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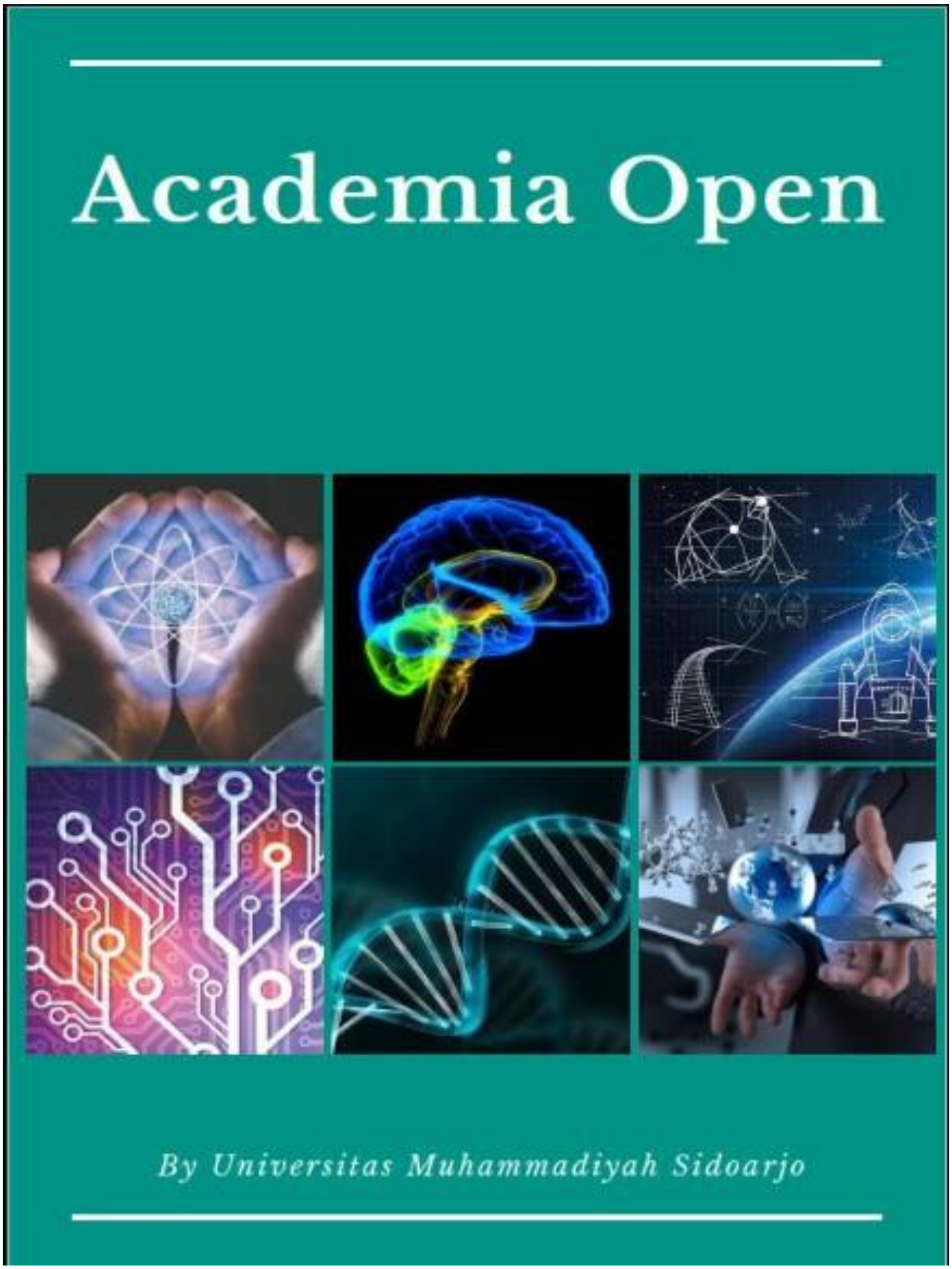

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Active Therapeutic and Diagnostic Management of Ascites of Unclear Etiology in a Patient With Tuberculosis

