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Laparoscopy in the Abdominal Staging of Melanoma

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Abstract—*A retrospective study on laparoscopic results in the abdominal staging of 297 patients with melanoma, is reported.*

In 195 (99.3%) of patients, laparoscopy was technically feasible, and in 10% the clinical stage was changed on the basis of the findings.

In 34% of patients with metastasis of the liver and peritoneum, the tumor had a diameter of under 1 cm and therefore was not detectable with non-invasive techniques.

In the light of these results laparoscopy is advisable in patients with Stage I melanoma at a high risk of metastatization (Clark IV–V; Breslow >0.76 mm) and in Stage II patients. In Stage III patients, laparoscopy seems indicated for an evaluation of the efficacy of sytemic treatment.

INTRODUCTION

MALIGNANT MELANOMA has an unpredictable course, and its prognosis varies depending on several parameters of tumor growth and clinical stage [1–11]. Although lymph node dissection is performed for all Stage II patients, its efficacy for Stage I patients is still under discussion [12]. This aggressive therapeutic approach therefore requires a rigorous staging of the disease to exclude the presence of distant spread. Many authors employ liver scanning for abdominal staging [11, 13–18], while others prefer sonography (US) or computed tomography (CT) [14, 19–23]. Apart from our group [24], few investigators have used laparoscopy for this type of staging [25, 26]. The aim of this paper is to evaluate the role of laparoscopy as an abdominal staging procedure in a retrospective series of 297 patients with different stages of melanoma.

MATERIALS AND METHODS

Our series consisted of 297 patients with melanoma (154 males and 143 females) aged from 17 to 79 years (mean 50 years) who, from January 1977 to February 1986, were submitted to laparoscopic exploration at the Laparoscopy Center of Padua. The examination was performed under local anesthesia, according to a standardized technique [27].

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In cases where abdominal metastases were found or only suspected, the size of any lesion was ascertained using a scaled laparoscopic probe [28] and one or more target biopsies were performed. The patients were subdivided as follows: 246 with primary cutaneous melanoma, classified according to Clark [6, 7]; 29 already treated (21 with short-term follow-up within 2 years of excision, eight with long-term over 5 years following excision) and 22 with choroid melanoma before surgery. Since this study was retrospective, the microstaging of the primary lesion, where possible, was evaluated according to Clark, and not to Breslow, or other important parameters in the prognosis. For the same reason, before laparoscopy, the patients were classified into three stages, according to the WHO Melanoma Group Classification. The more recent Anderson Hospital or American Joint Committee [29] grouping, which specifies four stages, was not followed. Staging was based upon positive findings with: chest X-ray (85%); lymphography (20%); brain scan with Tc 99 (12%), liver scintigraphy (12%) and, from 1982 to 1986, liver sonography (12%) (US) with real timing instruments. Table 1 reports the distribution of patients. Twenty underwent laparotomy for iliac and groin dissection; the findings were then used to detect the false negatives from laparoscopy and, in a limited series, a comparison was made between scintigraphy and sonography to evalute their sensitivity, specificity and diagnostic efficacy.

Table 1. Distribution of patients on the basis of clinical stage

		Cutaneous melanoma Clark level						
		II	III	IV	V	Unknown	Choroid melanoma	Follow-up
Stage I	(158)	12	50	66	8	—	19	3
Stage II	(83)	—	16	15	9	39	—	4
Stage III	(56)	—	1	6	2	22	3	22
Total	(297)	12	67	87	19	61	22	29

RESULTS

None of the patients had complications due to laparoscopy, which was technically feasible in 295 cases (99.3%); exploration was satisfactory in 93.6%, partial in 5.7% and unsatisfactory in 0.7% of the cases. Abdominal metastases, demonstrated by laparoscopy in 33 cases, were histologically confirmed. The liver, spleen, omentum and peritoneum were involved in different ways. The metastatic lesions appeared as nodules or plaques in 94% of the cases, and widespread liver infiltration was detected by biopsy in 6%. The lesions were pigmented in 54% and non-pigmented in 46%. The site and the sizes of the lesions, determined using the laparoscopic probe, were reported in Table 2. In four cases, the localization was single, a very small (<0.5 cm) peritoneal nodule being found.

