ORIGINAL ARTICLE

Diagnostic Approaches and Treatment of Abdominal Tuberculosis in Tertiary Care Settings

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ABSTRACT

Background: Abdominal TB is a less common disease but accounts for a considerable health issue in developing countries.Manifestations of abdominal TB include tubercular lymphadenitis, peritonitis, hepatosplenic and pancreatic TB respectively. Variety of approaches based on clinical signs, radiological, laboratory methods including bacteriology and histopathology are referred for diagnosis but none is characterized as gold standard.

Aim: To observe the diagnostic approaches and treatment outcomes of variety of abdominal TB patients in tertiary care settings.

Study Settings: This descriptive observational study was carried outpatient Department of Pulmonology, King Edward Medical University, Mayo Hospital Lahore and in Sheikh Zayed Hospital Rahim Yar Khan during January 2015 to December 2015.

Results: A total of 56 patients were recruited for present study comprising 38 females and 18 males showing clear dominance of females with a male to female ratio of 1:2.1. Mean age of patients remained 21.18±6.81. Computed tomography (CT) scan and ultrasound remained the most useful in diagnosis of abdominal TB cases and helped in establishing diagnosis of 26 (46.4%) and 25 (44.6%) case respectively. Most of the patients (62.5%) had excellent treatment compliance, good compliance was found to be in (16.1%) patients however few patients (14.3%) showed bad compliance.

Conclusion: Multivariate approach combining clinical presentation, laboratory findings, radiological and pathological features of patients may help prompt diagnosis while good treatment compliance was observed resulted in good treatment outcomes in present study.

Keywords: Extra-pulmonary TB, Peritoneal TB, Abdominal Lymph Nodes, Ascetic TB.

INTRODUCTION

Tuberculosis (TB) has been remained a highest global concern from few decades. It is a chronic granulomatous illness triggered by *mycobacterium tuberculosis complex* (MTBC). Although causative agent has been discovered long ago in 1882 but control of disease remained challenge world-wide. According to World Health Organization (WHO), in Pakistan the incidence of TB remained 268/100000 with death rate of 23/100000 in year 2016 and ranked the country at 5th highest burden territory[1]. Pulmonary TB is most commonly present that involves the lungs however organism may affect any part of the body other than lungs to cause extra-pulmonary TB[2]. Global burden of extra-pulmonary TB is 15% while 24% in Eastern Mediterranean Region including Pakistan[1].

Abdominal TB is a less common disease but accounts for a considerable health issue in developing countries. Abdominal TB has been ranked at 6th frequent position amongst extra-pulmonary involvement sites causing significant morbidity and mortality. Transmission of MTBC to abdomen is reported be via hematogenous route, ingestion of infected sputum, directly from lymph nodes and fallopian tubes[2-4]. Clinical presentations of abdominal TB are variable and may impersonator of other condition which results in considerable delay in diagnosis[5]. A high degree

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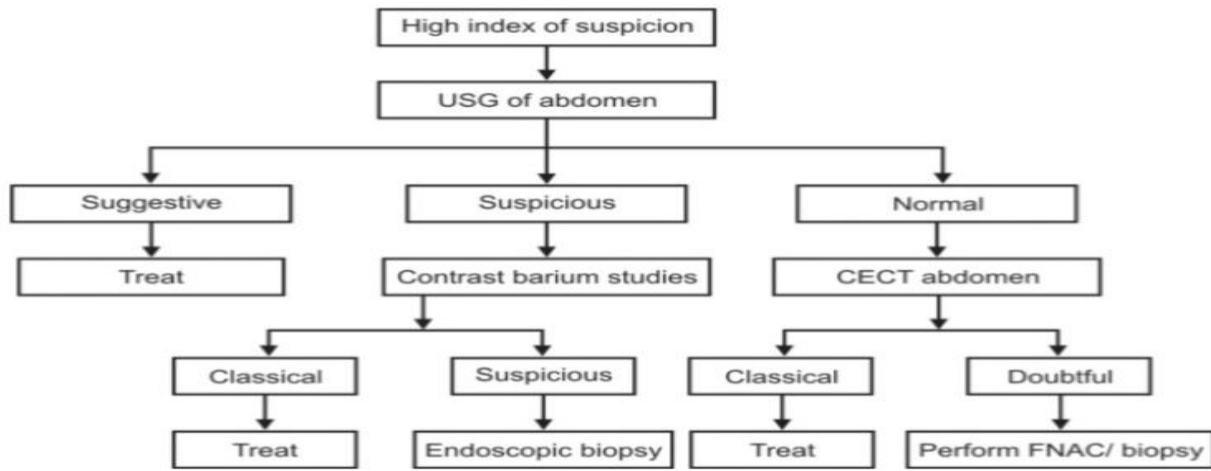[1]SR Pulmonology, K.E. Medical University, Lahore
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of suspicion on the other hand may be helpful in early diagnosis[4].

