Original Article

Radiological Evaluation of Chest in Abdominal Tuberculosis

Radiology Section

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ABSTRACT

Aim: To evaluate the chest x-ray in all non-HIV patients with abdominal tuberculosis.

Methods: Total 161 patients were studied who were retrospectively diagnosed as abdominal tuberculosis based on clinical examination and various biochemical, histopathological and radiological investigations . They were analyzed in the Department of Pulmonary Medicine of a tertiary medical centre during the period May 2005 to April 2010. All patients with abdominal tuberculosis were reviewed with x-ray chest both PA and Lateral view.

Results: Total 161 patients were studied with x-ray chest PA and lateral view. In 63 cases (39.13%) there were no radiological abnormalities and 98 cases (60.87%) showed radiological abnormalities of which 49 cases (30.43%) had features consistent with old lesion and 49 cases (30.43%) had features of active lesions. Commonest old lesion was pulmonary fibrosis found in 21cases (13.04%) of which majority (80.95%) were solitary. Pleural thickening was found in 9 cases (5.59%), calcification of pleura in 8 cases (4.97%) and mostly in the left side. Calcified hilar lymph node found in 2 cases (1.24%) and combination group under old lesion seen in 9 cases (5.59%).Commonest active lesion was pulmonary infiltrate seen in 25 cases (15.52 %) and majority (80%) were solitary. Pleural effusion found in 8 patients (4.97%) and was more common in the right side. Miliary opacities were found in 2 cases (1.24%). Isolated hilar and paratracheal lymphadenopathy were found in 1case (0.62%) and 2 cases respectively. Mediastinal widening was found in 2 cases (1.24%), cavitary lesion seen in 3 cases (1.86%) and all were found in upper zone and combination group with active lesions observed in 6 cases(3.72%).

Conclusion: In our study ,more than 60% cases showed radiological abnormalities of chest. It was equal in number both for old lesion and active lesion. Pulmonary fibrosis was the commonest old lesion whereas pulmonary infiltrate was the commonest radiological abnormalities among active lesion .Diagnosis of abdominal tuberculosis often poses a challenge to the physicians. High degree of clinical suspicion is required and x-ray chest often helps to diagnose these cases.

Key Words: Abdominal tuberculosis, Radiology of chest, Abdomen, Pulmonary fibrosis

INTRODUCTION

Tuberculosis of abdomen is not so uncommon in India. Even with improved medical services and easy availability of anti-tubercular drugs incidence and severity of abdominal tuberculosis is expected to increase with increasing incidence of HIV infection. Tuberculosis may affect any part of abdomen i.e, gastrointestinasl tract, peritoneum and pancreatobiliary system. Extrapulmonary tuberculosis accounts for about 10-12% of total number of cases of tuberculosis of which 11-16% affect the abdomen. Abdominal tuberculosis may be primary or secondary due to reactivation of abdominal foci. Abdominal tuberculosis may present as intestinal, peritoneal or mesenteric lymph node or combination of these. Diagnosis of abdominal tuberculosis is very difficult because of vague and non specific clinical presentation. Imaging like ultrasound, barium x-ray and CT scan of abdomen and Mantoux test have only supportive value. Many of these investigation facilities are not widely available in remote corners of India. Moreover high cost and facility for invasive procedures for obtaining tissue for histopathological examination and culture for mycobacterium are neither affordable nor available in such areas. In some cases trial with anti-tubercular drugs are given which may cause delay in the diagnosis of other diseases which mimic abdominal tuberculosis e,g crohn's disease, lymphoma, malignancy of abdominal organs. Therefore diagnosis of abdominal tuberculosis is an on going challenge to the physician especially in countries with limited resource. A chest x-ray may help to give the clue to the diagnosis of abdominal tuberculosis.

MATERIALS AND METHODS

This was a retrospective analysis over 161 patients who attended the out patient and in patient Department of Pulmonary Medicine of Nilratan Sircar Medical college, one of the tertiary medical colleges in West Bengal. Diagnosis of abdominal tuberculosis was based on high degree of clinical suspicion. Patients demographic, clinical presentation, family and past history of tuberculosis were evaluated. HIV screening was done. Routine sputum smear for acid fast bacilli (AFB), routine biochemical investigations were done, histopathological review to those patients who were referred from Department of Surgery of same medical college showing tubercular granuloma with or without caseation, radiological features compatible with tuberculosis in barium x-ray of gastrointestinal tract, ultrasonography, CT scan of abdomen, ascitic fluid study for cytological, microbiological, and biochemical examination in selected cases. X-ray chest PA view and Lateral view were evaluated amongst all patients with diagnosed abdominal tuberculosis.

