

Role of Coelioscopy in the Etiologic Diagnosis of Exudative Ascites of Unknown Origin of the Women

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Abstract

Introduction: The aim of this study was to clarify the role of laparoscopy in the etiological diagnosis of exudative ascites of unknown origin in women. **Materials and Methods:** This was a prospective study from 2007 to 2012, including 83 women with exudative ascites of unknown origin and had a laparoscopy diagnostic purpose. **Results:** Carcinomatosis and peritoneal tuberculosis were the two most common causes found in 31% (26 cases) and 66% (55 cases) of cases respectively. The average age of the patients was 56 years. Weight loss and abdominal pain were the most frequent, observed symptoms in 71 cases (85.5%) and 53 cases (63.8%) respectively. The CT scan abnormalities noted were a peritoneal thickening in 32 cases (38.5%), peritoneal nodules in 15 cases (18%), and agglutination of the digestive handles in 12 cases (14.4%). Laparoscopic Visual diagnosis was in favor of a peritoneal carcinomatosis in 32 cases (38.5%), peritoneal tuberculosis in 45 cases (54.2%), and non specific infection in 6 cases (7.3%). The histological diagnosis was a peritoneal carcinomatosis in 26 cases (31%), and peritoneal tuberculosis in 55 cases (66%). The positive predictive value of laparoscopic vision Diagnostics in Peritoneal tuberculosis was 100% and the negative predictive value was 73.7%. In peritoneal carcinomatosis, the positive predictive value was 81.3% and the negative predictive value was 100%. **Conclusion:** The etiologic diagnosis of exudative ascites in women is difficult despite the availability of several tests. Currently, laparoscopy with peritoneal biopsy remains the gold standard for etiologic diagnosis.

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Keywords

Ascites, Exudative, Laparoscopy, Peritoneal Tuberculosis, Peritoneal Carcinomatosis

1. Introduction

Exudative ascites is a frequent clinical entity that can be secondary to several pathologies. The usual diagnostic approach before ascites contains, in addition to physical examination, biological examinations (blood and ascites) and radiological examinations that cannot identify the cause of ascites in the majority of cases. The etiologies of these ascites, say of unknown origin, are dominated by tuberculosis and peritoneal carcinomatosis requiring diagnosis and early care [1] [2]. Thus, biopsies peritoneal per laparoscopic are required for etiological diagnosis.

The aim of this work was to describe the epidemiological, clinical, morphological, and macroscopic aspects of tuberculosis and peritoneal carcinomatosis and clarify the predictive value of the laparoscopic Visual diagnosis and histology in etiological diagnosis of exudative ascites of unknown origin in women.

2. Materials and Methods

2.1. Type of the Study

It is a prospective study including all the women who have been explored for exudative ascites in Gastroenterology Department of Sahloul Hospital in Sousse and who had a diagnostic laparoscopy used during the period from January 2007 to December 2012.

2.2. Criteria for Inclusion

During the period of the study, 83 patients were explored for exudative ascites. Before doing diagnostic laparoscopy, all women have had an exhaustive exploration with: an examination with a complete physical examination, tuberculosis review (intradermoreaction to tuberculin, chest x-ray, search for Koch's Bacillus in sputum, urine and ascites), a paracentesis of ascites fluid Explorer (cellularity, formula, direct examination with search of germs, cytology with search of neoplastic cells, culture of ascitic fluid, proteins), biological blood tests (blood count blood and tumor markers), endoscopic examinations (high digestive fibroscopy, colonoscopy) and radiological tests (ultrasound transvaginal, thoraco-abdomino-pelvic scanner). When this survey came back negative, the patient was clerk for diagnostic laparoscopy.

2.3. Technique

During exploration, ascitic fluid aspiration was performed, and clarified each macroscopic anomaly with details (nature, size, number, color, seat...). Multiple biopsies were systematically conducted during the review.

The Visual diagnosis of Peritoneal tuberculosis was suspected before the presence of multiple small nodules or granules (<5 mm) of uniform size, white or yellowish, and scattered on the parietal, visceral peritoneum and viscera.

Peritoneal carcinomatosis was suspected before the presence of nodules of larger size (1 - 5 cm in diameter) on the peritoneum and viscera.

The histological diagnosis of peritoneal tuberculosis has been selected before the presence of giant cell granulomas with or without caseous necrosis.

2.4. Statistical Analysis and Expression of Results

The sensitivity, specificity, predictive value positive and negative of laparoscopy are calculated. The data entry as well as the statistical analysis is performed using SPSS version 11.0 software.

3. Results

Over a period of 6 years, we collected 83 patients meet the criteria for inclusion. Carcinomatosis and peritoneal

tuberculosis were the two most common causes found in 31% (26 cases) and 66% (55 cases) of cases respectively. The average age of patients was 56 ± 17 years with extremes from 17 to 74 years.