Abdomen itself contains diverse structure which involves few vital organs. Mainly abdominal TB can infect any part of gastrointestinal tract, peritoneum e.g. ascites, lymph nodes, liver, spleen and pancreas etc[5]. Manifestations of abdominal TB include tubercular lymphadenitis, peritonitis, hepatosplenic and pancreatic TB respectively. Though disease may appear at any age conversely young adults are more commonly involve[6]. Peritoneal and nodal forms of TB are most common among children instead of intestinal tuberculosis[7]. Disease presentation vary person to person and remains asymptomatic sometimes. Around one third of patients present conventional symptoms like fever, fatigue, anorexia, weight loss, night sweats and weakness while local symptoms are presented according to site involved[5].

Variety of approaches based on clinical signs, radiological, laboratory methods including bacteriology and histopathology are referred for diagnosis but none is characterized as gold standard. An algorithmic approach has been supposed[5] and presented as flow chart in Diagram I.

Since variety of organs and multiple sites are present in the abdomen which may be affected by MTBC therefore diagnosis and management of diverse structures become difficult at times. Moreover there are limitations to declare the patient as cure from TB due unavailability of follow up tests during and after treatment. Keeping in view this study has been designed to observe the diagnostic approaches and treatment outcome of variety of abdominal TB patients in tertiary care settings.

Picture I: Flow Chart for the Management of Abdominal TB Cases[5]

METHODOLOGY

This descriptive observational study was carried outpatient Department of Pulmonology, King Edward Medical University, Mayo Hospital Lahore and in Sheikh Zayed Hospital Rahim Yar Khan during January 2015 to December 2015. After taking the consent from patients of age 15 years and above and both gendersthat were diagnosed for abdominal TB and referred to Department of TB and Pulmonology for seeking treatment were interviewed. A pre designed questionnaire was used to take demographic information and history. Patient's files were observed to see the approach used for diagnosis of abdominal TB. Patients were further followed up until treatment completion and investigations if done at the end were also noted.

Data was entered and analyzed in SPSS version 20.0. Qualitative variables like gender, treatment status, types of tests were presented in frequency and percentage. Qualitative variables like age were presented in mean ± standard deviation (SD).

RESULTS

A total of 56 patients were recruited for present study comprising 38 females and 18 males showing clear dominance of females with a male to female ratio of 1:2.1.

Table 1 shows the demographic characteristics and clinical presentation of patients in gender-wise distribution.

Abdominal lymph node TB remained predominant followed by peritoneal and intestinal TB. Computed tomography (CT) scan and ultrasound remained the most useful in diagnosis of abdominal TB cases and helped in establishing diagnosis of 26 (46.4%) and 25 (44.6%) case respectively. Histopathology helped in diagnosis of 12 (21.4%) cases while magnetic resonance imaging helped in diagnosis of only 8(14.3%) cases as shown in table 2.

Response to anti tubercular treatment was considered as gold standard in present study. Most of the patients (62.5%) had excellent treatment compliance which was considered for the patients who took their monthly visit well afore the given time and never missed their daily dose of medicine. Good compliance was found to be in (16.1%) patients which was categorized for the patients mostly took the monthly medicine at same day or next day of given time and missed medicine once to thrice during tenure of treatment. Few patients (14.3%) showed bad compliance and did never reached to take medicine on given time and missed medicine for more than one day every month. Two patients were categorized as failure and referred for further investigation while 2 patients defaulted after four months of treatment.

