ABDOMINAL TUBERCULOSIS MIMICKING OVARIAN CARCINOMA: A CASE FOR CAUTION

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ABSTRACT
Abdominal tuberculosis and ovarian carcinoma have non-specific signs and symptoms. When a patient presents with abdominopelvic mass, ascites and elevated CA-125 levels, ovarian malignancy is usually suspected. In countries with a large number of tuberculosis cases, suspicion of abdominal tuberculosis should not be ruled out. A 19-year-old young female suspected ovarian carcinoma. Her abdominal distended and pain, fever, a decrease of appetite, loss of body weight, ascites, and elevated CA-125 marker (3483 U/mL). From abdominal ultrasound found cyst lesion in right-left adnexa and ascites. From CT scan of the abdomen found multiloculated cyst with the density difference inside, irregular border, the impression from adnexa; loculated ascites; multiple lymphadenopathies. The surgery was performed, VC (vries coupe) from omentum, nodule ileum, and peritoneum show granulomatous inflammation according to tuberculosis. The patient gets ATD therapy for 9 months and responded to it. Abdominal tuberculosis is one of the most common sites with an incidence of 3% and more common in younger women. The symptoms are not typical often resemble malignancy. Ascites and increase of CA-125 do not necessarily indicate the malignant in reproductive women. Ultrasound and CT scan images also have similarities. Tissue biopsy may be a fundamental tool for differentiation. Abdominal tuberculosis can have signs and symptoms like ovarian carcinoma so that clinicians should be more cautious.

Keywords: Abdominal Tuberculosis, Ovarian Carcinoma, CA-125

I. INTRODUCTION
Tuberculosis (TB) is still a public health problem that causes high morbidity, disability, and death, so it is necessary to make efforts to overcome it.[1] Tuberculosis is one of the global health problems of global concern. The number of TB cases and deaths remains high even though this disease can be prevented and cured, but the facts also show success in TB control. The increase in the incidence of TB globally has been successfully stopped and has shown a downward trend (decline by 2% per year in 2012), and the mortality rate has also been reduced by 45% compared to 1990.[2]

TB is one of the top ten causes of death in the world. Tuberculosis also ranks as the first cause of death due to a single infectious agent. In 2017, there were 10 million TB sufferers worldwide, consisting of 5.8 million male sufferers, 3.2 million female sufferers, and 1 million child sufferers. Indonesia itself is in the third position of the country with the most TB cases in the world after India and China.[2]

Tuberculosis can attack various organ systems in the body with pulmonary TB being the most common form, but the incidence of extrapulmonary TB plays a role as a cause of significant morbidity and mortality which is generally due to delay in clinical diagnosis. In the period before the human immunodeficiency virus (HIV) became an epidemic, studies involving adults with good immune systems found that about 15-20% of all TB cases were extrapulmonary TB, of which 3% of extrapulmonary TB were abdominal TB.[6]

The symptoms and signs of abdominal TB are non-specific, so the diagnosis is quite difficult. The diagnosis is made through a combination of radiology, endoscopy, microbiology, molecular techniques, and histopathology. Delay in diagnosis occurs for several reasons. Furthermore, Abdominal TB is often diagnosed incidentally after www.turkphysiotherrehabil.org
This case report discusses abdominal TB (peritoneal TB) in a young adult female patient, who was initially suspected of having ovarian carcinoma.

II. CASE REPORT

PATIENT IDENTITY

A woman, Ms. FZH, 19-years old, Muslim, undergraduate student, from Sidoarjo. The patient is a referral patient of Private Hospital in Sidoarjo with suspicion of ovarian carcinoma.

Main complaint: Stomach Pain

HISTORY OF PRESENT DISEASE

On January 24, 2019 the patient came with complaints of intermittent abdominal pain since 6 months before entering Dr. Soetomo Hospital (RSDS). Abdominal pain is felt to be getting worse, sometimes felt throughout the stomach, feels full, and is accompanied by an enlarged stomach, so that it looks like a pregnant person. Fever on and off, decreased appetite, accompanied by weight loss from 60 kg to 40 kg. The patient had no complaints of nausea, vomiting, diarrhea, difficulty in defecating, pain when urinating, hard stomach like a board, vaginal discharge, and menstrual disorders. Meanwhile, long cough and night sweats are denied. The patient's eyes did not appear yellow, there was no swelling in both hands and feet. The patient was consulted by an Obstetrician and Gynecologist with suspicion of ovarian carcinoma, surgery plan for DD TB abdomen + ascites.

Past medical history

The patient had a history of being hospitalized several times at Private Hospital in Sidoarjo since 6 months before entering the RSDS with complaints of abdominal pain and enlarged abdomen. The patient complains of body heat that appears at night accompanied by chills. The patient was suspected of having typhoid which required hospitalization for several days. Three months after being hospitalized at Private Hospital in Sidoarjo (on December 2018), the patient was again treated with the same complaint. During her stay at the hospital, the patient underwent an abdominal ultrasound examination and found a cyst on the ovary, then the patient was consulted to an ob-gyn (obstetrician-gynecologist) colleague and diagnosed with an ovarian cyst suspected of being malignant. Therefore, the patient was referred to the Obstetrician and Gynecologist in early January 2019 to the Obstetrics and Gynecology Clinic of the RSDS for further examination and management. The patient had no history of high blood pressure, diabetes mellitus, heart disease, chronic liver disease, asthma, ATD (anti tuberculosis drug), and a history of previous surgery.