Results: X-ray chest PA and lateral view were reviewed in all 161 patients with abdominal tuberculosis. About one-third of them showed normal chest x-ray. Radiological abnormalities were seen in two-third cases, of which old healed lesions and active lesions

were equally distributed. Commonest old lesion was pulmonary fibrosis. Solitary pulmonary fibrosis was more common in left side. These were predominantly situated in upper zone. Pleural involvement in the form of calcification and thickening was found in relatively small number of cases. Calcified hilar lymph nodes were also found in some cases [Table/Fig-1]

Commonest active lesion was pulmonary infiltrate. Most of which were solitary, upper zonal and right sided. Pleural effusion was seen in small number of cases. Cavities were found in cases all

Old Lesion (N=49)				Upper zone	Mid zone	Lower zone
Pulmonary fibrosis n=21 (13.04%)	Solitary n=17		Right n=5	2	2	1
			Left n=12	7	3	2
	Multiple n=4	Same side n=2	Right n=2			
			Left			
		Both side n=2				
Calcified pleural lesion n=8 (4.97%)			Right n=1			
			Left n=4			
			Both n=3			
Pleural thickening n=9 (5.59%)			Right n=3			
			Left n=6			
Calcified lymph node n=2 (1.24%)	Hilar n=2		Right n=1			
			Left n=1			
Combined group n=9 (5.59%)						

[Table/Fig-1]: Radiological features of x-ray chest in abdominal tuberculosis (a) Old lesions

Active lesion n=49				Upper zone	Mid zone	Lower zone
Pulmonary infiltrate n=25 (15.52%)	Solitary n=20		Right n=12	8	3	1
			Left n=8	4	3	1
	Multiple lesion n=5	Same side n=3	Right n=1			
			Left n=2			
		Both side n=2				
Pleural effusion n=8 (4.97%)		Right n=4				
		Left n=2				
		Both n=2				
Cavitary Lesion n=3 (1.86%)			Right	3		
			Left			
			Both			
Miliary lesion n=2(1.24%)						
Mediastinal widening n=2(1.24%)						
Lymph node enlargement N=3 (1.86%)	Hilar node	Right	1			
		Left	1			
	Para-tracheal node	Right	1			
		Left				
Combined n=6 (3.72%)						

[Table/Fig-2]: Radiological features of active lesion in abdominal tuberculosis b)Active lesions

Name of author	Year of publication	Total cases	Radiological yield (%)	Different out come	
				old lesion (%)	Active lesion (%)
Khan R et al [1]	2006	209	64	59.2	4.8
J Ramesh et al [2]	2007	86	25.57	8.13	17.44
S rai et al [3]	2003	36	27.7	25.7	2
V sing et al [4]	1995	145	20	3.4	16.6
Bansali SK [5]	1978	310	16.4	5.8	10.6
Chong [6]	2005	10	54	36	18
Bhattacharyya S K etal	2011	161	60.87	30.43	30.43

[Table/Fig-3]: Salient radiological out come by different authors

in right upper zone. The other active lesions were miliary shadow in 2 cases, Lymph node enlargement in 3 cases and mediastinal widening in 2 cases [Table/Fig-2].

DISCUSSION

Correlation of roengenography of chest with abdominal tuberculosis has not been documented widely. As in developing countries investigations like CT scan, routine invasive procedure for tissue diagnosis is not freely available at every corner and as most of the abdominal tuberculosis cases are secondary to pulmonary tuberculosis, chest x-ray findings often give clue to the diagnosis. Table/Fig-3 shows a comparison of the findings between various studies including the present one, which shows wide variations of results [1-6]. Rita Sood stated radiography of chest may show evidence of active or healed pulmonary tuberculosis in some patients with abdominal tuberculosis while findings of tuberculous lesions on chest x-ray support the diagnosis of abdominal tuberculosis ,a normal chest x-ray does not rule it out [7].

Maniar et al found radiologic involvement in chest in 44.99% cases. pulmonary infiltrate was found in 62.5% and unilateral was more common than bilateral (71.8% v/s28.2%).Majority involved the mid zone followed by lower zone [8]. In our study pulmonary infiltrate was found in 25 (15.52%)cases ,unilateral lesion was more common 80% v/s 20% than bilateral lesion. Twelve solitary lesion was presented on right side 8 cases was on the left. Majority of solitary lesion was situated in upper zone [12] followed by middle zone [6], lower zone [2].

In our study old lesion suspecting prior pulmonary fibrosis found in 13.04% and recent pulmonary infiltrate found in 15.33% cases. Sharma *et* al studied 70 cases of abdominal tuberculosis and found evidence of active or healed lesions on chest x-ray in 22 cases (46%) [9]. In prakash series of 300 patients none had active pulmonary TB but 39% had evidence of healed TB [10]. Kapoor et al studied 70 cases of abdominal TB and found evidence of active or healed lesions on chest radiograph in 32(46%) [11].

CONCLUSION

Abdominal tuberculosis is a diagnostic challenge. There are several investigations which are either costly or involve invasive procedures which precludes its practicability in remote areas of developing countries. High degree of clinical suspicion is required and x-ray chest is often supplementary for diagnosis of abdominal tuberculosis. While findings of tuberculous lesions on chest x-ray support the diagnosis of abdominal tuberculosis, a normal chest x-ray does not rule it out.

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