



ORIGINAL ARTICLE

Primary versus Secondary Abdominal Tuberculosis as the Great Mimicker of many Diseases in General Surgery

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Abstract

Introduction: Nonspecific characteristics of abdominal tuberculosis (AT) help the disease to mimic a grade scale of intraperitoneal conditions from cancer to inflammation. A significant burden arises from the diagnostic challenge also contributes to the deterioration of the conditions, which necessitates a higher than normal level of suspicion.

Methods: Patients with AT who had no evidence of tuberculosis on lung imaging or anamnesis were evaluated in the primary AT (Group 1) group. Patients with AT who were found to have tuberculosis in lung imaging tests, anamnesis or another organ or in another part of the body and who had AT were examined in the secondary AT (Group 2) group. These two groups were compared with various parameters.

Results: Of the 14 patients, who formed the primary AT group, eight of them were female, and six of them were male. Of the 36 patients who formed the secondary AT group, 18 were female, and 18 were male. The mean age of the primary AT group was significantly lower than the secondary AT group ($p=0.027$). The mean hematocrit value of the primary AT group was significantly lower than the secondary AT group ($p=0.015$). It was observed that the distribution of the presence of ascites in CT in the secondary AT group was significantly higher than the primary AT group ($p=0.019$). The presence of fever in the primary AT group was observed to be significantly higher than the secondary AT group ($p=0.046$). Presence of cough in secondary AT group was found to be statistically significantly higher ($p=0.021$).

Discussion and Conclusion: Aging of all populations worldwide, drug resistance, increased number of immigrants and immunocompromised patients, all resulted in a minor pandemic of AT in all geographies. Although primary and secondary AT seem to share many similar characteristics, they also have statistically significant differences from each other.

Keywords: Abdominal; tuberculosis; extrapulmonary; gastrointestinal; diagnosis.

Tuberculosis (TBC) is a disease of people with low socioeconomic status and immune suppression, characterized by classification granulomas, which have been known since ancient times, including multisystemic involvement and the gastrointestinal tract, causing significant morbidity and mortality in our country. Nonspecific characteristics of abdominal tuberculosis (AT) help the disease to mimic a grade scale of intraperitoneal conditions from cancer to

inflammation. Coexisting pulmonary tuberculosis is unexpectedly rare in AT cases with a rate of 15% only. Aging of all populations worldwide with longer life expectancy than before, drug resistance, increased number of immigrants and immunocompromised patients have resulted in a minor pandemic of AT in all geographies.

Significant burden arises from the diagnostic challenge also contributes to the deterioration of the conditions,

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which necessitates a higher than normal level of suspicion. With an annual incidence of almost nine million around the world, that life-threatening disease killed 1.3 millions of people in 2012 [1].

The harvest of the bacteria is also difficult since successful direct visualization of acid-fast bacilli and culture positivity are 3 and 20%, respectively. The bacillus enters the abdominal cavity either by ingestion of food which is infected by the bacilli living in milk or sputum, where transposition through the intestinal way is blamed (primary AT) or by the hematogenous route from any other organ especially from the lung (secondary AT). Surgical intervention is necessary only in resistant cases of mechanical intestinal obstruction. In recent years, changes and developments in the course of the disease seriously affect the overall incidence and patients' clinic of tuberculosis, especially AT is one of the rare diseases that are becoming popular again and really deserve a renewed perspective. The development of antituberculosis drugs, combined therapies, positive improvements in life and nutritional standards has reduced the incidence of tuberculosis. The clinical presentation of AT has also changed. In developed societies, elderly people get sick more often than young people. In addition, tuberculosis of extrapulmonary regions is more common in developed countries than tuberculosis of the lung. This has increased the interest in extrapulmonary tuberculosis worldwide. The presence of new resistant strains against multiple drug therapies, the formation of immunocompromised patient groups, as in AIDS patients, and the increasing proportion of elderly populations in individuals forming societies create new dilemmas in the control of tuberculosis. With its newly gained popularity, tuberculosis is now becoming more and more comprehensive in its new print reference books. Tuberculosis, which can mimic every disease medically and surgically, can end up with unnecessary treatment, for example, pancreaticoduodenectomy, which has high mortality and morbidity when mimicking pancreatic cancer [2].