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Abstract

General Background: Ascites in women of reproductive age presents a complex diagnostic problem because it may arise from gynecological, oncological, infectious, or systemic diseases. **Specific Background:** Peritoneal and genital tuberculosis often show chronic and nonspecific manifestations that mimic other abdominal and pelvic disorders. **Knowledge Gap:** The absence of specific clinical and laboratory indicators frequently delays accurate identification of the etiology of unexplained ascites. **Aims:** This study describes a clinical case applying an active diagnostic approach to determine the cause of ascites in a reproductive-age woman with a history of disseminated tuberculosis, menstrualdysfunction, and infertility. **Results:** Diagnostic laparoscopy with ascitic fluid sampling and peritoneal biopsy revealed serous ascitic fluid, peritoneal hyperemia, and fibrinous deposits, while bacteriological and histological analyses showed a chronic inflammatory process without confirmation of tuberculous infection or malignancy. **Novelty:** The case demonstrates the clinical value of combining multidisciplinary evaluation with early invasive diagnostic procedures in unexplained ascites. **Implications:** Inclusion of peritoneal and genital tuberculosis in the differential diagnostic algorithm and the use of diagnostic laparoscopy can support accurate etiological clarification and guide therapeutic decision-making in tuberculosis-endemic regions.

Highlights:

- Multidisciplinary Evaluation Identified Chronic Inflammatory Origin Despite Suspected Tuberculous Etiology
- Invasive Assessment With Peritoneal Biopsy Ruled Out Malignant Pathology in Persistent Abdominal Fluid Accumulation
- Clinical Presentation Combining Infertility, Menstrual Disturbance, and Low-Grade Fever Complicates Etiological Identification

Keywords: Ascites of Unclear Etiology, Diagnostic Laparoscopy, Peritoneal Tuberculosis, Genital Tuberculosis, Chronic Inflammatory Process.

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Introduction

Ascites in women of reproductive age represents one of the most complex and multifaceted diagnostic challenges in modern clinical medicine, as it may be a manifestation of a wide spectrum of diseases with different etiologies and pathogenetic mechanisms [1,2]. In this category of patients, the causes of ascites include gynecological diseases—such as inflammatory processes of the pelvic organs and neoplastic formations—as well as oncological pathology of the abdominal cavity, and infectious, systemic, and metabolic diseases [3]. The treatment outcome in patients with extensive inflammatory processes and inflammatory fluid accumulations largely depends on timely diagnosis and the correct choice of therapeutic strategy [4,5].

A special place among these conditions is occupied by peritoneal and genital tuberculosis, which is characterized by a chronic, indolent, and often oligosymptomatic clinical course. In abdominal tuberculosis, the intestines, peritoneum, and lymph nodes are most commonly affected [6]. This form of extrapulmonary tuberculosis is often masked as nonspecific inflammatory diseases and is accompanied by menstrual dysfunction, adhesive process formation, and the development of secondary infertility, which significantly complicates timely diagnosis [7,8,9]. The establishment of a definitive diagnosis is based primarily on the results of histopathological and microbiological examinations [10,11].

Clinical and immunological studies reported in the literature show that tuberculous involvement of the abdominal organs is associated with activation of the cellular immune response (T helper cells, macrophages), alterations in the cytokine profile (increased levels of IL-2, IL-6, and TNF-α), and formation of immune complexes. These immunological changes reflect a chronic inflammatory process and may serve as additional markers in the differential diagnosis of extrapulmonary tuberculosis [12].

Materials and Methods

A clinical case study was conducted involving a woman of reproductive age with ascites of unclear etiology and a history of disseminated tuberculosis. The diagnostic approach included comprehensive clinical assessment, laboratory investigations, abdominal ultrasound, and interdisciplinary consultations. To verify the etiology of ascites, diagnostic laparoscopy was performed with revision of the abdominal and pelvic organs, collection of ascitic fluid for bacteriological, cytological, and microbiological analysis, and targeted peritoneal biopsy for histopathological examination. The obtained findings were used to determine the final diagnosis and further therapeutic strategy.

Results and Discussion

In regions endemic for tuberculosis, such a clinical presentation requires heightened vigilance from physicians of various specialties and the mandatory inclusion of tuberculous etiology in the differential diagnostic algorithm for ascites of unclear origin. The well-known statement by Professor V.D. Grund (1975) that tuberculosis is a “great imitator” does not take into account that other diseases may also mimic tuberculosis. To illustrate this point, we present the following clinical case.

*Patient A., 30 years old,*presented to City Clinical Hospital No. 4 of Tashkent on June 25, 2025, with complaints of lower abdominal pain, menstrual cycle disturbances, and general weakness.

History of present illness:According to the patient, she has considered herself ill for approximately 1.5 years, when she first noticed menstrual cycle disturbances. She does not associate the cause of the disease with any specific factor. Due to infertility, she had been under long-term follow-up by a gynecologist. Upon examination, ascites and menstrual dysfunction were detected, and she was subsequently referred to a phthisiogynaecologist to rule out a tuberculous etiology of the condition.

