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Introduction

Presently, the number of elderly patients who undergo surgery for gastric cancer has increased because of prolonged life expectancy rates (1-2). However, also the significant increase of postoperative complications attributed once to the old age of the operated patients does not seem at present a realistic risk factor (2-3). According to our experience, we compared two groups of patients, aged less than or as old as 65 (Group A) and older than 65 (Group B), with respect to immediate and long term results, affected by gastric cancer, who underwent palliative or radical operations.

Patients and methods

Since 1981 up to 1996, in the Department of General Surgery at Catholic University of Rome, 708 patients underwent surgery for gastric cancer. These patients were divided into two groups according to age: 378 patients younger than or as old as 65 years (group A, 53.4%) and 330 older than 65 (group B, 46.6%) (Tab. I). Overall 349 patients received palliative operations and 359 radical procedures (Tab. II).

Statistics: the data obtained had been processed applying the chi-square test for contingency tables (2 x m) and the variance analysis when required.

Abstract

Nowadays an increased number of elderly patients undergo surgery for gastric cancer. The old age by itself does not seem to represent a prohibitive risk factor anymore. Two groups of patients operated on of gastric cancer at our surgical unit (Group A=378 patients younger or as old as 65 years and Group B=330 patients older than 65 year) were compared. There were not statically significant differences between the two groups in terms of number of performed radical exereses (57,7% vs. 42,3% respectively), kind of resective operation (total gastrectomy or subtotal gastrectomy) and extent of lymphadenectomy (D2-D3 type: 64,7% vs 63,8% respectively). The location of tumor, the distribution by stage and the long term survival of radically resected cases were not statistically different in the two groups of patients. Five-year survival after radical resection was 56,8% and 54,0% respectively. We conclude that elderly patients in good clinical conditions affected by gastric cancer should undergo radical resection with lymphadenectomy such extensive as D2-D3 type. Key words: Gastric cancer, elderly, risk factors, survival.

Riassunto

IL CARCINOMA GASTRICO NELL'ANZIANO

Attualmente viene sottoposto ad intervento chirurgico per carci - noma gastrico un sempre maggior numero di pazienti anziani. L'età avanzata non sembra di per se rappresentare un fattore di rischio proibitivo. Sono stati confrontati due gruppi di pazienti (gruppo A=378 pazienti di età uguale o inferiore a 65 anni; gruppo B=330 pazienti di età superiore a 65 anni) operati per carcinoma gastrico presso la nostra Divisione chirurgica. Non sono state riscontrate significative differenze statistiche fra i due gruppi in termini di exeresi radicali praticate (rispettivamente il 57,7 % contro il 42,3 %), tipo di intervento di resezione (gastrectomia totale o subtotale) ed estensione della linfoadenectomia (tipo D2 - D3 64,7% contro il 63,8 %, rispettivamente). La sede del tumore, la distribuzione secondo stadiazione e la sopravvivenza a lungo termine dei casi sottoposti a resezione radicale non presentano differenze statisticamente significative tra i due gruppi. La sopravvivenza a 5 anni dopo resezione radicale è stata rispettivamente del 56,8 % e del 54 %. Se ne può concludere che il paziente anziano in buone condizioni cliniche affetto da carcinoma gastrico può essere sottoposto ad intervento di resezione radicale con linfoadenectomia allargata di tipo D2 - D3. Parole chiave: Cancro gastrico, anziano, fattori di rischio, sopravvivenza.

Tab. I – PATIENTS OPERATED ON FOR GASTRIC CANCER: DIVISION BY AGE

Cases n = 708 (Period 1981-96)		
Group A		Group B
378	65 years >	330
53,4%		46,6%

Tab. II – KIND OF PROCEDURES PERFORMED COMPLESSIVELY.

	N.	%
Palliative	349	49,3
Radical	359	50,7

Tab. III – PALLIATIVE PROCEDURES PERFORMED IN THE TWO GROUPS OF PATIENTS.

