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Patterns, trends and treatment outcomes of extra-pulmonary tuberculosis in Sohag, Upper Egypt



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ABSTRACT

Objective: Tuberculosis (TB) is one of the main health issues in Egypt. Nationwide collective data on the current trends of infection are scarce. The aim of the study was to evaluate the patterns and trends of extrapulmonary tuberculosis (EPTB) cases in Sohag, Upper Egypt.

Methods: Cross-sectional study involving a retrospective review of all TB cases registered as extrapulmonary TB (EPTB) from 2010 to 2014, the age and sex of the patients and the categories and types of EPTB registered their treatment outcomes.

Results: From 2010 to 2014, 500 patients were registered with EPTB, of whom 36.6% were male, and 85% were new EPTB cases. TB lymph node enlargement and pleural effusion were the two most common types of EPTB, accounting for 58%, followed by spinal/bone, abdominal TB and kidney disease. The overall treatment success rate was 90%, and was generally similar with respect to sex, age and different types of EPTB.

Conclusions: Sohag has a high proportion of patients registered as having EPTB, for whom treatment outcomes are satisfactory. Frequency of severe forms of EPTB is more often in younger ages in lower social economical condition areas.

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Introduction

Tuberculosis now ranks alongside HIV as a leading cause of death worldwide. HIV's death toll in 2014 was estimated at 1.2 million, which included the 0.4 million TB deaths among HIV positive people. Worldwide, 9.6 million people are estimated to have fallen ill with TB in 2014: 5.4 million men, 3.2 million women and 1 million children. Globally, 12% of the 9.6 million new TB cases in 2014 were HIV-positive.

To reduce this burden, detection and treatment gaps must be addressed, funding gaps closed and new tools developed. In 2014, 6 million new cases of TB were reported to WHO, fewer than two-thirds (63%) of the 9.6 million people estimated to have fallen sick with the disease. This means that worldwide, 37% of new cases went undiagnosed or were not reported. The quality of care for people in the latter category is unknown.

Of the 480,000 cases of multidrug-resistant TB (MDR-TB) estimated to have occurred in 2014, only about a quarter of these – 123,000 – were detected and reported.

The most common site for infection with *Mycobacterium tuberculosis* (TB) is the lungs (representing about 51% of UK cases), but dissemination may occur to any part of the body, resulting in extrapulmonary tuberculosis (EPTB). Most common sites include lymph nodes (19%), pleura (7%), the gastrointestinal tract (4%), bone (6%), CNS (3%) and genitourinary system (1%). Disseminated or miliary disease (3% of UK cases) can also affect any organ. EPTB is under-recognized and diagnosis is often delayed, so it is important to appreciate the variety of different organ-specific clinical scenarios with which it may present, as well as the non-specific systemic symptoms of TB, such as fevers, night sweats and weight loss.

The diagnosis of extrapulmonary tuberculosis can be elusive, necessitating a high index of suspicion. Physicians should obtain a thorough history focusing on risk behaviors for human immunodeficiency virus (HIV) infection and tuberculosis. Antituberculous therapy can minimize morbidity and mortality but may need to be initiated empirically. A negative smear for acid-fast bacillus, a lack of granulomas on histopathology, and failure to culture *Mycobacterium tuberculosis* do not exclude the diagnosis. Novel diagnostic

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modalities such as adenosine deaminase levels and polymerase chain reaction can be useful in certain forms of extrapulmonary tuberculosis.

Materials and methods

Study design

This was a cross-sectional study involving a retrospective review of EPTB registers and EPTB treatment cards. Ethical approval for the study was obtained. Ethical consent was taken from hospital scientific Ethical Committee for this study according to Hel-sinki declaration.

Study participants

EPTB refers to a case of TB involving organs other than the lungs, e.g. pleura, lymph nodes, abdomen, genitourinary tract, skin, joints and bones, meninges. Patients with multiple sites of infection are registered as 'disseminated disease'.

All new patients, including those with EPTB, are generally treated with a 6-month regimen consisting of rifampicin throughout (Category I), while patients with recurrent TB are treated with a standardized retreatment regimen (Category II).

The numbers of EPTB patients diagnosed and registered in Sohag were documented between 2010 and 2014. For patients registered with EPTB, detailed information was collected on age, sex, category and type of EPTB and treatment outcomes. Data variables were collected between October and December 2014. The variables included the number of EPTB patients registered between 2010 and 2014, district name, TB Registration Unit, TB registration number (unique), age, sex, type and category of TB, different types of EPTB, TB treatment regimens and TB treatment outcomes.

Statistical analysis

Data was collected and analyzed using SPSS v.17.0 (SPSS Inc, Chicago, IL, USA) and is presented as mean \pm standard deviations. To assess the significance of the differences between groups, *t*-distribution test. A *P* value of <0.05 was considered the threshold for statistical significance.