Of 158 patients classified as Stage I, subsequent laparoscopic findings, however, demonstrated that five had Stage III lesions. Of 83 patients initially considered as having Stage II, laparoscopic examination demonstrated Stage III lesions in seven cases. Four patients were considered Stage III on the basis of liver scanning, but on the basis of laparoscopic findings and a 2-year follow-up, three of them were reclassified as Stage I while the remaining one was reclassified as Stage II.

With multiple target biopsies for suspect lesions, the risk of false positives is eliminated: three cases, in fact, appeared macroscopically to be liver metastases, but biopsies revealed biliary cysts in two cases and a small angioma in one. The long-term follow-up of these patients confirmed the histologic findings.

In 20 cases laparotomy for iliac and groin dissection was performed. In one case, a small liver metastasis not visualized at laparoscopy was found. A comparison of the results obtained by liver scan

Table 2. Size and location of abdominal melanoma metastases

Size (cm)	Liver	Spleen	Peritoneum
>2	14	2	4
1–2	7	—	1
0.5–1	8	—	3
<0.5	—	—	4

Table 3. Scintigraphy and sonography compared with laparoscopy

	Scintigraphy (35 cases)	Sonography (37 cases)
True positives	5	4
True negatives	22	28
False positives	6	1
False negatives	2	4

(35 cases) and sonography (37 cases) is made in Table 3. It must be pointed out that all the false positives from both methods were detected by laparoscopy and confirmed by a mean 2-year clinical follow-up and that the case of liver metastasis not seen at laparoscopy and detected through laparotomy, had been indicated by liver scan.

DISCUSSION

If the distribution of the metastases detected by laparoscopy is related to the preliminary clinical stage, it is evident that this procedure allowed a stage advancement in 3.16% (five cases) from I to III and in 8.43% (seven cases) from II to III. However in four out of 35 patients (9%) who underwent preoperative liver scan, the laparoscopy revealed no liver metastases, allowing a regression in staging. Of these 12 cases previously considered Stage I or II, 58% had metastatic lesions equal to or less than 0.5 cm or, in 33%, a single peritoneal localization. Data reported in the literature [14, 19, 28, 30, 31] show how difficult it is to detect such small metastases with non-invasive techniques, in particular those in the peritoneum of omentum; they can only be detected through direct inspection. Our data show that the specificity of laparoscopy (100%) depends almost entirely upon multiple biopsies in doubtful cases, such as biliary cysts or small angiomas. A long-term clinical follow-up is necessary to confirm the laparoscopic findings. The technique had a good sensitivity (about 71%) because of the non-theoretical risk of false negatives which is about 5% by comparison with a selected series (20 cases) of laparotomies, also according to other comparative reports [13, 32].

A comparison with liver scan and sonography confirms literature reports: scintigraphy shows

good sensitivity but poor specificity [13, 14] with two false negatives and six false positives in our series. As ultrasound-guided biopsies can be obtained, sonography has a better specificity but this technique is less sensitive where lesions are very small or diffuse [14, 33–36], there being one false positive and four false negatives in our series. As ours is a retrospective study, the limited number of patients studied with both methods made further, or more detailed, comparisons very difficult. Furthermore, in our retrospective study only occasional use was made of computed tomography (CT) which is extremely useful in assessing abdominal node diffusion. Our group is now preparing a protocol to include both sonography and CT in the next study. The improvements made in imaging techniques, such as CT scanning, will probably result in a reduction in the number of patients submitted to laparoscopy to assess the extent of abdominal and pelvic nodal disease. Laparoscopy, however, will still be necessary to confirm or detect small liver and/or peritoneal metastases.

CONCLUSIONS

In view of the advantages of laparoscopy in the detection of very small hepatic or peritoneal metastases, we believe that it should be used in Stage I patients only in the presence of lesions with a high risk of metastasis (Clark IV, V or Breslow >0.76 mm), and in all Stage II patients. Since surgery is planned for these patients, the stage advancement to laparoscopy justifies this approach. Other sensitive techniques, such as CT, are to be used to complete the picture of the nodal spread. In Stage III, where the prognosis is very poor and surgery is contraindicated, abdominal staging may be made with non-invasive techniques (sonography) and/or CT scan, laparoscopy being used only to confirm uncertain sonographic findings or to verify the efficacy of chemotherapy.

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