Palliative Procedures: n = 349				
%	N.	Age	N	%
49,0	171	65 years>	178	51,0
p = 0,18 (n.s.)				

Tab. IV – KIND OF PALLIATIVE PROCEDURES PERFORMED IN THE TWO GROUPS OF PATIENTS.

Palliative Procedures: operative methods					
	Cases N.	%	Age	Cases N.	%
	171		65 years>	178	
Pall. Res.	59	34,5		55	30,9
Explor.	42	24,6		35	19,7
By-pass	39	22,9		47	26,4
Non-op.	31	18,1		41	23,0

Tab. V – MORBIDITY AFTER PALLIATIVE PROCEDURES IN THE TWO GROUPS OF PATIENTS.

Palliative Procedures: post-operative morbidity	
21,9%	65 years> 22,8%

Tab. VI – MORTALITY AFTER PALLIATIVE PROCEDURES IN THE TWO GROUPS OF PATIENTS.

Palliative Procedures: post-operative mortality	
7,0%	65 years> 10,7%

Tab. VII – FIVE-YEAR SURVIVAL RATE AFTER PALLIATIVE PROCEDURES IN THE TWO GROUPS OF PATIENTS.

Palliative Procedures: Five-year survival.	
5,7%	65 years> 6,5%
p = 0,18 (n.s.)	

Tab. VIII – RADICAL PROCEDURES PERFORMED IN THE TWO GROUPS OF PATIENTS.

Radical procedures: n = 359				
%	N.	Age	N.	%
57,7	207	65 years>	152	42,3
p = 0,08 (n.s.)				

Tab. IX – KIND OF RADICAL PROCEDURES PERFORMED IN THE TWO GROUPS OF PATIENTS (T.G.= TOTAL GASTRECTOMY; S.T.G.= SUB-TOTAL GASTRECTOMY; G.S.R.= GASTRIC STUMP RESECTION).

Radical Procedures: operative methods					
	Cases N.	%	Age	Cases N.	%
	207		65 years>	152	
T.G.	127	61,4		70	46,0
S.T.G.	70	33,8		79	52,0
G.S.R.	10	4,8		3	2,0

Tab. X/A – EXTENT OF LYMPHADENECTOMY DURING RADICAL PROCEDURES IN THE TWO GROUPS OF PATIENTS.

Radical procedures: Extent of lymphadenectomy					
	Cases N.	%	Age	Cases N.	%
	207		65 years>	152	
D1	73	35,3		55	36,2
D2-3	134	64,7		97	63,8

Tab. X/B – Lymph node involvement at D1-lymphadenectomies and at D2-D3 lymphadenectomies performed during radical procedures in the two groups of patients.

Radical Procedures: N+					
	Cases N.	%	Age	Cases N.	%
			65 years>		
D1	49/73	67,1		29/55	52,7
D2-3	70/134	52,2		46/97	47,4

Tab. XI – MORBIDITY AFTER RADICAL PROCEDURES IN THE TWO GROUPS OF PATIENTS.

Radical Procedures: post-operative morbidity
23,7% 65 years> 26,3%

Tab. XII – MORTALITY AFTER RADICAL PROCEDURES IN THE TWO GROUPS OF PATIENTS.

Radical procedures: post-operative mortality
3,4% 65 years> 5,3%

Tab. XIII – FIVE YEAR SURVIVAL AFTER RADICAL PROCEDURES IN THE TWO GROUPS OF PATIENTS.

Radical Procedures: Five-year survival
56,8% 65 years> 54,0%
p = 0,08 (n.s.)

Tab. XIV – TUMOR LOCATION IN THE TWO GROUPS OF PATIENTS SUBMITTED TO RADICAL PROCEDURES.