In a population, underestimating the incidence of tuberculosis or not including tuberculosis in the differential diagnosis of a patient with abdominal symptoms may have undesirable consequences. As in our country, Turkey, tuberculous peritonitis may be the most common cause in the etiology of acute abdominal surgery in some local geographies. Tuberculosis induced peritonitis continues to be a problem in populations where tuberculosis is common. Due to migrations, tuberculosis, in general, has been transformed into a disease in the western world in which research has gained momentum after a long period of time

[3]. In the presence of tuberculosis, the patient can be easily bypassed if the differential diagnosis is not considered, and the morbidity and mortality may increase due to delay in diagnosis. According to the general opinion, approximately 20% of the patients with AT has tuberculosis in their lungs. Given that tuberculosis, which could not be found more than a few paragraphs in western reference books a few decades ago, has also changed its evolution as a disease, cannot be overlooked by the scientific need for research in regions where tuberculosis is endemic. The studies carried out by the researchers working in endemic regions carry global importance and responsibility for the western world. Thus, it was deemed necessary to retrospectively evaluate 50 AT patients who were consecutively treated in various clinics in our hospital between 2004-2007 in Haseki Training and Research Hospital to meet the scientific need on this subject. In this study, after general evaluation, the data of the patients were examined in primary and secondary AT groups, and the two groups were compared in the light of various parameters.

Materials and Methods

Fifty patients who were admitted to the Haseki Training and Research Hospital between 2004-2007 for four years were diagnosed as intra-abdominal tuberculosis. Data were collected from general surgery, clinic of infectious diseases, obstetrics and gynecology clinics. Two of the patients were diagnosed and treated by hospitalization, four by obstetricians, 32 by internal medicine and 12 by hospitalization in general surgery clinics. The data of the patients were obtained retrospectively by contact with pathology records, surgical notes, archival records, clinical books and telephone. The ages of 14 patients in Group 1 ranged from 15 to 21 years, with a mean age of 18.14 years. Of the 36 patients (mean age: 31.11 years) in Group 2, 26 patients up to 25 years of age were examined in the young patient group and ten patients in the advanced age group. In the second group, young patients (26 patients) ranged in age from 17 to 24 years, with a mean age of 20.53 years. The other ten patients ranged in age from 36 to 78 years with a mean age of 58.6 years. Patients were divided into two groups as primary abdominal tuberculosis (Group 1) and secondary abdominal tuberculosis (Group 2). 14 patients in Group 1 and 36 patients in Group 2 were evaluated. In addition, all patients were evaluated in general with the selected parameters without being divided into groups. Patients with abdominal tuberculosis who had no evidence of tuberculosis on lung imaging or anamnesis were evaluated in the primary abdominal tuberculosis group.

Patients with abdominal tuberculosis who were found to have tuberculosis in lung imaging modalities, anamnesis or another organ or in another part of the body and who additionally had abdominal tuberculosis, were examined in the secondary abdominal tuberculosis group. There were 32 patients who had tuberculosis only on lung imaging (plain conventional radiography). The other four patients in this group were included in Group 2 because of the presence of TBC in the female internal genital organs even though there was no lesion in the lung film. In Group 2, six patients had TBC in the internal genital organs. As a result, TBC was found in the female internal genital organ in ten patients. There were six patients with both pulmonary and genital tuberculosis. Since tuberculosis peritonitis was present in all 50 patients, extra organ involvement was evaluated separately. The patients of both groups were analyzed using various parameters, firstly, all patients and then in their own groups. The groups were then compared with each other. Parameters used; age, gender, history of TBC in the past, family history of TBC, history of contact with a patient with TBC, whether he had previously received TBC treatment, previous hospitalization due to TBC, presence of comorbid disease, how the diagnosis is made (surgery due to acute abdomen, paracentesis, other causes of laparotomy, elective mini-laparotomy for peritoneal biopsy, laparoscopic surgery), ultrasonographic findings (presence of ascites in the abdomen, organomegaly, thickening of the peritoneum, ocular presence in the intestine, female internal genital organ involvement), computed tomography findings The presence of ascites in the abdomen, organomegaly, peritoneal thickening, female internal genital organ involvement, lymphadenopathy), presence of fever, abdominal pain, abdominal distention, lung at admission presence of conventional radiographic findings in patients with early and advanced age groups distribution, leucocytosis, CA-125 height, adenosine deaminase (ADA) height, anemia, presence of increased erythrocyte sedimentation rate, thrombocytosis, liver enzymes elevation (ALT, AST), PPD results, weight loss, cough, nausea and vomiting, loss of appetite, night sweats, diarrhea, complications, mortality, extra-peritoneal organ involvement (omentum, female icgenital, pericardium, intestine). Lower and upper limits of the laboratory values, biochemical and bacteriology laboratories of our hospital were estimated according to the cut-off values. Upper limit values of normal were 10.000/mm³ for leucocyte count, 35 U/ml for CA-125.50 U/L for ADA, 13 mm for erythrocyte sedimentation rate, 400.000/mm³ for platelet value, 55 U/L for ALT, 34 U/L for AST. The lower limit of hematocrit (Hct) was accepted as

38% for mild anemia.