Weight loss and abdominal pain were the most frequent, observed symptoms in 71 cases (85.5%) and 53 cases (63.8%) respectively. The signs of tuberculosis impregnation were significantly more frequent in peritoneal tuberculosis ($P < 0.01$).

Ascites was the reason for consultation of all patients. The appearance of ascites fluid was yellow citrine in 61 cases (73.5%) and hemorrhagic in 22 cases (26.5%). Ascites was lymphocyte-rich (>1000 elmt/mm³) in 39 cases (47%). Direct examination and research of Koch’s Bacillus and the culture of the ascites were negative in all cases.

A biology, the sedimentation speed (VS) was accelerated in 76 cases (91.5%) and the rate of CA - 125 was raised in 74 cases (89%).the anomalies noted on CT scan, were a peritoneal thickening in 32 cases (38.5%), peritoneal nodules in 15 cases (18%), agglutination of the digestive handles in 12 cases (14.4%), and the intra-abdominal lymph nodes in 17 cases (20.5%). An ovarian mass was found in 12 cases (14.4%).

The main clinical, biological and morphological elements are summarized in **Table 1** on the basis of two main etiologies.

Clinical signs, biological explorations and morphological examinations were not contributing to the etiologic diagnosis. All patients had benefited of a diagnostic laparoscopy.

Laparoscopic elementary lesions were peritoneal nodules in 26 cases (31.3%), and peritoneal granules in 41 cases (49.4%). Other associated lesions were found: adhesions in 59 cases (71%), peritoneal hyperaemia in 48 cases (57%), and agglutination of the digestive handles in 20 cases (24%).

Only adhesions without nodules or granules were present in 8 cases (9.6%). The histological diagnosis in these forms was a peritoneal tuberculosis in 6 cases, a non-specific inflammatory reworking in one case and a chlamydia infection in another case (**Table 2**).

Laparoscopic Visual diagnosis was in favour of a peritoneal carcinomatosis in 32 cases (38.5%), peritoneal tuberculosis in 45 cases (54.2%), and nonspecific infection in 6 cases (7.3%).

Table 1. Clinico-biological and CT features of patients according to the two main etiologies.

	Peritoneal tuberculosis N = 55	Peritoneal carcinomatosis N = 26
Abdominal pain	37 (67%)	16 (61%)
Weight loss	49 (89%)	22 (84.6%)
Fever and night sweats	33 (60%)	4 (15%)
Ascitic fluid		
• Citrus yellow	52 (94.5%)	9 (34.6%)
• Haemorrhagic	4 (7%)	18 (69%)
• Average lymphocytes	1243	512
Sedimentation rate	52 (94%)	24 (92%)
Increased CA-125	50 (91%)	24 (92%)
CA-125 ≥ 20 N	5 (9%)	15 (57%)
Impairing aspects		
• Peritoneal thickening	20 (36%)	12 (46%)
• Peritoneal nodules	2 (3.5%)	13 (50%)
• Agglutination of the handles	11 (20%)	1 (4%)
• Abdominal adenopathy	11 (20%)	6 (23%)
• Ovarian mass	5 (9%)	7 (26%)

The histological diagnosis was a peritoneal carcinomatosis of ovarian origin in 26 cases (31.3%), peritoneal tuberculosis in 55 cases (66.2%), infection with chlamydia (Fitz-Hugh-curtis syndrome) in one case and non-specific inflammation in one case.

Giant cell granulomas were present in all patients with peritoneal tuberculosis. Caseous necrosis was found in half of the cases.

In all cases, peritoneal carcinomatosis was of ovarian origin.

The correlation between Visual laparoscopic diagnosis and histology is represented in **Table 3**.

The study of the correlation between Visual laparoscopic diagnosis and histology allowed us to estimate a coefficient of concordance 0.752 kappa \pm 0.071 ($P < 0.01$).

The sensitivity and specificity of the laparoscopic Visual diagnosis in the diagnosis of peritoneal tuberculosis were 81.8% and 100% respectively. The positive predictive value was 100% and the negative predictive value was 73.7%.

The sensitivity and specificity of the laparoscopic Visual diagnosis in the diagnosis of peritoneal carcinomatosis were 100% and 89.5% respectively. The positive predictive value was 81.3% and the negative predictive value was 100% (**Table 4**).

The length of postoperative stay was 36 ± 12 hours. A single per-operative complication was observed in our series. This complication was type of active bleeding a peritoneal biopsy. Neoplastic spread on the trocar site was occurred in one case three months after the diagnostic laparoscopy.

Table 2. The laparoscopic elementary lesions according to the two main etiologies.

	Peritoneal tuberculosis	Peritoneal carcinomatosis
Peritoneal nodules	0	26 (100%)
Peritoneal granules	48 (87%)	0
Adhesions	40 (72.7%)	19 (73%)
Only adhesions	6 (11%)	0
Peritoneal hyperemia	32 (58%)	16 (61.5%)
Agglutination of the digestive handles	20 (36%)	0

Table 3. Crosswalk between laparoscopic Visual diagnosis and histology.