Family History

The patient's family had no history of tumors, TB, or jaundice.

Social History

The patient is not married yet and does not use contraception. The patient denied any history of sexual intercourse. Furthermore, there was no history of smoking, drinking alcohol, and no long-term drug consumption. The patient and family denied any contact with TB sufferers around the home and school environment.

PHYSICAL EXAMINATION

General condition is sufficient, GCS 4-5-6, pain scale 3, blood pressure 117/77 mmHg, pulse 100x/minute, breathing 20x/minute, body temperature 36.8°C, and oxygen saturation 99% (room oxygen).

Examination of the head revealed no anemia, jaundice, or cyanosis, examination of the neck did not reveal enlarged lymph nodes, there was no increase in JVP.

Cardiac examination, heart limits within normal limits, single heart sound (S1 and S2), no heart murmur or gallop rhythm was found.
Lung examination, inspection did not show any intercostal retractions, widening of the collateral veins, and widening of the intercostal spaces. Lung expansion appears symmetrical. On palpation there was normal fremitus of touch in both hemithorax. Resonant percussion of both hemithorax. On auscultation, breath sounds were vesicular in both hemithorax.

Abdominal examination revealed a bulging abdomen, normal (+) bowel sounds, palpable lumps with chewy consistency in the right and left lower quadrants of the abdomen with a diameter of 5 cm, tenderness without muscular defens, non-palpable liver and spleen, undulation examination (+), and shifting dullness (+).

Digital rectal examination revealed normal anal sphincter tone, smooth mucosa, non-collapsed ampulla of recti, no pain, no palpable lump, yellow stool, and no blood. Examination of the upper and lower extremities was within normal limits.

**SUPPORTING INVESTIGATION**

- **Laboratory examination**
  Examination of laboratory results on January 14, 2019, found tumor marker CA-125 3483 U/mL and thrombocytosis 687,000/uL, while other examinations were within normal limits, namely Hb 12.1 g/dL, leukocytes 8.110/uL, eosinophil 1.6 %, granulocytes 62.6%, lymphocytes 27.4%, monocytes 7%, SGOT 23 U/L, SGPT 20 U/L, albumin 3.9 g/dL, BUN 12 mg/dL, serum creatinine 0.64 mg /dL, fasting blood sugar 70, sodium 137 mmol/L, potassium 3.4 mmol/L, chloride 85 mmol/L, HBsAg non reactive, HIV rapid test non reactive, AFP 1.3 ng/mL, CEA 3.22 ng/mL, quantitative beta HCG < 2.0 mL U/mL

- **Radiological Examination**
  Abdominal ultrasound examination on December 21, 2018 at Private Hospital in Sidoarjo found a cystic lesion in the right adnexa accompanied by ascites.

![Ultrasound of the abdomen showed a cystic lesion in the right adnexa with ascites.](image)

Abdominal CT scan examination without and with contrast on January 15, 2019 at Dr. Soetomo Hospital was found to have cystic lesions with different internal densities (16-25 HU), multiloculated with septa thickness +/- 0.6 cm, wall thickness +/- 1 cm, firm boundaries, irregular edges, size +/- 5.6 x 4.5 x 6.0 cm in the pelvic cavity on the right side the impression comes from the right adnexa, and the size is 6.2 x 3.4 x 4.7 cm in the pelvic cavity on the left side the impression comes from the left adnexa, can be dd: (1). Endometriomas; (2). Malignant ovarian mass.
Fig2. CT scan of the abdomen with contrast coronal slices showed cystic lesions in the pelvic cavity and loculated ascites.

The fluid density (17 HU) was loculated in the pelvic cavity to the abdominal cavity (loculated ascites). There was enlargement of the lymph nodes in the mesentery in size +/- 0.8 cm, presacral +/- 0.5 cm, right parailiac +/- 0.4 cm, left parailiac +/- 0.4 cm, paraaortic +/- 1, 1 cm, aortocava +/- 1 cm, right inguinal +/- 0.3 cm, and left inguinal +/- 0.3 cm.

Fig3. CT scan of the abdomen with contrast axial slices showed loculated ascites with enlarged lymph nodes in the right and left parailiac.

Fig4. CT scan of the abdomen with contrast axial slices showed enlarged lymph nodes in the mesentery and paraaorta.

Radiological examination of the PA chest X-ray (January 15, 2019) found that the lungs and heart were within normal limits.