Table 1: Characteristics and Clinical Presentation of Patients in Gender-wise Distribution (N=56)

Characteristics		Male (n=18)	Female (n=38)	Total
Mean Age		21.89±4.38	20.84±7.74	21.18±6.81
Age Range	15-20	8 (44.5)	26 (68.4)	34 (60.7)
	21-25	6 (33.3)	6 (15.8)	12 (21.4)
	26-30	4 (22.2)	2 (5.3)	6 (10.7)
	≥31	-	4 (10.5)	4 (7.2)
Mean Weight		45.22±6.63	45.79±9.08	45.61±8.31
Sign and Symptoms	Abdominal Pain	18 (100)	38 (100)	56 (100)
	Fever	16 (88.9)	35 (92.1)	51 (91.1)
	Anorexia	15 (83.4)	33 (86.4)	48 (85.7)
	Fatigue	12 (66.7)	29 (76.3)	41 (73.2)
	Weight loss	2 (11.1)	5 (13.2)	7 (12.5)
	Nausea	2 (11.1)	7 (18.4)	9 (16.1)

Table 2: Distribution of Types of Abdominal TB and Diagnostic Approach Used (N=56)

Type/Site of TB	Reported Cases		Diagnostic Approach Used			
	N	%	Histo/Cyto*	Ultrasound	MRI**	***CT
Abdominal Lymph Nodes	15	26.7	6	-	7	8
Peritoneal TB	12	21.4	-	-	-	12
Small Intestinal TB	11	19.6	4	8	1	2
Large Intestinal TB	8	14.3	2	8	-	1
Abdominal Ascetic TB	6	10.7	-	6	1	-
Pelvic Ascetic TB	4	7.2	-	4	-	2

*Histopathology and/or Cytology, **Magnetic Resonance Imaging, ***Computed Tomography Scan

Table 3: Treatment Outcome of Abdominal TB Patients

Type/Site of TB	Treatment Compliance n(%)			Defaulter n(%)	Failure n(%)	Total
	Excellent	Good	Poor			
Abdominal Lymph Nodes	11(73.3)	2(13.3)	1(6.7)	1(6.7)	-	15
Peritoneal TB	8(66.6)	2(16.7)	2(16.7)	-	-	12
Small Intestinal TB	6(54.5)	3(27.3)	1(9.1)	-	1(9.1)	11
Large Intestinal TB	5(62.5)	1(12.5)	1(12.5)	1(12.5)	-	8
Abdominal Ascetic TB	3(50.0)	1(16.7)	1(16.7)	-	1(16.7)	6
Pelvic Ascetic TB	2(50.0)	-	2 (50)	-	-	4
Total	35(62.5)	9(16.1)	8(14.3)	2(3.5)	2(3.5)	56

DISCUSSION

Diagnosis of extra-pulmonary TB has been remained a challenge particularly abdominal types where validation of disease through symptoms and physical findings do not support to establish findings, hence delay in initiation of treatment may lead to high morbidity and mortality[8]. Nonspecific clinical presentations like abdominal discomfort, nausea/vomiting, weight loss and fever must also be taken in account in such cases[9]. Clinical judgment of abdominal TB is difficult because of scarce number of cases further sub classification makes it more uncommon with vague symptomatology leads to elusive diagnosis. Peritoneal TB e.g., in present study only consist of 21.4% cases and computed tomography was the basis of final diagnosis. A case study of peritoneal TB concluded that combination of radiologic, microbiologic, endoscopic and histo-pathological examination in combination can achieve diagnostic accuracy which ultimately prevents mismanagement[10].

Ultrasound has played major role in diagnosis of ascetic TB in this study however an earlier study has emphasized the ultrasound guided aspiration of ascetic fluid to proceed for polymerase chain reaction as reliable method[11]. Similarly intestinal TB in present study is diagnosed using varied type of investigations either alone or in combination of histo/cyto pathological examination of specimens, ultrasound, CT scan and magnetic resonance imaging techniques. A recent study also posed diagnostic dilemma of intestinal TB even in modern medical era and due to nonspecific laboratory and clinical findings, hence proposed combination of such technologies as a key for diagnosis of intestinal TB[12].

Multivariate approach was observed for diagnosis of abdominal lymph nodes TB in present study in which histopathology, magnetic resonance imaging and CT scan were used for final decision. As abdominal lymph nodes are difficult to differentiate from lymphomas therefore a study has proposed contrast enhanced CT scan for differentiation of tuberculosis and untreated lymphomas of abdomen[13]. Despite radiological and clinical findings correlation with laboratory findings like hemoglobin level, erythrocyte sedimentation rate, focal occult blood and C-reactive protein are also important and enhance the diagnostic approach of the physician[12] are lacking in present study.