Ethics Committee approval was not received because the present study was a retrospective study. Although the ethics committee approval was not obtained, detailed and signed informed consents were obtained from all patients indicating that the data could be used for scientific purposes.

Statistics Analysis

In this study, statistical analyzes were performed with NCSS 2007 package program. In addition to descriptive statistical methods (mean, standard deviation), independent t-test was used for comparison of binary groups, and chi-square test was used for comparison of qualitative data. The results were evaluated within the range of $p < 0.05$.

Results

Of the 14 patients who formed the primary AT group (Group 1), eight were female and six were male. TBC peritonitis was proven as a result of the procedures performed in all patients. Of the 36 patients who formed the secondary AT group (Group 2), 18 were female and 18 were male. TBC was proven as a result of the procedures performed in all patients. Thirty-two of the 36 patients (32/36, 88.8%) in Group 2 had pulmonary TBC accompanying AT. Genital TBC was present in 10 (27%) of 36 patients. Of these 10 patients, six patients had pulmonary tuberculosis, eight patients had tuberculosis in the omentum, and the other two patients had female internal genital tuberculosis, the only concomitant involvement site accompanying AT. TBC pericarditis was associated with pulmonary and abdominal tuberculosis in two patients. Abdominal TBC in two of the patients had a history of surgery, and they had previously undergone cecostomy and ileostomy. Lung operation (lobectomy) had been applied to two patients in the past.

In addition to peritonitis, the infection rate of the omentum was 32% (16/50) for all patients, 14% (2/14) for Group 1 and 38.8% (14/36) for Group 2. TBC was present in six patients (16%) in Group 2, and they were treated as inpatients. In Group 2, two patients had TBC on family history and two patients had contact with TBC. When comorbid diseases were examined, two patients in group 2 had comorbid diseases (nephrotic syndrome). Specifically screened hypertension and diabetes mellitus were not detected in any patients. Among the procedures we performed for the diagnosis of intraabdominal tuberculosis, mini-laparotomy (22 patients, 44%) under general anesthesia was the most common method.

Minilaparotomy was performed in eight (57%) out of 14 pa-

tients in Group 1 and in 14 (39%) out of 36 patients in Group 2. TBC peritonitis was detected in two patients in both groups who were operated for the acute abdomen (4/50, 8%). In Group 1, no diagnosis was made by laparoscopic surgery, whereas in Group 2, TB was diagnosed in six patients (6/50, 12% for all patients; 6/36, 16% for group 2). TBC was detected in eight patients (16%) who underwent laparotomy for another reason. In 10 (20%) of the patients, the fluid obtained by paracentesis without invasive surgical procedure was sufficient in the diagnosis. Paracentesis is helpful in diagnosis in two patients in Group 1 and eight patients in Group 2. As a result, 80% (40/50) of the patients were operated, and 12 of these patients had TBC. These were eight patients who underwent laparotomy for another reason and four patients who were operated for the acute abdomen. Abdominal USG was performed in all patients in this study, but abdominal CT was required in only 36 patients. Abdominal CT showed positive findings in all 36 patients. Thus, both the USG (50/50, 100%) and CT (36/36, 100%) obtained a positive clue that evoked the suspicion of abdominal TBC diagnosis. Radiologically detected ascites was 92%, in addition to fever with 64%, abdominal pain with 80%, and abdominal distension with 68% at admission. Abdominal USG was performed in all patients in this study, but abdominal CT was required in only 36 patients. Ascites and abdominal pain were the most common signs and symptoms. When the groups were evaluated separately, ascites were present in 12 (85.7%) of 14 patients in Group 1, whereas ascites in 34 (94.4%) of 36 patients were detected in Group 2. The presence of fever was positive in 12 (85.7%) of 14 patients in Group 1, while positive in 20 (55.5%) of 36 patients in Group 2. While abdominal pain was positive in 10 (71%) of 14 patients in Group 1, it was positive in 30 (83.3%) of 36 patients in Group 2. The presence of abdominal swelling in Group 1 was positive in eight (57%) of 14 patients, while it was positive in 26 (72.2%) of 36 patients in Group 2. Conventional plain chest X-ray was taken to all patients at the time of hospitalization. Thoracic CT was not detected in four patients with no findings. When all patients were evaluated together, 64% (32/50) of the patients with tuberculous peritonitis had radiological findings consistent with pulmonary tuberculosis. Gender as a parameter shows a balanced distribution when the groups are examined separately. Therefore, the statistical study could be conducted by ignoring the differences between the two groups in terms of gender. Of the 50 patients, 24 (48%) were male (6 patients in Group 1, 18 patients in Group 2), 26 (52%) were female (8 patients in Group 1, 18 patients in Group 2) gender. All of the patients