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Temporary Trouble List

- Abdominal pain came and went since 6 months before admission to the RSDS, was heavy, all over the abdomen, and felt full.
- Enlarged belly looks like a pregnant person.
- Fever on and off, decreased appetite, weight decreased from 60 kg to 40 kg.
- A history of being hospitalized several times at Private Hospital in Sidoarjo since 6 months before entering the RSDS with complaints of abdominal pain and enlarged abdomen, where the patient was said to be suffering from typhoid.
- The last hospitalization (December 2018) at Private Hospital in Sidoarjo, the patient underwent an abdominal ultrasound examination and found cysts in the ovaries, then the patient was diagnosed with suspicious ovarian cysts by ob-gyn colleagues, and then referred in early January 2019 to the Obstetrics and Gynecology Clinic RSDS for examination and further management.
- Pain scale 3.
- Tachycardia 100 beats/minute.
- Looks like a bulging abdomen.
- Palpable lumps with chewy consistency in the right and left lower quadrants of the abdomen with a diameter of 5 cm, tenderness without muscular defens.
- Check for undulation and shifting dullness (+).
- Thrombocytosis 687,000/uL.
- Increased tumor marker CA-125 3483 U/mL.
- Abdominal ultrasound examination on December 21, 2018 at Private Hospital in Sidoarjo showed cystic lesions in the right adnexa with ascites.
- Abdominal CT scan without and with contrast on January 15, 2019 at the RSDS showed cystic lesions with differences in density (16-25 HU), multiloculated with septa thickness +/- 0.6 cm, wall thickness +/- 1 cm, firm borders, irregular edges, size +/- 5.6 x 4.5 x 6.0 cm in the right side of the pelvic cavity, the impression comes from the right adnexa, and measures 6.2 x 3.4 x 4.7 cm in the pelvic cavity the left side of the impression comes from the left adnexa, can be a DD: (1). Endometriomas; (2). Malignant ovarian mass. The fluid density (17 HU) was loculated in the pelvic cavity to the abdominal cavity (loculated ascites). Enlarged lymph nodes in the mesentery were +/- 0.8 cm, presacral +/- 0.5 cm, right parailiac +/- 0.4 cm, left parailiac +/- 0.4 cm, paraaortic +/- 1.1 cm, aortocava +/- 1 cm, right inguinal +/- 0.3 cm, and left inguinal +/- 0.
- The patient was consulted by an Obstetrician and Gynecologist with suspicion of ovarian carcinoma, surgery plan for DD TB abdomen + ascites.
**Fixed Problem List**
1. Abdominal Pain
2. Pelvic Cavity Cystic Lesions
3. Ascites

**Table 1. Problem Analysis and Therapy Plan**

<table>
<thead>
<tr>
<th>No</th>
<th>Analysis</th>
<th>Diagnosis Plan</th>
<th>Therapy Plan</th>
<th>Monitoring Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Abdominal Pain</td>
<td>According to no.2 and 3</td>
<td>Metamizole 1000 mg every 8 hours iv</td>
<td>Clinical, vital signs, pain scale, signs of peritonitis</td>
</tr>
<tr>
<td>2</td>
<td>Pelvic Cavity Cystic Lesions, assessment:</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>a) Ovarian Carcinoma D et S</td>
<td><strong>unilateral salpingo-oophorectomy-vries coupe</strong> (USO-VC)</td>
<td>According to the results of the operation</td>
<td>clinical, vital signs, liver function tests, kidney function tests, ATD side effects</td>
</tr>
<tr>
<td></td>
<td>b) TB Abdomen</td>
<td>GeneXpert ascitic fluid smear ascitic fluid smear</td>
<td>If Genexpert MTB is detected, Rifampisin is sensitive: ATD category I (body weight=40 kg, R450 H300 Z1000 E750), If MTB is detected, Rifampicin resistant: ATD MDR individual regimen</td>
<td></td>
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<td>Culture and sensitivity of MTB ascitic fluid</td>
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<td>Abdominal tissue biopsy (laparoscopy): geneXpert, AFB smear, culture/sensitivity, tissue biopsy histopathology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Ascites ec</td>
<td>a) Ovarian Carcinoma</td>
<td>According to number 2</td>
<td>Clinical, vital signs, liver function tests, kidney function tests, ATD side effects</td>
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<tr>
<td></td>
<td></td>
<td>Ascitic fluid cytology</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) TB Abdomen</td>
<td>According to no. 2</td>
<td>If confirmed TB, ATD according to number 2.</td>
<td></td>
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</table>
PATIENT PROGRESS
During Hospitalization in the Merak Room at RSDS
The patient was hospitalized in the Merak Room for 6 days, from February 21, 2019 to February 26, 2019. On the second day of treatment, a unilateral salpingo-oophorectomy (USO)-vries coupe (VC) was performed by an ob-gyn colleague. The results of the operation showed thickened omental adhesions to the anterior abdominal wall, pseudocapsule on the ileal wall attached to the posterior uterus with a granulation image (cheese impression), normal size uterus, both adnexa were difficult to identify because they were covered with cheese tissue, exploration of the anterior abdominal wall (parietal peritoneum), multiple small nodules were found. Subsequently, VC was performed on the omentum, ileal nodules, and peritoneum with granulomatous inflammation results according to tuberculosis.