	Radical procedures: tumor location				
	Cases N.	%	Age	Cases N.	%
	207		65 years>	152	
Upper 1/3	44	21,2		34	22,4
Middle 1/3	70	33,8		46	30,3
Lower 1/3	93	45,0		72	47,3

Tab. XV. – Five-year survival according to tumor site and to extent of lymphadenectomy.

Univariate analysis:		five-year survival	P
		%	
Site	Upper third	37,1	<0,00025
	Middle third	64,4	
	Lower third	57,5	
Extent of lymphadenectomy	D1	41,5	<0,0001
	D2-3	66,3	

Result

Palliative procedures were performed in 171 patients of group A (49.0%) and in 178 patients of group B

(51.0%) ($p = 0.18$, n.s.) (Table III). The surgical techniques and the relative percentages in the two groups are shown in Table IV. The incidence of complications nearly overlapped in the two age groups (21.9% for group A and 22.8% for group B) as well as the operative mortality rate (7.0% vs. 10.7% respectively) (Tables V and VI). After palliative surgery, patients who survived for 5 years were 5.7% in group A and 6.5% in group B ($p = 0.18$, n.s.) (Tab. VII).

Radical procedures were performed on 207 patients of group A (57.7%) and on 152 patients of group B (42.3%) ($p = 0.08$, n.s.) (Tab. VIII). The operative methods and the frequencies in the two age groups are shown in Tab. IX. D2-D3 lymphadenectomies with curative resections were performed in 64.7% of group A patients and in 63.8% of group B patients (Tab. X/A). In these cases, the lymph node involvement was respectively of 52.2% and 47.4% (Table X/B). Even the comparison regarding the kind of performed lymphadenectomy did not show any statistically significant difference in the two age groups. Postoperative complications occurred in 23.7% of group A and in 26.3% of group B (Tab. XI); operative mortality shown in the two groups was 3.4% and 5.3% respectively: differences were not statistically significant (Tab. XII). After radical operations, patients who survived up to 5 years were 56.8% for group A and 54.0% for group B ($p = 0.08$, n.s.)

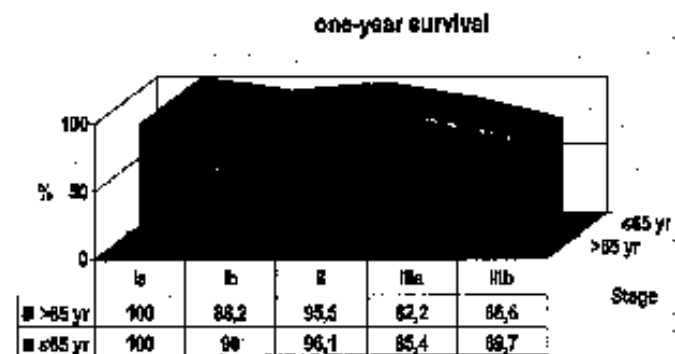


Fig. 1: One-year survival according to stage in the two groups of patients.

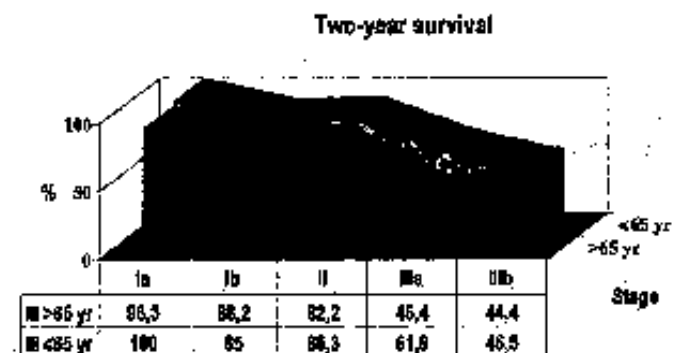


Fig. 2: Two-year survival according to stage in the two groups of patients.