in Group 1 were in the young age group (ranging from 15 to 21 years). Of the 36 patients in Group 2, 26 (72%) were in the younger age group (ranging from 17 to 25 years), while the remaining 10 (28%) were advanced (36-78 years). When the patient group was examined, it was found that primary AT was seen only in young patients. The rate of coexistence of AT with lung TBC increases with age. None of the 50 patients in both groups who had SGOT and SGPT were evaluated for liver enzyme elevation. The presence of leucocytosis was detected in 20% of the patients (10 patients). Leucocytosis was present in four (28%) of 14 patients in Group 1, whereas in 6 (16%) of 36 patients in Group 2, leukocytosis was present. CA-125 was evaluated in a total of 26 patients and was evaluated in six of 14 patients in Group 1, 20 of 36 patients in Group 2, and the higher rate of this parameter was 100% for both groups due to higher than normal values. CA-125 values ranged from 151-628 U/ml, the mean value was 368, and the median value was 342. When the groups were evaluated separately, the values of the patients in Group 1 ranged from 168-560 (mean value: 361, median value: 368). The values of patients in Group 2 ranged from 151 to 620 (mean value: 370, median value: 347). CA-125, which can be used as a reliable parameter in AT patients in diagnosis and follow-up, gave similar results in our series. ADA in the peritoneal fluid was measured in eight patients and the values obtained were negative in two patients in Group 1 and positive in four of six patients in Group 2. PPD test was positive in all two patients who could be examined in both groups. When the patients were evaluated for mild anemia, 38 (76%) of 50 patients had mild anemia. Mild anemia was present in 14 (100%) of 14 patients in Group 1, while 24 (66%) of Group 2 patients had mild anemia. When the patients were evaluated in terms of sedimentation height, it was found to be high in all 38 patients (10 patients in Group 1 and 28 patients in Group 2). The presence of thrombocytosis was detected in 36% of all patients (18 patients). Thrombocytosis was present in six (42%) of the 14 patients in Group 1, while thrombocytosis was present in 12 (33%) of 36 patients who formed Group 2. Abdominal pain was the most common symptom (80%). Abdominal pain was present in 10 (71%) of 14 patients in Group 1 and in 30 (83%) of 36 patients in Group 2. Weight loss was detected in 48% (24/50) of the patients. Weight loss was found in eight (57%) of 14 patients in Group 1 and 16 (44%) of 36 patients in Group 2. Cough was detected in 40% (20/50) of the patients. Cough was present in two (14%) of 14 patients in Group 1 and in 18 (50%) of 36 patients in Group 2. Nausea and vomiting were detected in 44% (22/50) of the patients. Nausea and vomiting were

present in four (28%) of 14 patients in Group 1 and in 18 (50%) of 36 patients in Group 2. Anorexia was detected in 68% (34/50) of the patients. Anorexia was present in 10 (71%) of 14 patients in Group 1 and in 24 (66%) of 36 patients in Group 2. Night sweating was detected in 48% (24/50) of the patients. Night sweating was present in eight (57%) of 14 patients in Group 1 and in 16 (44%) of 36 patients in Group 2. Diarrhea was detected in 36% (18/50) of the patients. Diarrhea was present in six (42%) of 14 patients in Group 1 and in 12 (33%) of 36 patients in Group 2. USG and CT were used as imaging studies. When all the results were examined, it was found that the rate of ascites detection in the abdomen was 92% (46/50), the rate of intraabdominal lymphadenopathy was 4% (2/50), and the peritoneal thickening rate was 20% (10/50). No organ-specific TBC-specific findings, such as thickening of the colon wall, were found. Ascites were detected in 46 of 50 patients by abdominal USG and in four of 36 patients by CT. Due to the retrospective nature of the study, only early-stage prognosis could be evaluated and the majority of the patients could not be reached by telephone. According to the records obtained from the outpatient follow-up period after discharge, two out of 50 patients were lost during hospitalization. Although the mortality rate may be higher, the rate is 4%. All of the major complications were seen in Group 2 (Group 2: (8/36, 22.2%); for all patients (8/50, 16%)), which may be attributed to the general condition of the present pulmonary disease. Complications were nephrotic syndrome, pericarditis, intraabdominal abscess development because of intestinal perforation leading to stoma opening following a biopsy trial with laparotomy. Patients with more than one additional organ involvement were not evaluated. There are double organ involvements in 10 patients in the total number of the subgroup consisting of 30 patients with organ involvements. When peritoneal and lung were ignored, 16 of 50 patients had omentum (2 (14%) in Group 1 and 14 (38.8%) in Group 2). Ten patients had their female internal genital organs involved (10 patients (27.7%) in Group 2) and two patients had their intestines involved and the pericardium was involved in another two patients. As a result, 20 patients had additional organ involvement in two of them (two patients in Group 1 and 18 patients in Group 2). Pulmonary involvement was present in all patients in Group 1 and in 32 of 36 patients in Group 2. Tuberculosis peritonitis was present in all patients in groups 1 and 2. When all patients were examined, only omentum involvement was detected in two patients in Group 1 and 4 patients in Group 2. Omentum involvement was accompanied by female internal genital organ involve-