Past medical history: In 2018, the patient suffered from disseminated pulmonary tuberculosis and received specific chemotherapy for 18 months. She denies sexually transmitted infections, viral hepatitis (A, B, C), and HIV infection. She reports no contact with infectious patients in the past 3 months. No blood transfusions have been performed. Allergic history is unremarkable. The patient is married and has no children.

Physical Examination:Body temperature: 37.6 °C. Skin: pale, clean, normally moist. Visible mucous membranes: pale. Respiratory system: nasal breathing, respiratory rate — 18 per minute, auscultation — vesicular breath sounds, no rales. Cardiovascular system: heart sounds muffled, rhythmic, pulse 80 bpm, blood pressure — 110/70 mmHg.

*Local findings:*The abdomen is distended due to ascites. On palpation, there is moderate tenderness in the lower abdominal regions. The liver and spleen are not palpable. From the vagina, intermittent yellowish discharge is noted, accompanied by burning sensation.

Ultrasound examination: Free fluid in the abdominal cavity.Conclusion: ascites? (Figure 1).

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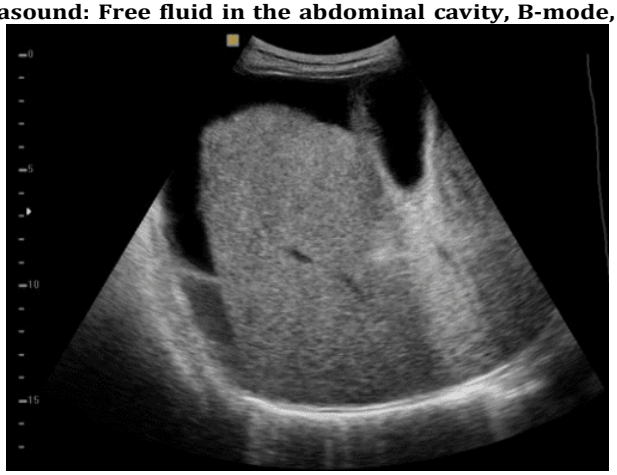
Fig. 1. Ultrasound: Free fluid in the abdominal cavity, B-mode, echogram.

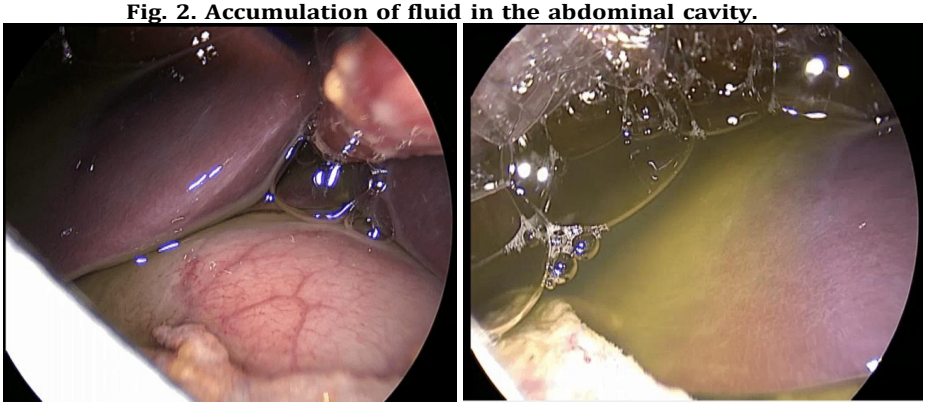


Based on the complaints, history of present illness, physical examination, local findings, and results of instrumental investigations, a preliminary diagnosis was made: “Ascites — peritonitis (tuberculous? etiology). Suspicion of peritoneal and genital tuberculosis. Menstrual cycle disorders. Secondary infertility.”

Due to the persistent diagnostic uncertainty and with the aim of verifying the etiology of ascites, the patient underwent a diagnostic laparoscopic procedure. During laparoscopy, a revision of the abdominal and pelvic organs was performed, ascitic fluid was collected for bacteriological, cytological, and microbiological studies, and a biopsy of the parietal peritoneum was taken for subsequent histological examination. The obtained data served as the basis for determining the further therapeutic strategy.

Surgical report (diagnostic laparoscopy on 25.06.2025): under general endotracheal anesthesia and after standard preparation of the operative field, a diagnostic laparoscopy was performed. After establishing a pneumoperitoneum, an optical trocar was inserted in the periumbilical region. Additionally, under visual guidance, two working trocars were placed in the right and left iliac regions. A revision of the abdominal and pelvic organs was carried out. A significant amount of free ascitic fluid of serous-yellowish color was observed in the abdominal cavity (Figure 2).

Fig. 2. Accumulation of fluid in the abdominal cavity.