Three-year survival

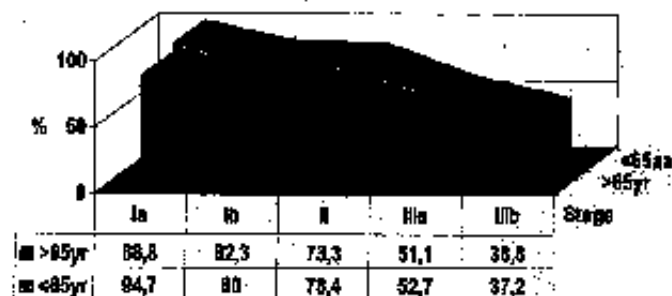


Fig. 3: Three-year survival according to stage in the two groups of patients.

Staging

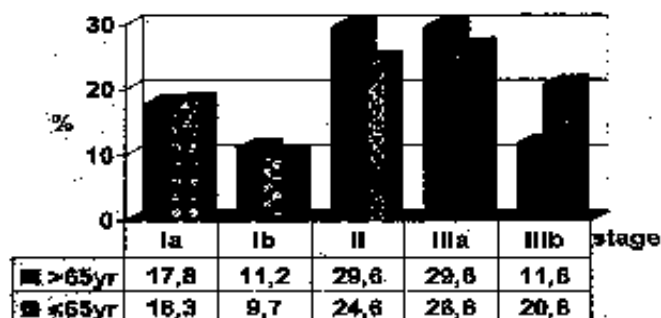


Fig. 7: Distribution by stage in the two groups of patients.

Four-year survival

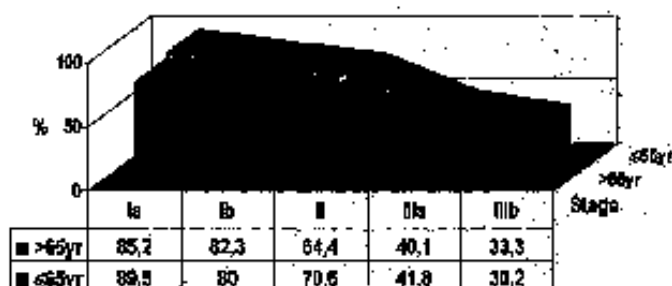


Fig. 4: Four-year survival according to stage in the two groups of patients.

Five-year survival

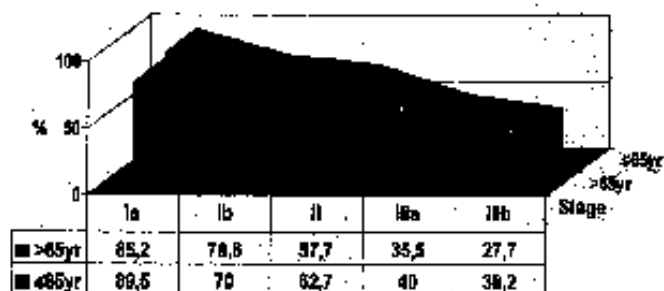


Fig. 5: Five-year survival according to stage in the two groups of patients.

Radical procedures : Survival

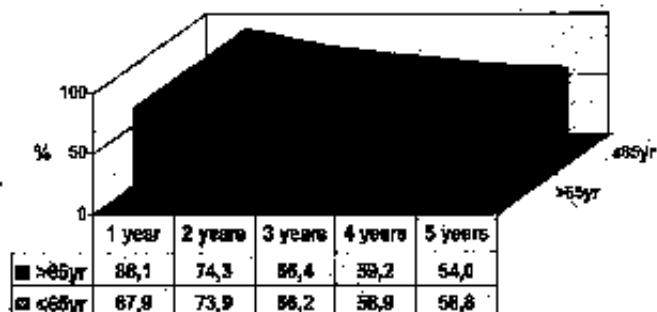


Fig. 6: Survival up to five years after radical procedures in the two groups of patients.

(Tab. XIII). Survival rates in the two age groups, according to the stage of disease and year by year, showed no significant difference (Fig. 1, 2, 3, 4, 5, 6, 7).