ment in eight patients and intestinal involvement in two patients. Only female internal genital organ involvement was observed in 2 patients and only pericardial involvement was observed in two patients. As a result, extra-peritoneal abdominal organ involvement was 14% (2/14) in Group 1 and 50% (18/36) in Group 2. Extra-peritoneal organ involvement is increased by 50% to 14% in favor of the group (Group 2) with pulmonary tuberculosis accompanied by abdominal tuberculosis. In Group 1, extra-peritoneal intraabdominal involvement was detected as omentum involvement in two patients. In all patients in Group 1 and Group 2, the standard site of involvement is peritoneum. The association of tuberculosis peritonitis with ascites; 46 patients (wet peritonitis) were present, while in four patients (dry peritonitis) ascites was absent in the abdomen. The mean age of the primary abdominal TBC group was significantly lower than the secondary abdominal TBC group ($p=0.027$). No statistically significant difference was observed between the gender distributions of primary abdominal TBC and secondary abdominal TBC groups ($p=0.748$). The mean hematocrit of the primary abdominal TBC group was significantly lower than the secondary abdominal TBC group ($p=0.015$). There was no statistically significant difference between the mean sedimentation rates of the TBC and secondary abdominal TBC groups ($p=0.459$). No statistically significant difference was observed between the distribution of past hospitalization because of TBC in the medical histories of patients with primary AT and secondary AT groups ($p=0.103$). There was no statistically significant difference between the primary abdominal TBC and secondary abdominal TBC groups in the distribution of TBC incidence in the family ($p=0.368$). There was no statistically significant difference between the primary and secondary AT groups and the distribution of contact history with TBC patients ($p=0.368$). No statistically significant difference was observed between the previous TBC treatment distributions of primary abdominal TBC and secondary abdominal TBC groups ($p=0.103$). No statistically significant difference was observed between primary abdominal TBC and secondary abdominal TBC groups in the past hospitalization due to TBC ($p=0.103$). There was no statistically significant difference between primary abdominal TBC and secondary abdominal TBC groups in terms of co-morbidities ($p=0.368$). There was no statistically significant difference between the primary abdominal TBC and secondary abdominal TBC groups due to acute abdomen and surgical distribution ($p=0.307$). There was no statistically significant difference between the distributions of paracentesis for diagnosis of primary abdominal TBC and