The ascitic fluid was partially aspirated, and samples were collected for bacteriological, cytological, and microbiological studies, including testing for Mycobacterium tuberculosis. Upon inspection of the parietal and visceral peritoneum, areas of hyperemia, fine-granular changes, and isolated fibrinous deposits were observed (Figure 3).

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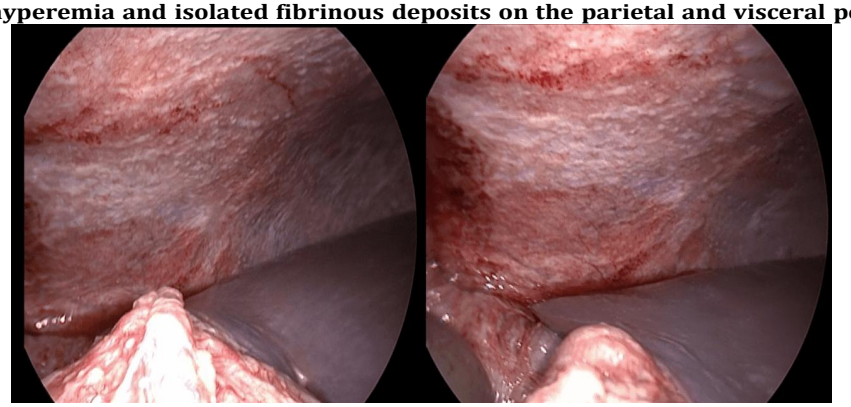
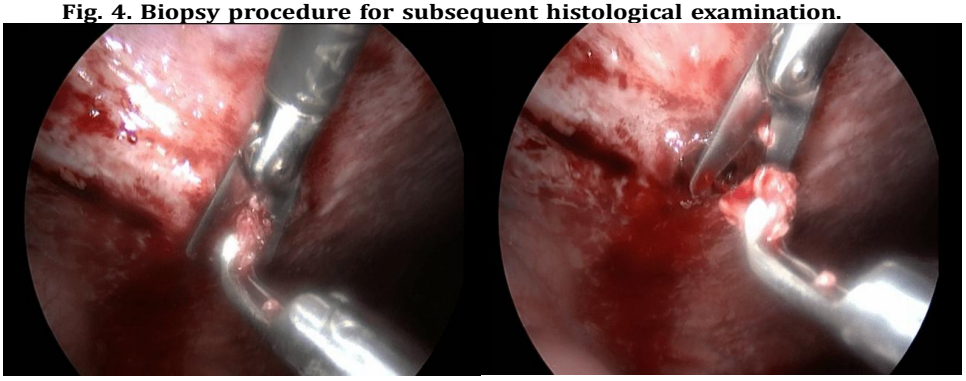
Fig. 3. Areas of hyperemia and isolated fibrinous deposits on the parietal and visceral peritoneum.



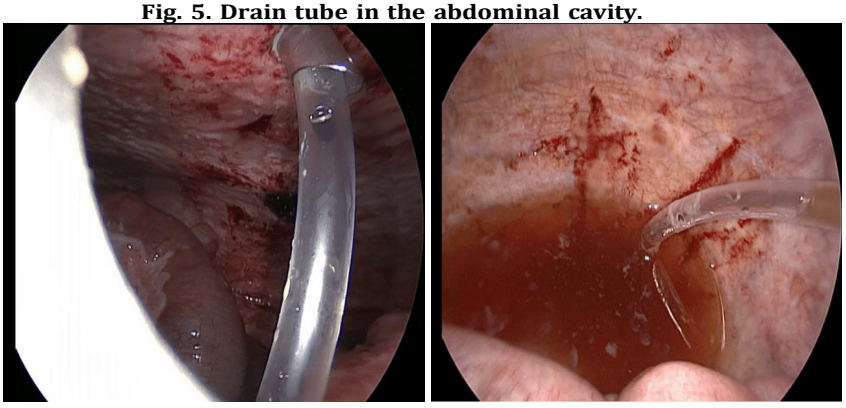
The pelvic organs were visualized: the uterus was of normal size, and the adnexa showed no obvious macroscopic signs of tumor involvement, although signs of a chronic inflammatory process were noted. A targeted biopsy of the parietal peritoneum and serous membranes of the pelvic organs was performed for subsequent histological examination (Figure 4).

Fig. 4. Biopsy procedure for subsequent histological examination.



Bleeding after the biopsy was minimal, and hemostasis was achieved. The abdominal cavity was lavaged, and a drain tube was placed in the right lower quadrant of the abdomen to evacuate serous-yellowish fluid and monitor postoperative effusion (Figure 5).

