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Surgical Treatment for Gastric Cancer in Extremely Aged Patients

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Abstract

Objectives: Average human life expectancy is 82.6 years old in Japan. We report surgical treatment for extremely aged patients with gastric cancer.

Methods: Between 1991 and 2011, 5330 gastric cancer patients were underwent gastrectomy in our hospital, and 78 patients (1.5%) were over 85 years old. The clinic-pathological findings in these patients were investigated retrospectively and compared with those in 4494 patients under 75 years old.

Results: Median age was 86 (85-95) vs. 63 (19-75). The types of gastrectomy such as local/proximal/distal/total were 9/0/49/20 vs. 216/172/2983/1123. Preoperative morbidity rate was 73.1% vs. 23.2%. The ratio of extent nodal dissection was 30.8% vs. 53.5%. Postoperative morbidity/30-day mortality rate was 24.4%/1.3% vs. 15.3%/0.2%, especially pneumonia; brain infarction and urinary tract infection were more common in elderly group. Best supportive care is highly selected in case of recurrence in elderly group (66.7% vs. 11.9%). The overall 5-year survival rate of StageI/II/III/IV was 70.6/70.0/30.3/0% vs. 92.0/80.0/60.5/13.3%. The ratio of non-cancer death within 5 years after operation was 19.2% vs. 5.8%.

Conclusion: Although the postoperative complications and non-gastric cancer death are high ratio, cautious operative procedure contributes to a good results and prognosis even in the extremely aged patients.

Keywords: Surgical; Patients; Aged; Cancer

Introduction

Average human life expectancy is 80 years for men and 86 years for women in Japan [1], and the proportion of elderly patients diagnosed with gastric cancer is increasing. However, strategies for treating extremely aged patients with gastric cancer were not yet established and there was no guideline for elderly patients in Japan. The purpose of this retrospective study was to clarify the problem of surgical treatment for these extremely aged patients.

Patients and Methods

Since 1991 to 2011, 5330 gastrectomies have been performed for gastric cancer patients in Niigata Cancer Center Hospital, and 78 patients (1.5%) were aged 85 or above (elderly group; median age 86 years). The control group consisted of 4494 patents, aged 19-75 (median age 63). All patients were analysed retrospectively for physiological status, surgical procedures, and postoperative course. Data were collected from all medical and nursing charts. Pre-existing morbidity and postoperative complications were only included in this analysis when medical or interventional treatment had been carried out. Surgical specimens were examined and scored according to the Japanese classification of gastric carcinoma, 3rd English edition [2]. About prognosis, survival curves were calculated using the Kaplan-Meier Method and the 90-day mortality rate was also studied. The chi-squared test was used to assess statistical significance.

Results

A total of 4572 patients were included in this study. The patients' characteristics are shown in Table 1. There were no significant differences between the elderly group and the control group in gender. The ratio of the cancer of the remnant stomach is significantly higher in the elderly group than the control group. About the operative procedures, the local resection ratio of stomach was higher and splenectomy was rare in the elderly group. The combined resection of other organic cancer is more common in the elderly group. The extent of nodal dissection was significantly different between the two groups. There was no D3 lymphadenectomy in the elderly group, while 5.4% underwent in the control group. Operation time/blood loss was 135 min/70 ml in elderly group vs. 165 min/100 ml in control group respectively ($p<0.0001$). In the pathological findings, the ratio of well differentiated adenocarcinoma was higher in the elderly group.

Table 2 summarizes pre-existing morbidity, which was higher in the elderly group (73.1% vs. 23.2%, $p<0.0001$). Post-operative complications were shown in Table 3. The postoperative morbidity and mortality rate was higher in the elderly group. Although the frequency of postoperative complications in surgical field was similar in the two groups, other morbidity such as pneumonia, cerebral infarction and renal impairment were more common in the elderly group. There was no difference in postoperative hospital stay (median 15 days).

Postoperative chemotherapy was summarized in Table 4. The elderly group received less chemotherapy than the control group. Table 5 summarizes treatment for cancer recurrence. Best Supportive Care is highly selected for the elderly group in case of recurrence.

The 5-year survival rate of the elderly group was lower than that of the control group in pStageI /III (70.6%/34.3% vs. 92.0%/60.5%) (Figure 1). This difference depends on non-cancer death. The cause of death within 5 years after operation was shown in Table 6. The ratio of non-gastric cancer death was significantly higher in the elderly group.

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		Age		P value
		≧85 (n=78)	≦75 (n=4494)	
Age	Median (range)	86(85-95)	63(19-75)	
Gender				NS
	Male	62.8%	69.0%	
	Female	37.2%	31.0%	
	Cancer of the remnant stomach	11.5%	2.9%	<0.0001
Type of gastrectomy				
	Local	11.5%	4.8%	0.0064
	Proximal	0	3.8%	NS
	Distal	61.5%	66.0%	NS
	Total (Remnant Stomach)	25.6%	25.0%	NS
	Others	1.3%	0.4%	NS
Combined resection				
	Spleen	2.6%	11.1%	0.0163
	simultaneous other organic cancer	6.4%	0.9%	<0.0001
Nodal dissection				
	D0	11.5%	6.5%	NS
	D1	57.7%	40.1%	NS
	D2	30.8%	48.1%	0.0024
	D3	0	5.4%	0.0348
Time				
	Median (range)	135 (30-265)	165 (30-1165)	<0.0001
Bleeding				
	Median (range)	70 (5-985)	100 (5-2600)	<0.0001
pStage				
	I	53.8%	66.4%	0.0345
	II	12.8%	9.8%	NS
	III	19.2%	11.7%	0.0421
	IV	14.1%	12.4%	NS
Histology				0.0054
	Well differentiated	74.4%	58.6%	
	Poorly differentiated	25.6%	41.2%	

Table 1: Patients characteristics.

