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The Reassessment of Patients with Ovarian Carcinoma*

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Abstract—*The value of diaphragmatic inspection, peritoneal cytology and lymphography in the evaluation of ovarian carcinoma diffusion was evaluated in 51 patients. The results were the following: diaphragmatic inspection changed the stage in 3.7% of cases and gave information in 41.7% of patients with stage III–IV; lymphography changed the stage in 18.7% of patients and provided information about spread of disease in 21.0% of patients with stage III–IV; peritoneal cytology changed the stage in 11.5% of patients and gave information about spread of disease in 28.0% of patients in advanced stages. The conversion rate from stage I–II to stage III with diaphragmatic inspection and lymphography was 21.2%, and 11.5% from stage I–II a–b to stage I–II c with peritoneal cytology. The data indicate that the three procedures are essential in evaluation of ovarian carcinoma diffusion.*

INTRODUCTION

THE SPREAD of ovarian carcinoma occurs by two main pathways: by i.p. and diaphragmatic implantation and by the lymphatic route to iliac and para-aortic nodes.

Peritoneal spread is easily assessed by surgery. Retroperitoneal spread, diaphragmatic involvement, and the presence of free cells in the peritoneal cavity are demonstrable with the use of lymphography [1–4], diaphragmatic inspection during peritoneoscopy [5–9] and peritoneal cytology [10–13].

On the basis of the published data, these procedures have disclosed dissemination in apparently localized stages in a large number of patients. Nevertheless, because node metastases can be present together with diaphragmatic metastases, the real conversion rate with any single procedure and its relative merit for the knowledge of the natural history of the disease are not clear.

The purpose of this study was two-fold: (1) to determine the true conversion rate with diaphragmatic inspection, peritoneal cytology and lymphography when each single procedure was evaluated in comparison with data obtained from the combination of all other diagnostic procedures; (2) to determine how much information about the spread of the disease could be obtained with these procedures.

MATERIALS AND METHODS

For this study, 51 non-consecutive patients aged 21–74 yr, observed in the Outpatient Department of our Institute (INT) up to December 1978, were evaluated. The patients had been submitted to explorative laparotomy with or without bilateral ovarosalpingectomy plus total abdominal hysterectomy and omentectomy in other hospitals within 30 days before admission in the INT. In these patients, in whom none of the three procedures under investigation had been previously performed, all the medical records and the slides were reviewed. The distribution according to histologic type [14] is reported in Table 1.

Every patient was submitted to chest X-ray, peritoneoscopy with diaphragmatic inspection and biopsy in positive cases, peritoneal cytology (peritoneal fluid or washing in absence of fluid) during peritoneoscopy, and lymphography. The patients in whom lymphography was performed unilaterally, in

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Table 1. Total cases examined according to histologic type

Serous	14
Mucinous	7
Endometrioid	11
Clear cell	2
Undifferentiated	8
Unclassified	9

whom diaphragmatic leaves could not be observed, or biopsy had not confirmed the malignancy, and the patients in whom peritoneal cytology was inadequate, were excluded from the study. No other criteria for exclusion were used. The patients were classified first without and then with the single test according to the FIGO classification [15].

The employed techniques and the criteria for metastatic involvement have been described in our previous reports [4, 8, 16]. The results were interpreted as negative or positive. No equivocal diagnosis was accepted. No side effects and/or complications related to lymphography were encountered, while one patients with stage III disease and positive peritoneal cytology developed a s.c. lesion not proved by biopsy, after peritoneoscopy.

RESULTS

Diaphragmatic inspection was positive in 11/51 patients (21.6%), but the stage was modified in only 1/27 stage I–II patients (3.7%). Information about the spread of the disease was obtained in 10/24 patients (41.7%) at stage III and IV (Table 2).

Diaphragmatic metastases were present in 7/13 (53.8%) stage III patients for peritoneal, in 0/6 for retroperitoneal, and in 1/1 for contemporaneous peritoneal and retroperitoneal involvement. Furthermore, diaphragmatic metastases were shown in 2/2 stage IV

Table 2. Stage and disease's diffusion without and with diaphragmatic inspection

Stage with physical examination, chest X-ray, lymphography, peritoneoscopy	No. cases	Stage with diaphragmatic inspection									
		I	II	III				IV			
				P	RP	P+RP	+D	Liver	+D		
I	21	20					1	1/27 (3.7%)			
II	6		6								
III Peritoneal	13			6			7				
III Retroperitoneal	6				6						11/51 (21.6%)
III Peritoneal + retroperitoneal	1						1			10/24 (41.7%)	
IV Liver	2							2			
IV Distant	2								2		
Total	51	20	6	6	6	0	9	2	2		

P: peritoneal;
RP: retroperitoneal;
D: diaphragmatic.

Table 3. Stage and disease's diffusion without and with lymphography

Stage with physical examination, chest X-ray, peritoneoscopy, diaphragmatic	No. cases	Stage with lymphography							
		I	II	IIIP	III+RP	IV	IV+RP		
I	24	20			4	6/32 (18,7%)			
II	8		6		2				
III	15			14	1				10/51 (19.6%)
IV Liver	2					1	1	4/19 (21%)	
IV Distant	2						2		
Total	51	20	6	14	7	1	3		

P: peritoneal; RP: retroperitoneal.