Fig 6. At the time of surgery, multiple nodules were seen in the intestines.

Durante's ob-gyn peer surgery consulted a Digestive Surgery colleague because the histopathological biopsy (VC) results were consistent with abdominal TB. Digestive surgeons performed a laparotomy exploration and found grade IV intestinal adhesions, multiple serosal (peritoneal seeding), and liver surfaces and subcentimeter peritoneal seeding. Tissue biopsy was performed for smear examination and tissue geneXpert examination.

Fig 7. Histopathology of biopsy tissue. A: 40X magnification, B: 100X magnification, C and D: 400X magnification.
Histopathological examination of the biopsy tissue with Hematoxilin-Eosin staining showed a granulomatic inflammation according to tuberculosis. A necrotic center or caseous necrosis is seen (arrows in figure A) surrounded by fibrous connective tissue with an influx of epithelioid histiocytes (arrows in figure B). Datia Langhans cells (arrow in figure C) are fusions of macrophages containing clusters of nuclei and arranged in a horseshoe-shaped pattern at the periphery of the cell. Figure D shows a granuloma which is a collection of epitheloid cells, lymphocytes, and plasma cells forming a multi-layered arrangement.

Post surgery there were no complications and the surgical wound closed well. Suture treatment is done every two days. The tissue geneXpert results are MTB not detected and the AFB (acid fast bacilli) tissue wipe also shows negative AFB results. The patient was transferred to a Digestive Surgery colleague from an Obstetrician with a diagnosis of abdominal TB post laparotomy et causa suspected ovarian carcinoma. The patient was consulted by a Digestive Surgery peer to a Pulmonary colleague for the management of abdominal TB. The patient received ATD category 1 (R450, H300, Z1250, E750) orally every 24 hours. Complaints of abdominal pain and pain in the surgical wound were felt to be improving by the patient.

RSDS Polyclinic Control of TB DOTS
A control patient at the DOTS TB Polyclinic on February 28, 2019 and it was decided that the patient would continue ATD treatment at Taman Public health center in Sidoarjo with ATD category 1 with a daily dose for 2 months and intermittent follow-up doses (Monday, Wednesday, Friday) for 7 months 2(HRZE)/7 (HR)3.

Taman Public Health Center in Sidoarjo Control
The patient underwent ATD treatment regularly and had finished ATD treatment for 9 months without any side effects. Complaints related to abdominal pain and an enlarged abdomen were no longer felt by the patient and the patient also experienced an increase in body weight from 40 kg to 55 kg. At this time the patient was able to perform daily activities well.

III. DISCUSSION

EPIDEMIOLOGY AND RISK FACTORS

Ninety percent of all TB cases are found in adults with a male ratio of more than a female ratio of 2:1. Based on the WHO report in 2018, worldwide it was estimated that 10 million people infected with TB developed TB disease in 2017.\textsuperscript{[2]}

In the period before HIV became an epidemic, studies involving adults with good immune systems found that about 15-20% of all TB cases were extrapulmonary TB, with abdominal TB around 3%.\textsuperscript{[3]}

M. tuberculosis infection of the abdomen can occur in the gastrointestinal tract, peritoneum, lymph nodes in the mesentery, omentum, and around the pancreas, or other solid organs (liver, spleen, pancreas). Gastrointestinal TB (GI TB) is found in about 66-75% of cases of abdominal TB with the most frequent locations being the terminal ileum and ileocaecal. Patients with GI TB are mostly accompanied by peritoneal TB and TB lymphadenopathy.\textsuperscript{[5]}
PTB, pulmonary tuberculosis; EPTB, extrapulmonary tuberculosis; GUTB, genitourinary tuberculosis; MTB, miliary tuberculosis; TBM, tuberculous meningitis; ABD, abdominal tuberculosis; LNTB, lymph node tuberculosis.¹³

The development of TB disease is higher in people with HIV because of a weakened immune system. Other risk factors that also affect the weakening of the immune system are alcoholism, poor nutritional status, diabetes mellitus, malignancy, corticosteroid treatment, and the use of TNF inhibitors.²

Age and gender are also risk factors that play an important role in the incidence of extrapulmonary TB. In a study in Nepal, 40.9% cases of extrapulmonary TB were found in the population under the age of 25 years and 21.7% over the age of 50 years, where women had a one and a half times risk of developing extrapulmonary TB. In these two populations, abdominal TB was found in 14.8% and was the second most common location for the incidence of extrapulmonary TB after lymph nodes.⁶ This is in line with studies in the United States which showed that patients under the age of 18 years had twice the risk of developing extrapulmonary TB.⁷

In this case, according to theory, the patient is a 19-year-old woman and lives in a TB endemic area. The patient experienced a weight loss of approximately 20 kg since the beginning of the illness with a low body mass index (BMI), which was 15.6 kg/m² at the time of hospitalization at the RSDS. Meanwhile, other risk factors such as diabetes mellitus, HIV, malignancy, alcoholism, smoking, history of using corticosteroid drugs or TNF inhibitors were not found in the patient.