	Age		P value
	≧85 (n=78)	≦75 (n=4494)	
Overall	73.1%	23.2%	＜0.0001
Cardiovascular	43.6%	12.9%	＜0.0001
Brain	14.1%	3.9%	＜0.0001
Diabetes mellitus	14.1%	6.3%	0.0058
Respiratory	11.5%	3.0%	＜0.0001
Liver	0.1%	1.8%	NS
Renal	0.1%	0.8%	NS

Table 2: Pre-existing morbidity.

Discussion

The differences in the clinico-pathological features of gastric cancer between the elderly group and the control group were shown in this study. In the pathological findings, the ratio of well differentiated adenocarcinoma was higher in the elderly group. It has been reported that more elderly patients had well or moderately differentiated histology and more young patients had poorly differentiated histology and signet ring cell carcinoma [3].

		Age		P value
		≧85 (n=78)	≦75 (n=4494)	
Morbidity				
	Overall	24.4%	15.3%	0.0289
	Surgical	14.1%	13.1%	NS
	Respiratory	7.7%	1.7%	<0.0001
	Brain	3.8%	0.7%	0.001
	Cardiovascular	2.6%	0.8%	NS
	Renal	2.6%	0.4%	0.0056
Mortality	90day (30day)	5.1%(1.3%)	1.2%(0.2%)	0.0016

Table 3: Incidence of post-operative complications.

		Age		P value
		≧85	≦75	
pStage				
	II	10.00%	54.20%	N.S.
	III	13.30%	67.90%	<0.0001
	IV	63.60%	87.1%	0.0251

Table 4: Postoperative chemotherapy.

	Age		P value
	≧85	≦75	
	n=18	n=531	
Surgery	11.1%	23.0%	NS
Chemotherapy	22.0%	73.8%	<0.0001
Radiation	0	14.9%	NS
Best supportive care	66.7%	11.9%	<0.0001

Table 5: Treatment for cancer recurrence.

		Age		P value
		≧85	≦75	
Total		n=78	n=4494	
	Primary cancer/ Recurrence	19.2%	14.7%	N.S.
	Non-cancer death	19.2%	5.8%	<0.0001
	90 day mortality	5.1%	1.2%	0.0116
Stage I		n=42	n=2937	
	Recurrence	0	1.2%	N.S.
	Non-cancer death	23.8%	5.4%	<0.0001
	90 day mortality	2.4%	0.2 %	N.S.
Stage II		n=10	n=441	
	Recurrence	20.0%	12.0%	N.S.
	Non-cancer death	20.0%	5.7%	N.S.
	90 day mortality	0	0.2 %	N.S.
Stage III		n=15	n=527	
	Recurrence	26.7%	28.8%	N.S.
	Non-cancer death	33.3%	6.3%	0.0004
	90 day mortality	13.3%	1.1	0.0055
Stage IV		n=11	n=589	
	Primary cancer/ Recurrence	81.8%	71.5%	N.S.
	Non-cancer death	0	7.5%	N.S.
	90 day mortality	9.1%	7.1%	N.S.

Table 6: Cause of death within 5 years after operation.

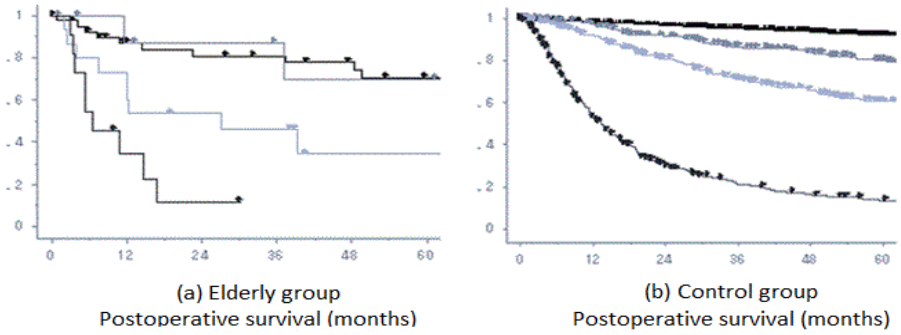

Figure 1: Kaplan-Meier overall survival curves for the elderly group (a) and the control group (b).

In the general population of 85 years old people in Japan, the men can live 6.12 years more and the women can live 8.19 years more [1]. The survival rate in the elderly group was worse even after curative resection than that in the control group because of non-gastric cancer death. The elderly patients had a higher incidence of preoperative risk factors and 90-day mortality. To avoid severe complications, preoperative risk assessment and less invasive surgery were important [4-7]. Although treatment for cancer recurrence is sometimes restricted in the elderly patients, cautious operation contribute to a good results and prognosis even in the extremely aged patients [8].

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