6.0%)		2 (6.2%)	3 (9.4%)	
D3	33 (2.5%)	0 (0.0%)		0 (0.0%)	2 (6.2%)	
Others	14 (1.1%)	8 (16.0%)		0 (0.0%)	1 (3.1%)	
Radicality						
R0	1240 (93.7%)	31 (62.0%)	< 0.001	24 (75.0%)	26 (81.2%)	0.833
R1	35 (2.6%)	6 (12.0%)		4 (12.5%)	3 (9.4%)	
R2	48 (3.6%)	13 (26.0%)		4 (12.5%)	3 (9.4%)	
Tumor Size (cm)	6.0 ± 3.3	8.2 ± 4.1	0.001	8.6 ± 4.5	8.3 ± 4.5	0.786
Pathological Stage						
IA	5 (0.4%)	1 (2.0%)		0 (0.0%)	1 (3.1%)	
IB	207 (16.5%)	0 (0.0%)		0 (0.0%)	0 (0.0%)	
IIA	194 (15.5%)	2 (4.0%)		1 (3.1%)	2 (6.2%)	
IIB	170 (13.6%)	1 (2.0%)	<0.001	2 (6.2%)	1 (3.1%)	0.031
IIIA	193 (15.4%)	5 (10.0%)		4 (12.5%)	5 (15.6%)	
IIIB	209 (16.7%)	7 (14.0%)		8 (25.0%)	6 (18.8%)	
IIIC	195 (15.6%)	5 (10.0%)		14 (43.8%)	4 (12.5%)	
IV	78 (6.2%)	29 (58.0%)		3 (9.4%)	13 (40.6%)	

Table 2 Operative outcome

	All patients			Propensity score matched patients		
	Conventional group (n=1323)	IP chemotherapy group (n=50)	p value	Conventional group (n=32)	IP chemotherapy group (n=32)	p value
Operation time (min)	216.6 ± 78.2	273.4 ± 93.5	< 0.001	274.8 ± 95.3	272.6 ± 65.4	0.916
EBL (ml)	97.9 ± 204.6	74.9 ± 94.2	0.117	97.0 ± 103.2	88.6 ± 106.4	0.749
Number of retrieved LNs	66.6 ± 25.2	61.3 ± 32.0	0.247	73.0 ± 29.9	73.4 ± 21.5	0.950
Early Post-operative complication (<=POD 30)	163 (12.3%)	5 (10.0%)	0.786	2 (6.2%)	4 (12.5%)	0.668
Early Post-operative Mortality (<=POD30)	4 (0.3%)	0 (0.0%)	1.000	0 (0.0%)	0 (0.0%)	1.000
Adjuvant Chemotherapy	615 (49.9%)	38 (76.0%)	0.001	22 (68.8%)	22 (68.8%)	1.000



In subgroup analysis of stage IV gastric cancer, median survival was 15.7 ± 12.8 months in the conventional group and 18.6 ± 12.2 months in the IP chemotherapy group.



Conclusion

Simultaneous EIPL and IP cisplatin chemotherapy may be considered as a treatment option for far advanced gastric cancer who undergone surgery.