International Journal of Innovative Research in Medical Science (IJIRMS)
Volume 07, Issue 07, July 2022,
https://doi.org/10.23958/ijirms/vol07-i07/1451

Original article

Disseminated TB in Immunocompetent Individual: Case Series

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Received 30 June 2022; Accepted 06 July 2022; Published 10 July 2022

Abstract

Introduction: Disseminated tuberculosis (dTB) is a rare disease, affects any organ system and presents mainly in immunocompromised populations. The typical presentation is non-specific, posing a challenge for diagnosis. ***Case series Report:*** This case series of 4 patients an immunocompetent patients presenting with varied signs and symptoms of disseminated TB. Our case series mainly explains how disseminated tuberculosis presents with subtle symptoms and also diagnostic clues which help in day-to-day clinical practice to pick up the diagnosis of disseminated tuberculosis. ***Discussion:*** This case series stands to acknowledge the fact of the presence of disseminated tuberculosis in immunocompetent patients and point out difficulties of diagnosis and the need for physicians to maintain a broad differential including disseminated TB as a possibility from the beginning of assessment. Physicians should be aware of predisposing factors of disseminated TB in patients presenting with non-specific symptoms. They should also acknowledge that TB may present atypically in patients with minimal predisposing factors, rendering the need to further investigate abnormal CXR images despite lab results inconsistent with TB. ***Conclusion:*** Disseminated tuberculosis although a rare disease with varying signs and symptoms, but common in immunocompetent individuals. Hence, a patient diagnosed with one site tuberculosis and immunocompetent patients should also be worked up for disseminated tuberculosis.

Keywords: ***Disseminated tuberculosis; miliary tuberculosis; immunocompetent adult.***

Introduction

Disseminated tuberculosis is defined as concurrent involvement of at least two non-contiguous organ sites of the body, or, involvement of the blood or bone marrow by tuberculosis process, [1-2] one form of disseminated TB, military TB, results from a massive haematogenous dissemination of tubercle bacilli which results in tiny discrete foci size of millet seeds (1-2mm) more or less uniformly distributed in lungs and other viscera [3].

The exact global incidence of disseminated TB is still unclear; however, among immunocompetent adults, it is estimated as accounting for <2% of all cases of TB and up to 20% of all extra pulmonary TB cases [4]. Several aspects of this disorder, including its subtle and nonspecific clinical presentation, constitute barriers to accurate diagnosis.

In patients with disseminated TB there are 2 peaks for age incidence, one involving adolescents and young adults and another later in life among elderly people [3].

In a study conducted by Wang JY et al [2], the peak age for disseminated TB in HIV was, mean age 37.1yrs compared with HIV negative serology disseminated TB was 61.4 yrs and 58.9 yrs with and without other co-morbid conditions.

Although rare, predisposing factors to disseminated TB include elderly patients, individuals with childhood infections, human immunodeficiency virus (HIV), alcohol abuse, diabetes, chronic liver or kidney failure, organ transplant, pharmacological immunosuppressants, pregnancy [4,5].

Although disseminated TB involves almost all organs, most often the involvement is asymptomatic. Clinical manifestations of disseminated TB are protean and can be obscure till late in the disease [6]. 22% of dTB disseminate to the central nervous system (CNS) including meningitis, cerebral tuberculoma, tuberculoma abscess, and thoracic transverse myelopathy, chorid tubercles-2-12 %, hepatic involvement 14-62 % [4,7]. Here we are presenting various manifestations of disseminated TB in immunocompetent individuals.

Materials and Methods

This case series, conducted in Patients After taking informed consent) admitted in ESIC & PGIMSR, Rajajinagar, Bangalore from Jan 2022 to May 2022.

Case Report

Case 1

A 39-year-old female presented to OPD with a History of distension of the abdomen since 2 months, discharge from umbilicus since 1 month, dyspnea on exertion since 1 month. She is k/c/o T2 DM & HTN. No other significant Positive or Negative history. O/E: Pulse-86bm, Bp-150/90mmhg, SPo2-98% RA, RR-16 cycles per minute. Respiratory system examination- inspection-normal, percussion-stony dullness and on auscultation reduced breath sound in (R) infrascapular, infraaxillary area. Cardiovascular system examination -S1 S2 heard, No Murmur. CNS examination -No neurological deficit

P/A- soft, Umbilicus everted, uniformly distended, Shifting dullness present

Investigation -in Table-1. Chest X-rays showed ® pleural effusion, Ultrasound abdomen showed - moderate ascites. CECT (contrast enhanced computed tomography) Thorax showed- mediastina & hilar Lymphadenopathy with necrosis, ® Moderate Pleural effusion. CECT abdomen showed - moderate ascites, Omental thickening, Lymphadenopathy in perihepatic, paraoitic region with early necrosis. Ascitec fluid analysis: color -cloudy, protein-5.2mg/dl, Albumin 8 mg/dl. ADA-36, SAAG-0.7g/dl, cells-1800c/m, all cells are lymphocytes, amylase-74 u/l, lipase- 23.4 u/l. Pleural fluid analysis: Sugar-136mg/dl, Protein 5.5mg/dl, LDH-322mg/dl, cell-1050 c/mm3, Neutrophils-5%, lympocytes-95%.