Table 4. Stage and disease's diffusion without and with peritoneal cytology

Stage with physical examination, chest X-ray, lymphography, peritoneoscopy, diaphragmatic inspection	No. cases	Stage with peritoneal cytology													
						III				IV					
		Ia–Ib	Ic	IIa–IIb	IIc	P	RP	P+RP	+C	Liver	Distant	+C			
Ia–b	20	18	2			3/26 (11.5%)									
IIa–b	6			5	1										
III Peritoneal	14					9			5				7/25 (28%)	10/51 (19.6%)	
III Retroperitoneal	6						6								
III Peritoneal + retroperitoneal	1							1							
IV Liver	2									1		1			
IV Distant	2										1	1			
Total	51	18	2	5	1	9	6	1	5	1	1	2			

P: peritoneal; RP: retroperitoneal; C; cytology positive.

patients for extra-abdominal spread, while none of the two patients with stage IV for liver disease had diaphragmatic metastases (Table 2). It is noteworthy that of the total of 51 patients, the liver capsule was never positive.

Lymphography was positive in 10/51 patients (19.6%), and the stage was modified in 6/32 (18.7%), 4/24 stage I (16.7%) and 2/8 stage II (25.0%). Information about the spread of the disease was obtained in 4/19 patients at stage III–IV (21%) (Table 3). Only one patient among 15 with peritoneal spread had positive lymphography while this procedure was positive in 2/2 stage IV patients for distant metastases, and 1/2 stage IV patients for liver metastases.

Peritoneal cytology was positive in 10/51 patients (19.6%), and the stage, from I–II a–b to c was modified in 3/26 patients (11.5%). Information about the spread of the disease was obtained in 7/25 patients in advanced stages (28.0%) (Table 4). Among 15 patients with peritoneal involvement five had positive cytology (33.3%). Eleven patients had disease in peritoneum and four only in the omentum. In these last patients in whom omentectomy was performed in other hospitals, peritoneal cytology was negative.

Summing up the results of lymphography and diaphragmatic inspection, the true conversion rate from stage I–II to stage III, is 21.2% (7/33 patients) and from stage I–II a–b to stage I–IIc, for cytology, is 11.5% (3/26 patients) (Table 5).

DISCUSSION

Previous reports of patients with stage I–II ovarian carcinoma have documented metastases to the diaphragm when explored or re-explored with the laparoscope [5, 6–9, 16]. The reported incidence of these metastases varies greatly, and in the series of some authors [17, 18] none of the patients with stage I–II had demonstrable diaphragmatic metastases. Similarly the findings of positive cytology washings and lymphangiographies show a significant difference [1, 2, 4, 10, 11, 13].

The discrepancies in the reported data may be due to the different stage grouping. In fact, the conversion rate (i.e., the worsening of stage) for diaphragmatic metastases, lymph node metastases, and positive peritoneal cytology can be established only if all patients have been submitted to the three procedures.

The results of our study suggest that the incidence of metastases on the diaphragm is high but related to an i.p. dissemination and therefore more common in advanced disease, while the conversion rate for isolated diaphragmatic metastases is only 3.7%. On the contrary, lymph node metastases may occur as an early event, since lymphography changes the stage in 18.7% of the cases. One could object that these data are questionable because, while the diaphragmatic metastases are biopsy proved, the retroperitoneal metastases are not. Nevertheless, it is noteworthy that in our cumulative report [19], the results of a radiologic-histologic correlation showed an accuracy for positive lymphography in 100% of cases and in 87.3% for negative lymphography. In other words, because of the no false positive and the eight false negative cases, we must consider the incidence of retroperitoneal metastases to be higher than that demonstrable by lymphography.

If one adds, and in this series it is possible, the results of lymphography and diaphrag-

Table 5. Conversion rate in 51 patients with ovarian carcinoma

	Stage with physical examination, chest X-ray, surgical inspection	Stage also with peritoneoscopy	Stage also with lymphography, diaphragmatic inspection and peritoneal cytology					
			Ia–b	Ic	IIa–b	IIc	III	IV
Ia–b	25	25	18	[2]			(5)	
IIa–b	10	8			5	[1]	(2)	
III	12	14					14	
IV	4	4						4
Total	51	51	18	2	5	1	21	4

Conversion rate from stage I–II to stage III—21.2% (7/33 patients).
Conversion rate from stage I–II a–b to c—11.5% (3/26 patients).

matic inspection, the conversion rate from stage I–II to III is 21.2%. Our data are thus lower than those reported by Rubin [15].

With regard to peritoneal cytology, in 11.5% of cases the stage was worsened, and this is therefore inferior to that reported by many authors [9, 11, 13]. It is noteworthy that among 11 patients with present peritoneal and diaphragmatic metastases, six had negative cytology. We cannot explain the last data, except that it may indicate a limit of the method.

In conclusion, the presented data confirm the opinion of Rubin [15], Delgado *et al.* [17], Piver *et al.* [9, 13], Young *et al.* [20] and many other authors that ovarian carcinoma is only temporarily confined to the pelvis and that metastases occur early in the course of the disease to the peritoneal cavity, the diaphragm and the retroperitoneal nodes. This explains the poor results obtained in past years with these patients and suggests the routine use of peritoneoscopy with diaphragmatic inspection, peritoneal cytology and lymphography, which can result in a more accurate definition of the true extent of the disease and therefore in new and improved methods of treatment.

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