**PATHOGENESIS**

*M. Tuberculosis* can infect organs in the abdomen through primary and secondary infection mechanisms. Primary infection occurs when unpasteurized dairy products contaminated with *M. tuberculosis* are ingested.
Secondary infection occurs when the primary focus in the lung spreads by hematogenous, lymphogenous, or direct spread from adjacent organs. In addition, phlegm containing M. tuberculosis that is swallowed can also cause abdominal TB disease. M. tuberculosis will penetrate the mucosa and settle in the lymphoid tissue in the submucosa. The body's immune system will provide resistance in the form of granuloma formation, caseous necrosis, and fibrotic tissue. This invasion and inflammation can cause ulceration, bleeding, and perforation.\(^9\),\(^10\)

Abdominal TB can occur in the gastrointestinal organs, peritoneum, lymph nodes in the mesentery, or other solid organs (liver, spleen, pancreas). M. tuberculosis infection in gastrointestinal organs from the esophagus to the anus. However, the area most commonly involved is the ileocaecal area. This can be caused by the abundance of lymphoid tissue (Payer's patches) and microfold cells (M-cells) accompanied by a relatively slower flow of food due to the narrower lumen diameter in these areas. M. tuberculosis will experience a longer contact and then be phagocytosed in the Payer’s patches.\(^11\)

M. tuberculosis infection of the peritoneum can occur due to direct spread of intra-abdominal lymph node rupture (TB lymphadenopathy) or hematogenous spread. In peritoneal TB there are tubercles with thick yellow-white color and hyperemia accompanied by thickening of the omentum. There are 3 forms of peritoneal TB, namely wet type, encysted type, and fibrotic type. In the wet type found the presence of ascites. In the encysted type, localized abdominal swelling is found. In the fibrotic type, there is a mass in the abdomen consisting of thickening of the mesenteric and omentum with intestinal loops that are palpable like lumps in the abdomen. Sometimes all three forms can appear simultaneously.\(^4\),\(^12\)

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Fig 8. Extrapulmonary TB pathogenesis.\(^8\)
In this case, based on a CT scan of the abdomen, cystic lesions were found in the pelvic cavity, enlarged lymph nodes in the mesentery, presacral, right and left paralaiac, paraorta, aortocava, right and left inguinal and loculated ascites images. At surgery, it was found that there were many thickened omental attachments to the anterior abdominal wall, grade IV intestinal adhesions, pseudocapsule on the ileal wall attached to the posterior uterus with granulation (cheese impression) appearance, multiple small nodules on the anterior abdominal wall (parietal peritoneum), multiple serosal (peritoneal) seeding, liver surface and peritoneal seeding subcentimeter. Abdominal CT scan and surgery depicted TB abdominal lymphadenopathy and a combination of the three peritoneal forms of TB, namely wet type, encysted type, and fibrotic type.

**CLINICAL MANIFESTATIONS**

The clinical manifestations of abdominal TB can vary depending on the site involved. Common clinical symptoms include: abdominal pain (80-95%), weight loss (40-90%), fever (40-70%), diarrhea (11-29%), constipation, nausea and vomiting, anemia, night sweats, anorexia, and malaise. Abdominal pain can be colic and intermittent. In some cases it can be asymptomatic.[13]

M. tuberculosis infection in gastrointestinal organs can cause mucosal damage which on the macroscopic picture appears in the form of ulcerative lesions, hypertrophic lesions, and ulcero-hypertrophic lesions. Ulcerative lesions are the most common form of lesions, especially in the jejunum, ileum, and caecum. Hypertrophic lesions are a form of immune response with the formation of excess connective tissue. Ulsero-hypertrophic lesions are a combination of lesions that are often found in the ileocaecal area.[14]

The clinical manifestations of peritoneal TB are non-specific. Common symptoms include abdominal pain, abdominal swelling, weight loss, fever and diarrhea. Physical examination of the abdomen revealed ascites (73%), and abdominal tenderness. The clinical symptoms of peritoneal TB can be acute or chronic, where the acute onset of TB peritonitis resembles that of an acute abdomen and requires surgery, while the chronic symptoms of peritoneal TB are most often abdominal pain and abdominal swelling.[9]

Abdominal TB can cause various complications such as malabsorption, intestinal obstruction, bleeding (hematochezia, hematemesis, melena), perforation, or fistula formation. The delay in diagnosis and inadequate therapy can lead to worsening and life-threatening conditions.[10]

The patient in the case we reported had clinical manifestations of intermittent abdominal pain since 6 months that came and went and was getting worse. Other clinical manifestations were found, namely abdominal swelling, fever, weight loss, anorexia and malaise. Meanwhile, the patient did not complain of diarrhea, constipation, nausea, vomiting, anemia, and night sweats.