From the above findings, patients were diagnosed with abdominal TB and pleural TB i.e. disseminated TB and was started on ATT (anti-tubercular treatment) as per RNTCP (Revised National Tuberculosis Program) guidelines.

Table -1

Investigation	Case 1	Case 2	Case 3	Case 4
Hb (mg/dl)	11.4	11.6	8.0	10.8
TC c/mm^3	4420	12,600	14,000	11,200
PLC c/mm^3	3.93	5.26	1.68L	1.8L
RBS (mg/dl)	230	160mg/Dl	120	110
Blood urea (mg/dl)	143	17.5	31.5	25
S. Creatinine (mg/dl)	0.6	0.8	0.9	1.0
Total Bilirubin (mg/dl)	0.6	2.0mg/dl	1.0	0.6
Direct (mg/dl)	0.3	0.9	0.4	0.3
Indirect (mg/dl)	0.3	1.1	0.6	0.3
Indirect (mg/dl)	0.3	1.1	0.6	0.3
AST u/l	138	229	34	25
ALT u/l	9	97	36	26
GGT u/l	121	240	40	21
S Albumin (mg/dl)	4.2	2.89	3.6	3.5
ESR mm/Hr	65	80	95	76
Mantoux test	Negative	ND*	ND	ND
Na (mEq/L)	138	116	140	135
K (mEq/L)	4.4	3.6	5.1	3.6
Cl (mEq/L)	106	102	105	102

*ND- not done

Case 2

A 53-year male presented with H/O (History Of) Cough with sputum since 2 months, loss of appetite since 2 months, fever since 2 months. No H/O DM, HTN, TB in the past. No significant family history. Patients give H/O smoking beedi from past 30yrs. O/E: pule-72bm. BP-90/60mmlt9, SPO-96% RA, RR-18cpm. Respiratory system examination -tubular type of bronchial breathing present in ® infraclaviculcer supraclaviculas & upper interscapular area with crepitation (Inspiratory) with post – tussive suction present. Cardiovascular system examination -S, S2 heard no murmur. The CNS examination -patient is drowsy, arousable with painful stimuli, upper limb & lower limb- Normal tone & Power. Abdomen examination - hepatomegaly present 3 cm below coastal region.

Investigation: Table 1
Chest x-ray- should ® upper lobe fibrosis with cavity

The USG abdomen showed - 3-5 nodules of liver measuring 3-4 mm in size and a rounded lesion, suggestive of granuloma.

CECT- abdomen showed 5-6 hypo dense lesion of 6-8 mm in diameter with necrosis, no omental thickening, Mild ascites present.

His sputum AFB (Acid-Fast Bacillus) was positive. The patient was diagnosed with disseminated TB (pulmonary TB and Tubercular Granuloma in Liver) and was started on ATT as per RNTCP guidelines.

Case 3

A 60yr old male came with a history of vomiting for 2 days, H/O abdominal pain since 2 days, H/O loss of appetite since 2 months, H/O weight loss since 15 days. H/O fever since 15 days. No H/O DM, HTN, TB in past.

O/E- Pulse-116bpm, BP-120/70 mmHg, SPO2-94% under room air, RR-20 cycles per minute.

RS-Norma; vesicular breath sound heard, No added sound, Cardiovascular system examination -S1 S2 heard no murmur, CNSexamination -patient is conscious oriental, Abdomen examination- guarding (+) rigidity, diffuse tenderness (+)

Investigation: Table-1
USG-abdomen showed mild free fluid in the abdomen, sub-acute intestinal obstruction. The patient was taken for laparotomy- 5 cm perforation in the stomach was seen, a modified graham's repair done and they also observed 2-3 mm whitish patches all over the omentum, peritoneum. The biopsy from the lesion was taken and sent for HPE. The chest x-ray showed- B/L diffuse 2-3 mm nodule suggestive of military TB. HPE report from abdomen showed caseating granuloma with lymphocytes suggestive of tuberculosis. Patients had dessiminated in the form of military TB in X-ray and military TB in Abdomen. Patient received standard care of treatment according to hospital protocol and patients was started on ATT as per RNTCP guidelines.