Results

Characteristics of the study patients

The age distribution revealed that the commonest age range for extrapulmonary TB is (21–30) years and mean age is 34.8 ± 7.1 . Out of the studied cases 183 patients were males (36.6%) and 317 patients were females (63.4%). As regard distribution of cases according to their residence, most of them are from rural areas (68.6%) while (31.4%) of them are from urban areas. As regard smoking history, (34%) of patients are current smokers, (61.8%) of them are goza smokers while (38.2%) are cigarette smokers, (16%) of the patients are ex-smokers while (50%) are nonsmokers. The study included 425 (85%) new cases, while 35 cases (7%) are relapsed and 40 cases (8%) were defaulter cases (Table 1).

Frequency of different types of EPTB

The clinical forms of EPTB in patients included in the study were as follow: TB lymphadenitis (187 cases, 37.4%), TB pleural effusion (106 cases, 21.2%), skeletal TB (90 cases, 18%) which included (75 cases, 15%) that were pott's disease and (5 cases, 1%) were articular TB (3 cases with knee arthritis, 1 case hip arthritis, and 1 case

Table 1

Demographic data of the patients with extrapulmonary tuberculosis (EPTB).

Characteristics	N (%)
<i>Gender</i>	
Male	183(36.6%)
Female	317(63.4%)
<i>Age, yr</i>	
Mean + SD	34.8 \pm 7.1
<i>Age group, years</i>	
0–10	16(3.2%)
11–20	60(12%)
21–30	150(30%)
31–40	98(19.6%)
41–50	91(18.2%)
51–60	50(10%)
≥ 61	35(7%)
<i>Category</i>	
New	425(85%)
Relapsed	35(7%)
Defaulter	40(8%)
<i>Residence</i>	
Urban	157(31.4%)
Rural	343(68.6%)
<i>Smoking</i>	
Current smoker	170(34%)
- Cigarette	65(38.2%)
- Goza	105(61.8%)
Ex-smoker	80(16%)
Non smoker	250(50%)
<i>Treatment outcome</i>	
Completed	390(78%)
Defaulter	40(8%)
Referred	14(2.8%)
Died	9(1.8%)
Failed	12(2.4%)
Relapsed	35(7%)
<i>Methods of diagnosis</i>	
Bacteriological tests	55(11%)
Histopathological diagnosis	340(68%)
Therapeutic test	30(6%)
Clinico-radiological diagnosis	75(15%)

elbow arthritis) and (10 cases, 2%) with extraspinal osteomyelitis (7 cases with rib osteomyelitis and 3 cases with femur osteomyelitis), TB ascites (37 cases, 7.4%), TB enteritis (21 cases, 4.2%), cutaneous TB (10 cases, 2%), genitourinary TB (30 cases, 6%) which included (22 cases, 4.4%) renal TB and (4 cases, 0.8) were male genital TB cases (3 cases TB epididymitis and 1 case testicular TB) and (4 cases, 0.8%) were female genital TB cases (3 cases TB salpingitis, 1 case TB endometritis), CNS TB (10 cases, 2%) which included (7 cases, 1.4%) were TB meningitis and (3 cases, 0.6%) were TB tuberculoma, pericardial effusion (5 cases, 1%), TB mastitis (3 cases, 0.6%), TB laryngitis (1 case, 0.2%) (Fig. 1).

Clinical presentations of the studied cases

The study of clinical presentations of the cases revealed that in TB lymphadenitis (100%) of cases presented by neck (75%) or axillary (25%) swelling and (55%) with weight loss and (40%) with fever. In TB pleural effusion (100%) of cases with chest pain (60% right and 40% left chest pain) and (75%) came with dyspnea while cough present in (15%) of cases. In skeletal TB (100%) of cases with back pain and (20%) of cases came with neurological deficit and (30%) with weight loss. In TB ascites (100%) presented with abdominal distension and (60%) with anorexia. In TB enteritis (100%) with diarrhea and (85%) with anorexia. In (100%) of cutaneous TB cases there was skin lesion (30% was nodule and 70% was ulcer), while in

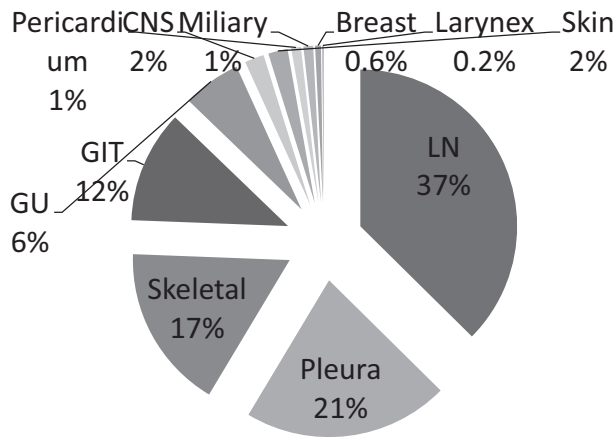


Fig. 1. Frequency of different types of EPTB.

genitourinary TB (65%) of cases have dysuria while (40%) have infertility (5% males and 35% females). In CNS TB (80%) with convulsions and (25%) with neurological deficit and (10%) with coma and (60%) came with fever. In pericardial effusion (100%) of cases with dyspnea and (80%) with chest pain. As regard TB laryngitis (100%) with cough and hemoptysis was in (100%) of patients (Table 2).