**DIAGNOSIS**

The gold standard for the diagnosis of abdominal TB is the discovery of M. tuberculosis. However, it takes a long time, which can reach 12 weeks with low sensitivity, where only about 50% of cases give positive results. Therefore, the diagnosis of abdominal TB can be determined based on complaints from the history, clinical examination, laboratory examination, radiological examination, and histopathological examination. From the clinical examination of the abdomen, a distended abdomen can be found, palpable lumps, abdominal tenderness, ascites, signs of ileus (decreased bowel sounds), or signs of peritonitis (hard stomach like a board).[15,16]

a) **Laboratory Examination on Abdominal TB**

Blood laboratory examination did not show specific results in abdominal TB. In general, it can be found anemia, hypoalbuminemia which is a manifestation of systemic symptoms of TB. Leukocytes are generally within normal limits.[9]
M. tuberculosis-specific molecular diagnostics that are fast, accurate, and can detect resistance to ATD have been widely applied in extrapulmonary TB. The sensitivity of geneXpert examination when compared to culture was 84.9% (95% confidence interval [CI], 72.1-92.4%) (14 studies, 849 samples) in lymph node tissue or aspiration, 83.8% (95% CI, 65.9-93.2%) (12 studies, 1258 samples) in gastric fluid, 79.5% (95% CI, 62.0-90.2%) (16 studies, 709 specimens) in CSF, 43.7% (95% CI, 24.8-64.7%) (17 studies, 1385 specimens) in pleural fluid, and 81.2% (95% CI, 67.7-89.9%) (12 studies, 699 specimens) on other tissue specimens. Data on ascitic fluid, pericardial fluid, urine, blood, and stool specimens were not analyzed in this study.[17]

In the study, Ahmad et al. stated that geneXpert from ascitic fluid samples had poor sensitivity and specificity (28.57% sensitivity and 0% specificity) in detecting abdominal TB.[18] Kumar et al. stated that geneXpert from intestinal mucosal biosamples had low sensitivity but high specificity (8.1% sensitivity and 100% specificity) in detecting gastrointestinal TB.[19] Meanwhile, Dahale et al. stated that geneXpert from peritoneal biopsy samples had good sensitivity and specificity (60.71% sensitivity and 100% specificity) in detecting peritoneal TB and drug resistance.[20] Furthermore, Rahman et al. in a study that evaluated geneXpert examination of stool samples showed a fairly high sensitivity and specificity (sensitivity 90.2% and specificity 100%), but this study was to detect M. tuberculosis in the feces of pulmonary TB patients.[21]

Abdominal TB cases with ascites manifestations which were examined for AFB smear or M. tuberculosis culture from ascitic fluid had low sensitivity, where positive smear results only occurred in 3% of cases, and positive culture results in only about 20% of cases. Examination of ascitic fluid adenosine deaminase (ADA) levels is recommended with a limit value of more than 36 U/L.[22]

The patient in this case underwent smear examination of biopsy tissue with negative smear results and geneXpert examination of biopsy tissue with MTB not detected. However, examination of AFB smear, culture of M. tuberculosis and examination of the ADA test of ascitic fluid, as well as faecal geneXpert were not performed in this case.

b) Radiological Examination of Abdominal TB

Radiological examination of plain abdominal radiographs cannot describe abdominal TB specifically, unless complications occur. In conditions with complications of obstructive ileus, plain abdominal radiographs (BOF or LLD) can show a picture of intestinal dilatation and hearing bone, while perforation of gastrointestinal organs can show an air-fluid level.[9]

Ultrasound examination of the abdomen may show features such as free or localized intra-abdominal fluid (ascites), lymphadenopathy (mesenteric, peripancreatic, periportal and para-aortic), peritoneal thickening, peritoneal nodules, cecum wall thickening, edematous terminal ileum, dilatation, and swelling. immobilization.[23]

Abdominal CT scan is better in describing abnormalities of the organs in the abdomen. CT scan images that can support the diagnosis of abdominal TB include: ascites, peritoneal thickening, omental thickening, omental infiltration, peritoneal infiltration, mesentery infiltration, lymphadenopathy, circumferential or asymmetrical wall thickening (generally in the cecum and terminal ileum), and intestinal narrowing. CT scans may also reveal ulcerations or nodules in the terminal ileum, along with proximal narrowing and dilatation. Ascitic fluid in abdominal TB has a fairly high HU, namely 25-45 HU, because this ascitic fluid contains high protein. Abdominal lymphadenopathy is a manifestation of abdominal TB that is often found on CT scans, especially in the mesenteric, upper and lower para-aortic, periportal and pancreaticoduodenal areas.[24]

CT-omentum rim sign (CT-OR sign) is a typical sign that can be found in abdominal TB (peritoneal TB) especially to distinguish it from peritoneal carcinomatosis which has a sensitivity of 85% and specificity of 96%. Limitations in finding the CT-OR sign occur in cases of peritoneal dry type TB because the absence of ascites makes the omental surface not look like a circle (rim).
The patient in this case did not undergo a plain abdominal radiograph. Abdominal ultrasound examination revealed a cystic lesion in the right adnexa with ascites. The results of the abdominal CT scan in this patient described the presence of a thick-walled and septated cystic lesion in the pelvic cavity which was suspected as an ovarian mass. However, a CT scan of the abdomen also revealed loculated ascites and lymphadenopathy in the mesentery, presacral, right and left paraaorta, paraaorta, right and left inguinal areas which can support the diagnosis of abdominal TB. The CT-OR sign is also visible from the CT scan of the abdomen.