Case 4

A 24 yr. female presented with history of fever since 1 month, difficulty walking since 7 days, loss of weight since 1 month, back ache since 1 month, No H/O DM, HTN, TB in patient, No significant family history H/O seizures 1 episode, GTCS type.

O/E Pule - 80bpm, Spo2-98% RA BP-110/70mmhg

RS- Bronchial breath sound over ® mammary, axillary, inter-Scapular area with crepitation and Cardiovascular system examination -S1, S2 normal, No murmur

CNS examination- Conscious, oriented, drowsy, both lower Limb hypotonia present, power- 2/5 at ankle, knee, hip joint, sensory system examination normal, Gibbous present over lower thoracic vertebra.

MRI- brain contrast showed- basal exudates with meningitis

MRI- Spine showed T8, T9, T10, vertebra shows caseation with an anterior subligamental abscess

Chest xray ® middle lobe fibrosis with cavity

The patient has spine TB and Pulmonary TB, hence diagnosed with disseminated TB and was started on ATT as per RNTCP guidelines.

Discussion

Disseminated tuberculosis (dTB) is an important health issue resulting from the hematogenous spread of Mycobacterium tuberculosis, and is associated with a globally significant burden of morbidity and mortality. Diagnosis of dTB can be challenging due to nonspecific clinical findings [8]. Our study aimed to evaluate the characteristics of dTB patients in our institution. Our case series of 4 dTB patients represents both the young, middle aged and elderly age groups. Young patients (case 4) had no risk factor, middle aged women (case 1) had type 2 DM and one elderly male (case 2) had his BMI-19.9 kg/m^2. In the case, no 3 male patients had no risk factor. Common symptoms among 4 are fever, generalized weakness with loss of appetite. In various multicentric studies conducted [11-15], the majority of patients had fever, fatigue, anorexia, weight loss, night sweat present in 100, 90,84,66,65 percentage of patients respectively, hence clinical presentation of disseminated TB is highly variable and usually includes sub-acute or chronic constitutional symptoms and clinical pictures ranging from anorexia and pyrexia of unknown origin to even multiorgan failure that reflects the underlying organ involved.

In our case series, all 4 patients had prolonged symptoms. In a study conducted by Khan FY et al [11], the duration of symptoms before the diagnosis was variable; patients may experience progressive symptoms and signs over days to weeks or occasionally over several months. Therefore, the diagnosis of this disease is generally difficult and more than 50% of patients usually delay seeking medical help for >1 month [11]. All 4 patients had raised ESR. None of the 4 patients had past history of tuberculosis or a family history of tuberculosis. All 4 belong to an upper middle-class family.

All 4 patients had evidence of haematogenous spread of tubercular bacilli, case 1 had pulmonary and abdominal TB, case2 had pulmonary and hepatic TB, case 3 had military TB with peritoneal TB, case 4 had pulmonary, meningeal and spine TB. In study conducted by Mert et al.[12] involvement of Hepatic, Spleen, CNS, pleural, choroid, ascites, skin - 20, 19, 17.5, 18, 7.6,0,1.5% respectively. All patients were started on ATT according to RNTCP guidelines and under follow-up.

The organ involvement in dTB varies greatly depending on the geographical region. Yang et al.[9] have suggested that the skeletal system and joints were involved more commonly in EPTB, while Noert jojo et al.[10] have reported that the genitourinary system was more frequently affected.

Conclusion

From the above case series we would like to conclude that disseminated tuberculosis presents a severe form of EPTB (extra pulmonary TB) and requires exclusive care as well as a specific approach even to patients who don't have comorbid diseases like HIV infection, showing disseminated tb is not an uncommon disease in an immunocompetant individual and hence there should be a high index of suspicion even in an immunocompentant patients so that there will be an early evaluation, diagnosis and treatment of disseminated TB. Larger and multicenter studies on dTB are needed for further evaluation of characteristics of patients in the best way.

Ethical part

A written informed consent was taken from patients.

List of abbreviations

dTB: Disseminated Tuberculosis
TB: Tuberculosis
EPTB: Extra-Pulmonary Tuberculosis
HIV: human immunodeficiency virus
ATT: Anti-Tubercular Treatment
RNTCP: Revised National Tuberculosis Control Program
AFB: Acid-Fast Bacillus

Data Availability

Not applicable.

Conflict of Interest

The author declares that there is no conflict of interest regarding the publication of the article.

Sources of Funding

The research work did not receive any specific grant from any funding agencies.

Authors' contributions

LV, wrote the case report, SS, analyzed and organized tables, MT, reviewed the literature. All 4 authors contributed in writing the discussion and finalize the manuscript.

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