Good treatment compliance was observed among patients in present study turned in good treat outcomes. Study population in current study was younger with mean age of 21.18±6.81 years and most of the patients (60.7%) lie in age group of 15-20 years of age. These findings are in accordance with studies that reported the high prevalence of abdominal TB among younger population[5] however not in agreement with previous study from same settings that reported a bit higher mean age of 26.55±14.9[14]. Male to female ratio of 1:2.1 in present study is in accordance with study that report male to female ratio of 1:2.7[14]. Prevalence of clinical manifestations like fever, fatigue, anorexia, weight loss and nausea are in agreement with previous study[2] undertaken in 2015 while not in agreement with more recent study[12].

In conclusion National TB Control Program, Pakistan remained successful to meet the major challenges in diagnosis and treatment of TB and drug resistant TB with reference to pulmonary tuberculosis[15]. Extra-pulmonary tuberculosis is somewhat neglected as of opinion in current study. Diagnosis of abdominal TB still difficult and dilemma for physicians as well as TB control program in this modern era of science and technology. Multivariate approach combining clinical presentation, laboratory findings, radiological and pathological features of patients may help prompt diagnosis while good treatment compliance was observed resulted in good treatment outcomes in present study.

REFERENCES

1. World Health Organization. Global TB Report 2017. (Accessed on 19th May 2018) Available from URL:[http://apps.who.int/iris/bitstream/10665/259366/1/9789241565516-eng.pdf?ua=1]
2. Awasthi S, Saxena M, Ahmad F, Kumar A, Dutta S. Abdominal tuberculosis: a diagnostic dilemma. J Clin Diagnostic Res. 2015;9(5):EC01.

3. Wadhwa N, Agarwal S, Mishra K. Reappraisal of abdominal tuberculosis. J Indian Med Assoc. 2004;102(1):31-2.
4. Chugh SN, Jain VI. Abdominal Tuberculosis—Current Concepts in Diagnosis and Management. Association of Physician of India. 2007:601-8.
5. PedaVeerraju E. Abdominal tuberculosis. In: Satya Sri S, editor. Textbook of Pulmonary and Extrapulmonary Tuberculosis. 3rd ed. New Delhi: Interprint; 1998. pp.250-52.
6. Kapoor VK. Abdominal tuberculosis. Postgrad Med J 1998;74(874):459-67.
7. Kapoor VK. Abdominal tuberculosis; the Indian Contribution. In J Gastroenterology 1998;17(4):141-7.
8. Rasheed S, Zinicola R, Watson D, Bajwa A, McDonald PJ. Intra-abdominal and gastrointestinal tuberculosis. Colorectal Dis. 2007;9(9):773-8.
9. Khan R, Abid S, Jafri W, Abbas Z, Hameed K, Ahmad Z. Diagnostic dilemma of abdominal tuberculosis in non-HIV patients: an ongoing challenge for physicians. World J Gastroenterol. 2006;12(39):6371-5.
10. Karanikas M, Porpodis K, Zarogoulidis P, Mitrakas A, Touzopoulos P, Lyratzopoulos N, Kouklakis G, Courcoutsakis N, Polychronidis A. Tuberculosis in the peritoneum: not too rare after all. Case Rep Gastroenterol. 2012;6(2):369-74.
11. Uzunkoy A, Harma M, Harma M. Diagnosis of abdominal tuberculosis: experience from 11 cases and review of the literature. World J Gastroenterol. 2004;10(24):3647-9.
12. Shi XC, Zhang LF, Zhang YQ, Liu XQ, Fei GJ. Clinical and laboratory diagnosis of intestinal tuberculosis. Chin Med J. 2016;129(11):1330-3.
13. Yang ZG, Min PQ, Sone S, He ZY, Liao ZY, Zhou XP, Yang GQ, Silverman PM. Tuberculosis versus lymphomas in the abdominal lymph nodes: evaluation with contrast-enhanced CT. Am J Roentgeno. 1999;172(3):619-23.
14. Rahman M, Shahid SA, Ahmad S, Imran M. Role of Fine Needle Aspiration Cytology And Histopathology in Diagnosis of Cervical Lymph Node Tuberculosis. IOSR-JDMS. 2017;16(2):82-5.
15. Munir MK, Rehman S, Iqbal R. Meeting the Challenge, Making a Difference: Multidrug Resistance Tuberculosis in Pakistan. Pak J Med Res. 2018;57(1):1-2.