c) Endoscopy and Colonoscopy Examination
Endoscopic examination and colonoscopy can support the diagnosis of abdominal TB, especially in the gastrointestinal organs. On endoscopic examination there is no pathognomonic picture for an abdominal TB, but it can see the condition of the mucosal damage lesions. These lesions can be ulcerative lesions, hypertrophic lesions, and ulcero-hypertrophic lesions. A biopsy to take a sample can be done from the lesion followed by histopathological examination. Biopsy samples should be taken from the edge of the ulcer because granulomas in abdominal TB of the gastrointestinal organs are often located in the submucosa. The ileoceleal area is a predilection area for abdominal TB, so that ileocolonoscopy has a sensitivity of 67% and a specificity of 100% in case management.\[25\]

The patient in this case was diagnosed with suspicion of ovarian carcinoma requiring urgent surgery (USO), so that endoscopic and colonoscopy diagnostic examinations were not performed.

d) Laparoscopy and Laparotomy Examination
Laparoscopic examination is a minimally invasive surgical technique that uses small-diameter instruments to look inside the abdomen without performing major surgery and performing surgical procedures inside the abdominal cavity. Make 2 or 3 holes measuring about 2 cm to insert a mini camera, then insert gas to create a gap between the abdominal cavity so that it can be seen clearly on the monitor screen. Laparoscopic examination can evaluate intra-abdominal organs, structural abnormalities, take biopsy samples, and perform certain surgical procedures. Small yellowish white tubercles with peritoneal thickening with or without adhesions, and the formation of fibrotic tissue adhesions are features that can be found in abdominal TB.\[14,26,27\]

Laparotomy examination is a surgical procedure by making a large vertical incision on the wall into the abdominal cavity. This action has begun to decrease since the discovery of a more minimally invasive laparoscopic technique. However, in certain conditions, a laparotomy is required, namely in the event of an abdominal emergency, surgical removal of certain organs, or the act of evaluating tumors.\[28\]

In this patient, a laparotomy was performed, but it was intended for diagnostic and therapeutic purposes of suspected ovarian carcinoma. Operation by ob-gyn peer thickened omental adhesions with the anterior abdominal wall, pseudocapsule on the ileal wall attached to the posterior uterus with a granulation appearance (cheese impression), normal size uterus, difficult to identify both adnexa covered with cheese tissue, exploration of the anterior abdominal wall (parietal peritoneum) found multiple small nodules -small, then performed VC (vries coupe) on the omentum, ileal nodules, and peritoneum with the results of granulomatic inflammation according to tuberculosis and without signs of malignancy.

During the operation, Obstetrician colleague consulted with Digestive Surgery colleague because histopathological findings were consistent with abdominal TB. Digestive surgeons performed a laparotomy exploration and found grade IV intestinal adhesions, multiple serosal (peritoneal seeding), liver surface and subcentimeter peritoneal seeding.

e) Histopathological Examination of Abdominal TB
Sampling for histopathological examination can be done through endoscopy, colonoscopy, laparoscopy, or biopsy during laparotomy. On histopathological examination, a typical picture was found, namely epithelioid granuloma cells with Langhans giant cells, central caseous necrosis. Sometimes AFB can be found, but rarely. They can be found in all layers of the intestinal wall and regional lymph nodes. Therefore, in the early stages of the disease sometimes only www.turkjphysiotherrehabil.org
lymphoid tissue is found in the granuloma, extensive metaplasia, or superficial ulcers that extend to the submucosa. The healing phase occurs through fibrosis and epithelial regeneration starting at the periphery, so that the healing granuloma gives a picture surrounded by fibrotic tissue.\(^{[25]}\)

In this case, a biopsy sample for histopathological examination was obtained by laparotomy. Suspicion of ovarian carcinoma in patients requires urgent surgery for diagnostic and therapeutic purposes. However, at the time of surgery, the picture was not in accordance with ovarian carcinoma, where the uterus looked normal, the two adnexa were difficult to identify because they were covered with cheese tissue, and there were multiple nodules. Histopathology (VC) on omental tissue, nodules in the intestine, and peritoneal tissue showed fragments of fibrous connective tissue with epithelioid histiocyte infiltrates that gathered to form granulomas, Langhans' giant cells were seen, and no signs of malignancy were seen. Conclusion: Histopathological examination of the omentum, granulation tissue, and nodules in the intestine was granulomatous inflammation according to tuberculosis.