secondary abdominal TBC groups ($p=0.529$). There was no statistically significant difference between primary abdominal TBC and secondary abdominal TBC groups for the distribution of laparotomy for other reasons ($p=0.837$). There was no statistically significant difference between the distributions of minilaparotomy in the diagnosis of primary abdominal TBC and secondary abdominal TBC groups ($p=0.243$). There was no statistically significant difference between the distributions of laparoscopy in the diagnosis of primary abdominal TBC and secondary abdominal TBC groups ($p=0.103$). There was no statistically significant difference between the presence of ascites in the USG of the primary abdominal TBC and secondary abdominal TBC groups ($p=0.307$). No statistically significant difference was observed between the distribution of organomegaly in the USG of the primary abdominal TBC and secondary abdominal TBC groups ($p=0.307$). There was no statistically significant difference in the distribution of peritoneal thickening in the USG of the primary abdominal TBC and secondary abdominal TBC groups ($p=0.756$). No statistically significant difference was observed between the distribution of intestinal edema in the USG of primary abdominal TBC and secondary abdominal TBC groups ($p=0.193$). There was no statistically significant difference between the distribution of the presence of female internal genital organ involvement in USG of primary abdominal TBC and secondary abdominal TBC groups ($p=0.054$). It was observed that the distribution of the presence of ascites in CT in the secondary abdominal TBC group was significantly higher than the primary abdominal TBC group ($p=0.019$). No statistically significant difference was observed between the distribution of detection of peritoneal thickening in CT of primary and secondary AT groups ($p=0.739$). There was no statistically significant difference between the distribution of the presence of organomegaly in CT of primary and secondary AT groups ($p=0.096$). There was no statistically significant difference between the distribution of the presence of female internal genital organ involvement in CT of primary and secondary AT groups ($p=0.158$). There was no statistically significant difference between the distribution of the presence of lymphadenopathy (LAP) on CT in the primary and secondary AT groups ($p=0.367$). In primary AT and secondary AT groups, there was no statistically significant difference between just the presence of acid distributions ($p=0.307$). The presence of fever in the primary AT group was observed to be significantly higher than the secondary AT group ($p=0.046$). There was no statistically significant difference between the distribution of abdominal pain in primary and secondary AT groups ($p=0.345$). There was no

statistically significant difference between the presence of abdominal distention in primary and secondary AT groups ($p=0.305$). The presence of positive findings on the chest X-ray of the secondary AT group was found to be significantly higher than the primary AT group ($p=0.0001$). There was no statistically significant difference between the distribution of primary and secondary AT groups regarding the presence of leucocytosis ($p=0.345$).

No statistically significant difference was observed between the distribution of the presence of elevation of ADA in the peritoneal fluid of the primary AT and secondary AT groups ($p=0.102$). The presence of mild anemia in the primary AT group was significantly higher than the secondary AT group ($p=0.013$). No statistically significant difference was observed between the distribution of thrombocytosis in primary and secondary AT groups ($p=0.529$). No statistically significant difference was observed between the distribution of weight loss in primary AT and secondary AT groups ($p=0.420$). The presence of cough in the secondary AT group was significantly higher than the primary AT group ($p=0.021$). No statistically significant difference was observed between the distribution of the presence of nausea and vomiting in the primary and secondary AT groups ($p=0.171$). No statistically significant difference was observed between the distribution of anorexia in primary and secondary AT groups ($p=0.746$). No statistically significant difference was observed between the distribution of night sweating in primary and secondary AT groups ($p=0.420$). There was no statistically significant difference between the diarrhea distribution of primary and secondary AT groups ($p=0.529$). No statistically significant difference was observed between the distribution of complications in primary and secondary AT groups ($p=0.054$). No statistically significant difference was observed between the distribution of mortality in primary and secondary AT groups ($p=0.368$). There was no statistically significant difference between the distribution of omentum involvement of primary and secondary AT groups ($p=0.094$). The presence of female internal genital organ involvement in the secondary AT group was significantly higher than the primary AT group ($p=0.027$). There was no statistically significant difference between the distribution of the presence of pericardium involvement of primary and secondary AT groups ($p=0.368$). No statistically significant difference was observed between the distribution of intestinal involvement of primary and secondary AT groups ($p=0.368$). The presence of additional peritoneal additional organ involvement in the secondary AT group was significantly higher than the primary AT group ($p=0.021$). When the distribu-

tion between the groups were compared only gender, mild anemia, the presence of acid on CT, fever, cough, and statistically significant differences in parameters of abdominal TBC patients because of the primary and secondary distinction of all patients in general due to the difference in the general tissue does not show much difference. The opinion of the examination was born. In the presence of abdominal tuberculosis, 50 patients had TBC history; the family had TBC patients, had contact with TBC patients, had TBC treatment in the past, and was hospitalized because of TBC 12%, 4%, 4%, 12%, 12% were found to be risky. Only 4% of the co-morbidities are consistent with the general course of infectious diseases. Although paracentesis is an easy-to-apply method, the algorithm has a diagnostic modality that should be applied first in every patient, but in our series, only 20% of the patients have achieved results. In our series, TBC emerged as the cause of acute abdomen in 8% of acute abdominal operations without suspending tuberculosis. In diagnostic surgical procedures, general.