Fig. 5. Drain tube in the abdominal cavity.



The trocars were removed under visual control, the skin incisions were closed with interrupted sutures, and aseptic dressings were applied.

The postoperative period was uneventful. Comprehensive postoperative management was carried out, including antibacterial, infusion, and symptomatic therapy. Antibacterial therapy was prescribed prophylactically to prevent the development of secondary infection. On postoperative day 2, the patient was transferred from the intensive care unit to the surgical ward, mobilized, and intestinal peristalsis fully recovered. Spontaneous bowel movement was noted. Local wound care consisted of daily dressings with irrigation of the wound using antiseptic solutions (dioxidine). On postoperative day 6, the drainage tube was removed; sutures were removed 10 days after surgery.

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On postoperative day 7, the patient was discharged from the hospital in satisfactory condition. The wound healed by primary intention, with no signs of suppuration observed.

Laboratory test results: Microscopic examination of ascitic fluid: no specific or atypical cells were detected. Bacteriological examination of ascitic fluid: no bacterial growth; pathogenic and opportunistic microflora were not identified. Microscopy of the specimen for acid-fast bacilli (AFB): negative. Culture of the specimen for Mycobacterium tuberculosis (MBT): negative. Histological examination of the peritoneal biopsy: findings are consistent with a chronic inflammatory process (the morphological pattern corresponds to chronic inflammation).

In our case, at the time of the patient's admission to the hospital, there were considerable difficulties in establishing the correct diagnosis and uncertainty regarding the etiology of the ascites. The complexity of the diagnostic process is evidenced by the patient's prolonged follow-up with physicians of various specialties, primarily gynecologists, without identification of the underlying cause of the disease.

The patient's residence in a tuberculosis-endemic region, a history of disseminated tuberculosis, irregular intake of anti-tuberculosis medications, prolonged low-grade fever, weight loss, asthenic–intoxication syndrome, as well as the combination of ascites with menstrual dysfunction and infertility, did not allow exclusion of a tuberculous etiology of the pathological process.

The presented clinical case clearly illustrates the challenges in diagnosing extrapulmonary forms of tuberculosis, particularly tuberculosis of the peritoneum and internal genital organs, which often mimic chronic inflammatory diseases of the pelvic organs. The absence of pathognomonic clinical and instrumental signs, the subtle course of the disease, and nonspecific laboratory findings significantly complicate timely verification of the diagnosis.

The involvement of related specialists, including a gynecologist and phthisiatrician, as well as the use of invasive diagnostic methods, allowed for the avoidance of diagnostic errors and the differential diagnosis of extrapulmonary tuberculosis versusoncological pathology. Diagnostic laparoscopy with revision of the abdominal and pelvic organs, ascitic fluid sampling, and peritoneal biopsy proved to be a key step in clarifying the nature of the disease.

Thus, this clinical case emphasizes the need to include peritoneal and genital tuberculosis in the differential diagnostic algorithm for ascites of unclear etiology in women of reproductive age, especially in the presence of a burdened epidemiological history, menstrual dysfunction, and infertility.

The negative results of microscopic and bacteriological examination of the ascitic fluid did not allow for verification of a tuberculous etiology, but did not exclude it, given the oligobacillary nature of extrapulmonary tuberculosis and the chronic course of the disease.

Conclusion

Ascites of unknown etiology in women of childbearing age is still a difficult diagnostic problem, as such an accumulation may have varied (gynecological, oncological, infectious and systemic) etiologies. The following clinical case is another argument in favour of the necessity of adding peritoneal and genital TB to list possible differential diagnosis in a symptomatic patient, will be particularly useful for physicians practicing in tuberculosis-endemic areas who encounter female patients with a history of tuberculosis, menstrual disorder, infertility and chronic intoxication syndrome.

A lack of positive microbiological and histological results does not rule out the etiology of tuberculosis when it is oligobacillary and chronic in the form of other sites of extrapulmonary tbcases. Diagnostic laparoscopy with inspection of the abdominal and pelvic viscera, ascitic fluid cytology, and directed peritoneal biopsy were essential diagnostic tools, which enabled me to exclude a malignancy process and define an inflammatory etiology of the disease.

Interdisciplinary cooperation between surgeon, gynecologist and phthisiatrician is crucial for reliable diagnosis and adequate therapy. C) The early application of invasive diagnostic techniques is important to prevent unnecessary delay in diagnosis, undue delay in therapy, and to optimize the choice of appropriate treatment strategies. The clinical importance of actively diagnosing and treating cases with uncertain origin ascites was emphasized in this case report.

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