Discussion

Gastric carcinoma is decreasing in overall population in nearly all developed countries as well as in Italy (4-5-6). However, the progressive growth of life expectancy rates increased the number of elderly patients affected by gastric carcinoma. In fact, the mean age of patients at the time of the diagnosis is about 63 years and 50% of them are older than 65 (7-8). Therefore gastric cancer may be considered a typical old-age disease.

In the natural history of gastric cancer, the age of the patient does not represent a risk factor (2-3); instead the presence of concurrent diseases is related to a higher incidence of complications and postoperative mortality (9-10-11-12-13-14). These at risk subjects are easily identified by the ASA classification (15-16). A drastic decrease of postoperative mortality rate (from 32% to 3% in patients older than 70 undergone to total gastrectomy (2)), was obtained by the preoperative correction of respiratory, cardiovascular, metabolic and nutritional disorders, together with the improvement of surgical and anesthesiological techniques as well as the introduction of antibiotic and thromboembolic prophylaxis.

Best treatment for gastric cancer is the surgical one. Even in cases when there is no radical oncological result, resection is justified by the finality of preventing the tumor-related complications (stenosis, perforation, bleeding) and of enabling the patient a longer survival and a better quality of life (17).

The choice of surgical treatment comes from a cautious balance between the maximum local exeresis of the tumor and the lower related mortality and morbidity. Still today there is the problem of the extent of resection (subtotal gastrectomy, total gastrectomy) (18) and of lymphadenectomy (D1 - D2 - D3 dissections) (19 - 20 - 21 - 22). Subtotal gastrectomy is performed when tumors are

localized in the antrum. The extent of lymphadenectomy is conditioned by the stage of disease. However, our preference is for D2-D3 dissections.

The analysis of our cases compared two groups of patients, those younger or as old as 65 and those older than 65 years, in order to assess if there was an increased risk in the surgical treatment of elderly patients affected by gastric cancer. There were 378 patients younger or as old as 65 (group A) and 330 patients older than 65 years (group B), who underwent surgery for gastric cancer (radical or palliative operations). The old age of patients did not prevent operations: radical exereses were performed in similar rates in the two groups (57.7% vs. 42.3% respectively, Tab. VIII) with extensive lymphadenectomies of D2-D3 type performed in 64.7% and 63.8% of cases respectively (Tab. X/A). An aggressive attitude towards tumor even in old patients was confirmed by the lymphonodal involvement in 52.2% and 47.4% of cases respectively (Tab. X/B).

There were not statistically significant differences between the two groups in terms of staging (Fig. 7) and of survival rates at 1-2-3-4-5 years as related to the age and to the stage (Fig. 1-2-3-4-5).

The long term results (patients who survived up to five years after radical surgery were 56.8% and 54.0% in the two groups respectively (Tab. XIII) confirm the necessity to perform, aside from age, radical resections such extensive as lymphadenectomies of D2 - D3 type. In fact, in our experience the univariate analysis of radically resected patients globally evaluated showed that only the tumor site and the extension of lymphadenectomy resulted to significantly influence the survival (Tab. XV).

Conclusions

From our experience with patients submitted to surgery for gastric cancer it was possible to deduce that:

—there were not significant differences between two groups of patients (378 younger or as old as 65 years and 330 older than 65) in relation to the percentage of tumor site, percentage of staging, kind of resective operation (Total Gastrectomy, Sub-Total Gastrectomy), long term survival in relation to the age and to the staging;

—the univariate analysis of all treated cases regarding different parameters (sex, age, tumor site, Lauren's classification, Borrmann's classification, tumor spread, and type of operation) showed statistically significant results in relation to the 5-year survival only for the site of tumor and the extent of lymphadenectomy (Tab. XV);

—therefore in patients affected by gastric cancer the age is not a risk factor and it should not condition the choice of a less aggressive surgical treatment.

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