Because of this approach, 44% of our series had a minilaparotomy for peritoneal biopsy. The presence of ascites in 92% of the patients in our series by ultrasonography increased to 94% when CT was applied. Although CT has no additional benefits for ascites detection, it has been shown to benefit from additional findings, such as organomegaly, peritoneal thickening, and lymphadenopathy. In our series, fever 64%, abdominal pain 80%, abdominal swelling 68%, positive chest X-ray findings 64%, leucocytosis 20%, peritoneal fluid adenosine deaminase 50%, presence of mild anemia 76%, thrombocytosis 36%, weight loss 48%, cough 40%, nausea-vomiting 44%, anorexia 68%, night sweating 48%, diarrhea 36%, erythrocyte sedimentation rate was found to be 100% high.

Discussion

Diagnosis of tuberculosis due to the absence of specific symptoms and pathognomic findings presents significant difficulties. In the presence of abdominal tuberculosis, there are serious differences of opinion about the rate of tuberculosis in the lung. Although the general opinion is that only 20% of these patients have findings in the lung film, a serious section of the publications claims otherwise [4].

The results in our series also contradict the general opinion and there is evidence that there is a difference in the course of the disease today. In our country, 69% of the patients with tuberculosis peritonitis had lesions that would reduce tuberculosis on chest radiographs. The rate of 64% in our series is similar to the high rate of secondary AT in the literature. When the diagnostic methods used in our study

are examined, the diagnosis of 50 patients with acute abdomen was diagnosed in four patients, paracentesis in 10 patients, laparotomy in eight patients, peritoneal biopsy in 22 patients, and peritoneal biopsy in laparoscopic surgery. The diagnosis was noted in six patients. Tuberculosis ranks tenth in the differential diagnosis of young Asian patients presenting with abdominal symptoms all over the world. In AT, pain-type power is localized, slowly onset. In the eastern series, in the presence of ileocecal tuberculosis, mass formation in the right ileocecal fossa was found in half of the cases, so the possibility of such mass in appendicitis abscess or Crohn's mass in the patient who was suspected from AT was more background for Asians. Since the presence of ascites in the abdomen is easy to detect, 'wet' tuberculosis peritonitis is easier to diagnose according to 'dry' or fibrosis peritonitis. The most useful laboratory test has been reported as an increased erythrocyte sedimentation rate, consistent with the results in our series. Opioid studies with Barium or passage enema with Barium enema showed positive findings in all patients with intestinal tuberculosis. Contrast radiological examinations that show the intestine lumen are negative in the presence of tuberculous peritonitis. Percutaneous liver biopsy has also been found useful. In our series, there were patients who underwent peritoneal and omentum biopsies with minilaparotomy. These patients were operated for diagnosis by exclusion of tuberculosis and obtaining general anesthesia to rule out malignant diseases and confirm the diagnosis. Today, however, there is no evidence that there is no place for the diagnosis or surgical treatment of uncomplicated abdominal tuberculosis. Surgical intervention is indicated only in acute or subacute intestinal obstructions that do not respond to conservative treatments. In spite of this generally accepted approach, minilaparotomy surgery is beneficial for some patients when we agree with our internal medicine clinics and this is the most common method in our series. It is accepted that 20% of patients with abdominal tuberculosis will have to undergo emergency surgery at some time in their lives [5].

In our series, six patients had to undergo emergency surgery directly for tuberculosis peritonitis. These are four patients who underwent surgery due to acute abdomen and patients requiring previous bowel stoma due to acute abdomen due to TBC. Surgical procedures were performed electively to diagnose other patients. As a result, 6 (12%) patients in our series had to undergo surgery in the period we could follow. We believe that this rate may increase further during the long follow-up periods of these patients. The increasing movements in the globalized world have made tuberculosis

a disease that needs to be reevaluated. The most common findings are fever, abdominal tenderness and presence of ascites. The most common hematological abnormality is the increase in the erythrocyte sedimentation rate. It is also detected in half of the patients with mild anemia. In western series, the male/female ratio is 23 to 7.

In our series, this ratio is 24/26. The reason for the similarity between men and women in our series is that the patients in our country are not immigrant and the disease is an endemic disease in our country. In western countries, males constitute the majority of the immigrant population, which results from western publications, generally examining tuberculosis in males. In developing countries, the number of female patients in the series is reported to be higher [6].

Tuberculosis peritonitis was around 80% in western series, whereas tuberculosis peritonitis was 100% in 50 patients, 16 of these patients had omentum involvement, 10 had internal genital organ involvement, and 10 had pericardium and intestinal involvement. The presence of active or delayed tuberculosis in the lung film was present in 60% of patients in the western series (secondary abdominal tuberculosis), whereas in our series, this rate was 64% (32/50), which is consistent with the literature. When gastrointestinal tuberculosis has insidious symptoms, patients should consult a doctor; it extends the time of diagnosis after application. High erythrocyte sedimentation rate and mild anemia are alarming laboratory findings [7].