**DIFFERENTIAL DIAGNOSIS**

**a) Peritoneal Carcinomatosis**

The differential diagnosis of abdominal TB is carcinoma of the abdominal organs (peritoneal carcinomatosis), especially the reproductive organs. Ovarian cancer is a carcinoma that often resembles abdominal TB. Symptoms and clinical signs are almost the same so that it can lead to misdiagnosis in the early stages. Symptoms may include discomfort in the lower abdomen, abdominal pain, urinary and defecation disturbances, ascites, swelling of the lower limbs, and menstrual disturbances. Laboratory results showed an increase in the tumor marker CA-125 (> 35 IU/ml). In addition to its role in pathogenesis, CA-125 also plays a role in patient prognostication. In conditions of malignancy, CA-125 tends to continue to increase.\(^{[4,29,30]}\)

**b) Metastasis or Lymphoma**

In metastases or lymphomas found enlarged lymph nodes in the intra-abdomen. Lymphadenopathy due to metastases, when histopathological examination was carried out, the results were according to the spread of primary cancer cells. In lymphoma, histopathological examination showed an abnormal picture of lymphocyte cells.\(^{[31]}\)

**c) Chronic Liver Disease**

Chronic liver disease is a liver disease that involves a process of progressive destruction and regeneration of liver parenchyma leading to fibrosis and cirrhosis. In this disease can be found an enlarged abdomen, ascites, hepatomegaly, and increased liver function.\(^{[32]}\)

In the reported cases, the patient was initially suspected of having ovarian carcinoma. Clinical symptoms of pain accompanied by swelling of the abdomen supported by an abdominal ultrasound and CT scan of the abdomen with a mass in the pelvic cavity, ascites with enlarged abdominal lymph nodes, and an increase in the tumor marker CA 125 strengthen the diagnosis of ovarian cancer.

**MANAGEMENT**

**a) Anti-TB drugs**

Treatment of abdominal TB follows the ATD guidelines used in Indonesia for extrapulmonary TB. The combination is: 2(HRZE)/4(HR) for the first phase or can be extended in the advanced phase according to the patient's clinical setting. The category I regimen was given when the patient had never received ATD therapy before. Patients with relapse, failure, or loss to follow-up were given ATD category II and in certain conditions were given special ATD regimens. ATD is given immediately after clinical diagnosis even though it has not been confirmed bacteriologically or bacteriological results are found to be negative. The majority of patients with abdominal TB showed clinical improvement after 4-6 weeks of ATD administration.\(^{[1,23]}\)
This patient received ATD category 1 therapy with 3 tablets of 4 FDC orally every 24 hours for 2 months, then followed by 3 tablets of 2 FDC orally three times a week for 7 months (every Monday, Wednesday, Friday). During the treatment, the patient took medication regularly and there were no ATD side effects.

b) Surgery
Surgery is performed when complications occur such as massive bleeding, obstruction, perforation, and so on. Obstruction is the most common complication of abdominal TB. The type of surgery performed depends on the type of complication and the location of the organs involved. Approximately 20-40% of patients with abdominal TB have an acute abdominal condition that is life-threatening and requires immediate surgery.33,34

Surgery in this patient was not performed to treat complications of abdominal TB. Initially the patient was suspected of ovarian carcinoma, so it was done urgent USO-VC surgery. However, at the time of surgery, the signs were more suggestive of abdominal TB. The uterus looks normal and the two adnexa are difficult to identify because they are covered with cheese tissue, supported by many thickened omental attachments to the anterior abdominal wall, grade IV adhesions of the intestine, pseudo capsules on the ileal wall attached to the posterior uterus with granulation appearance (the impression of cheese), multiple small nodules on the wall. anterior abdomen (parietal peritoneum), multiple serosal (peritoneal seeding), liver surface and sub centimeter peritoneal seeding. Adhesiolysis is performed in several places to release adhesions between organs which are complications of abdominal TB. Histopathological results (VC) on granulation tissue, nodules in the intestine, and peritoneal tissue showed granulomatous inflammation according to tuberculosis.

c) Treatment Evaluation
Monitoring of clinical conditions is a way of assessing the progress of treatment outcomes for extrapulmonary TB patients. As in smear negative TB patients, improvement in clinical condition is a useful indicator to assess treatment outcomes, including increased patient weight, reduced complaints, and others.1

The patient had finished taking ATD treatment for 9 months, it was known that her weight had increased from 40 kg at the beginning of ATD treatment to 60 kg, with a BMI of 23.44 kg/m2. Complaints of abdominal pain, abdominal swelling, anorexia, and malaise are no longer felt. The patient is able to carry out daily activities as before the illness.

IV. CONCLUSION
A case of abdominal TB mimicking ovarian carcinoma has been reported, in a 19-year-old young adult woman. Initially, the patient complained of abdominal pain and swelling of the abdomen. The results of an elevated CA 125 examination, ultrasound and abdominal CT scan showing a cystic lesion in the pelvic cavity with enlarged abdominal lymph nodes and loculated ascites raise the suspicion of ovarian carcinoma. At the time of surgery, a tissue biopsy and histopathological examination (VC) were performed which showed a granulomatous appearance according to tuberculosis and no signs of malignancy were seen. Therefore, the patient was diagnosed as abdominal TB and was given ATD category 1 therapy for 9 months. At the end of the treatment, there were no complaints of abdominal pain accompanied by abdominal swelling, and the patient's weight was known to increase. The patient was declared complete treatment and able to resume activities well.

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