	Laparoscopic vision Diagnostics			Total	
	Peritoneal tuberculosis	Peritoneal carcinomatosis	Other		
Histological diagnosis	Peritoneal tuberculosis	45	6	4	55
	Peritoneal carcinomatosis	0	26	0	26
	Other	0	0	2	2
	Total	45	32	6	83

Table 4. Sensitivity and specificity of the laparoscopic Visual diagnosis in tuberculosis and peritoneal carcinomatosis.

	SE	SP	VPP	VPN
Tuberculosis	81.8% [68 - 90]	100% [85 - 100]	100% [90 - 100]	73.7% [56 - 86]
Carcinomatosis	100% [84 - 100]	89.5% [77 - 95]	81.3% [63 - 92]	100% [91 - 100]

SE: sensitivity; SP: specificity; VPP: positive predictive value; VPN: negative predictive value; []: 95% confidence interval.

4. Discussion

Exudative ascites of unknown origin in women are dominated by tuberculosis and peritoneal carcinomatosis requiring diagnosis and early care [1] [2]. The means of imaging (ultrasound, CT scan, MRI) have limited coverage in the etiological diagnosis of exudative ascites [3] [4].

Several series of literature [5]-[11], confirmed the feasibility of laparoscopy in the exploration of the ascites of unknown origin in women as well as its high sensitivity and specificity. The main advantage of laparoscopy compared with other explorations through optical magnification, it allows an excellent exploration of peritoneal surfaces and the abdominopelvic cavity [12]. Biopsies are taken under direct control of the view, contrary to those obtained by imaging. Therefore, laparoscopy enables to distinguish between peritoneal tuberculosis and a carcinomatosis peritoneal [13].

During tuberculosis, three lesions have been described, most commonly associated in the same patient. Peritoneal granulations are color whitish or yellowish, uniform size, the size of a pin head, not exceeding 5 mm, divided equally as well at the level of the parietal peritoneum that visceral. Adhesions result from the Organization of fibrinous exudates, between two peritoneal layers. These adhesions can have an aspect cobweb son or a thicker appearance pillars or ropes [14]. The inflammatory phenomena manifested by congestion, hypervascularisation and edematous state of peritoneum [15].

In literature, the grits are the most frequently encountered aspect (66% to 100% of the cases), adhesions were observed in 13% to 80% of cases, and inflammatory phenomena are described in 21% to 79% of the cases [14] [16]-[19].

For our patients with peritoneal tuberculosis, the grits were observed in 87% of cases, adhesions in 72% cases and inflammatory phenomena in 58% of cases.

In the peritoneal carcinomatosis, peritoneal implants are generally size different, upper to 1 cm and distributed irregularly on the peritoneum, abdomino-pelvic viscera and diaphragm [13]. In general, multiple biopsies at the primary tumor if it was identified and peritoneal implants are needed. Apart from his diagnostic interest, laparoscopy to predict the tumor resectability in cases of advanced ovarian cancer and thus avoiding laparotomy and unnecessary surgery as part of an already disseminated tumor.

In the series of Barnard *et al.* [2] involving 90 patients, including 60 women, the positive predictive value of the laparoscopy in peritoneal tuberculosis was 85%. Peritoneal biopsy confirmed the diagnosis of tuberculosis and peritoneal carcinomatosis in 98% and 100% of the cases respectively.

Chien-Min Han *et al.* [6] investigated the sensitivity and specificity of Visual diagnostic laparoscopic in 176 patients with ascites transudative and exudative of undetermined origin. The sensitivity and specificity of diagnostic Visual laparoscopic peritoneal tuberculosis were 86% and 100% respectively. In the peritoneal carcinomatosis, the sensitivity and specificity were 100% and 94%, respectively.

Sheth SS *et al.* [5] assessed the contribution of laparoscopy in ascites of unknown origin in 70 women. Laparoscopy and peritoneal biopsies have highlighted the diagnosis in 90% of cases.

Nassir *et al.* [8] assessed the contribution of laparoscopy in exuding ascites of unknown origin in 33 patients whose 18 women. The diagnostic profitability of this exploration was 97%.

In our series, sensitivity and specificity of the laparoscopic Visual diagnosis in the diagnosis of peritoneal tuberculosis were 81.8% and 100% respectively. In the peritoneal carcinomatosis, the sensitivity and specificity were 100% and 89.5% respectively. This shows that the only Visual laparoscopic diagnosis helps to confirm the diagnosis of tuberculosis and eliminate a carcinomatosis in 100% of cases. Histology allowed to confirm the diagnosis of tuberculosis and peritoneal carcinomatosis in all cases.

5. Conclusion

The etiological diagnosis of exudative ascites in women is difficult despite the availability of several tests expensive and complex. Currently, laparoscopy with peritoneal biopsy remains the gold standard for etiologic diagnosis.

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