In 38 (76%) of the 50 patients in our series, mild anemia was found and high sedimentation rates were observed in all of the 38 (100%) patients in whom sedimentation was studied. Currently, abdominal tuberculosis is known to be mostly secondary. This is also observed in our series. Of the 50 patients in our series, 36 had secondary abdominal TBC and 32 had a primary pulmonary focus. The site of primary infection must be investigated, usually the pulmonary system. In contrast to the western world, although the Eastern literature reports that intestinal tuberculosis is the first pathology that should be considered in a patient with bowel obstruction, fever, weight loss, night sweating and loss of appetite, the similar clinical picture in our country is similar to that of tuberculosis. However, we need to differentiate our point of view in foreign patients who apply to our hospitals more and more frequently. When abdominal tuberculosis is suspected for our citizens living in the eastern part of our country, at least USG should be examined for the presence of ascites in the abdomen because the presence of ascites in the ab-

domen is the most common finding in AT [8]. In our series, the detection rate of ascites was present in 46/50 (92%) patients.

In non-mucinous epithelial ovarian cancers, CA-125 should not be overlooked in the diagnosis, and even CA-125 is a parameter that can introduce tuberculosis in the differential diagnosis of cancer. CA-125 can be used in follow-up as it returns to normal after treatment. Tuberculosis in the differential diagnosis of patients with elevated CA-125 may save patients from unnecessary laparotomy [9]. In our series, CA-125 was examined in 26 patients, and all had higher than normal results. Therefore, we believe that the CA-125 should be included in the algorithm as it deserves.

Adenosine deaminase (ADA) activity from ascites fluid is useful in the diagnosis of abdominal tuberculosis. Many researchers see ADA as a marker of cellular immunity and note that ADA activity in serum is elevated in diseases characterized by cellular immunity [2, 10]. In our series, ADA, which was evaluated in eight patients, yielded a positive result of 50%, and considering the higher rates in the literature, ADA is seen as a reliable parameter at the time of diagnosis.

In 75% of patients with gastrointestinal tuberculosis, the site of involvement is the ileocecal region or jejunum. The affinity of tuberculosis bacilli to lymphoid tissue and stasis in that region are responsible for this: the colon, jejunum, appendix, duodenum, stomach, esophagus, sigmoid colon and rectum. Multiple intestinal involvements may occur. The 20% success in diagnosis by culturing is increased to 80% if 1 liter of ascites is made after centrifugation [11]. We believe that the success rates in culture and direct examination can be increased by taking abundant material during ascites analysis. Low hemoglobin and increased CRP are present in 90% of the patients [12]. Tuberculosis peritonitis is usually diagnosed by a peritoneal biopsy performed by us [13]. In patients with pulmonary tuberculosis, fever, abdominal pain, weakening and abdominal tuberculosis in patients with abdominal ascites peritoneal biopsy, colon x-ray, colonoscopy or tuberculosis treatment is recommended to initiate the treatment is suggested that the treatment can be administered [14].

The weak point in our study was the small number of patients and the retrospective evaluation of the data. In the light of the data obtained in this study, suspending from TBC is the most important parameter for diagnosis and sometimes the diagnosis can only be made by excluding other etiologies. Tuberculosis is one of the few diseases in which symptomatology and findings are highly important.

Conclusion

When evaluating the primary and secondary AT; secondary disease does not show a statistical difference between the groups in terms of symptoms, signs, diagnosis, course and treatment except that the disease is seen at an older age and fever, anemia and cough are more common than the primary disease. Laboratory parameters, such as elevation of erythrocyte sedimentation rate, which we found at a rate of 100%, should not be ignored. In addition, the presence of ascites in the abdomen was determined as 92%, abdominal pain was the most common parameter with 80%, and 44% in the diagnosis was the most common diagnostic modality of peritoneal biopsy with minilaparotomy. In the presence of abdominal tuberculosis, the rate of positive findings on chest X-ray was 64%. In the light of the parameters we obtained, the questioning of suspected patients in the direction of tuberculosis and performing the appropriate tests should be included in the diagnostic algorithm. In the light of the results obtained in our series with the increase in the number of patients and in our series, we observed that 50-100% results of adenosine deaminase or CA-125 as a result of random laboratory investigations were examined, with the results of randomized prospective studies, the diagnosis of tuberculosis will be made. We think that we can contribute to the international literature using our local data in the diagnosis and follow-up of tuberculosis.

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