Sex and age associated incidence of of extra-pulmonary tuberculosis

The age distribution revealed that the commonest age range for extrapulmonary TB is (21–30) years and mean age is 34.8 ± 7.1. In

the youngest age group, CNS and GIT TB was the most frequently seen type of EPTB. The age composition did not differed among different types of EPTB (P = 0.577). As regard distribution of cases according to their gender, Out of the studied cases 183 patients were males (36.6%) and 317 patients were females (63.4%) P = <0.001). For all types of EPTB, the male: female ratio was 1:2 (Table 3).

Number and proportion of EPTB patients by health facility type

As regard distribution of extrapulmonary TB cases in sohag governorate according to residence we noticed that the highest number of cases in Gerga (108) cases and the lowest number of cases in Saqlta (5) cases (Fig. 2).

Outcomes

By observing the treatment course of the studied cases, we found that 390 (78%) cases have completed the treatment course, While 40 (8%) cases were defaulters, 14 (2.8%) cases were referred to other hospital and 9 (1.8%) cases died before completing the course while 35 (7%) cases are relapsing cases and 12 (2.4%) cases failed to respond to treatment and their smear or culture remains positive after at least 5 months of treatment (Table 1).

Discussion

The study included 500 cases, 183 (36.6%) males and 317 (63.4%) females received antituberculous drugs from chest department of sohag university hospital, sohag chest hospital and sohag district hospitals. So we found that extrapulmonary TB is more

Table 2
Pattern of clinical presentations of the studied cases.

	Lymphadenitis	Pleural effusion	Skeletal	Ascites	Enteritis	Cutaneous	Genitourinary	CNS	Pericardial effusion	Laryngitis	Mastitis
No. of cases	187	106	90	37	21	10	30	10	5	1	3
Percentage of each symptom in each group of extrapulmonary TB%											
Respiratory symptoms:											
Cough	0	15	0	0	0	0	0	0	0	100	0
Haemoptysis	0	0	0	0	0	0	0	0	0	100	0
Dyspnea	0	75	0	0	0	0	0	0	100	0	0
Chest pain		100							100		
-Right	0	60	0	0	0	0	0	0	95	0	0
-Left	0	40	0	0	0	0	0	0	5	0	0
Non respiratory symptoms:											
Night fever	40	60	15	30	70	20	30	60	75	100	80
Anorexia	20	30	5	60	85	0	25	40	50	100	35
Weight loss	55	40	30	50	75	0	10	30	50	0	10
Back pain	0	0	100	0	0	0	0	0	0	0	0
Diarrhea	0	0	0	5	100	0	0	0	0	0	0
Abdominal distension	0	0	0	100	7	0	0	0	0	0	0
Dysuria	0	0	0	0	0	0	65	0	0	0	0
Infertility											
-Male	0	0	0	0	0	0	5	0	0	0	0
-Female	0	0	0	0	0	0	35	0	0	0	0
Swelling											
-Neck	75	0	0	0	0	0	0	0	0	0	0
-Axillary	25	0	0	0	0	0	0	0	0	0	0
-Breast	0	0	0	0	0	0	0	0	0	0	100
Skin lesion											
-Nodule	0	0	0	0	0	30	0	0	0	0	0
-Ulcer	0	0	0	0	0	70	0	0	0	0	0
CNS symptoms											
-convulsions	0	0	0	0	0	0	0	80	0	0	0
-CNS deficit	0	0	20	0	0	0	0	25	0	0	0
-Coma	0	0	0	0	0	0	0	10	0	0	0

Table 3
Relation between types of extrapulmonary TB and age and sex of the study population.

Group	Age		Sex			
	Range	Mean \pm SD	Male		Female	
			No.	%	No.	%
TB lymphadenitis	1–77	39 \pm 12	50	27	137	73
TB pleural effusion	14–75	51.5 \pm 6	62	58	44	42
Skeletal	4–80	42 \pm 11.5	39	43	51	57
Ascites	5–60	32.5 \pm 7.5	11	30	26	70
Enteritis	18–59	38.5 \pm 7	4	19	17	81
Cutaneous	2.5–80	41.25 \pm 11	1	10	9	90
Genitourinary	16–64	40 \pm 10	12	39	18	61
CNS	1–45	23 \pm 13	2	20	8	80
Pericardial effusion	31–38	34.5 \pm 3	1	20	4	80
Laryngitis	57	57	1	100	0	0
Mastitis	30–37	33.5 \pm 2.5	0	0	3	100
Total	1–77	34.8 \pm 7.1	183	36.6	317	63.4
P value	0.557 (NS)		<0.001 (HS)			

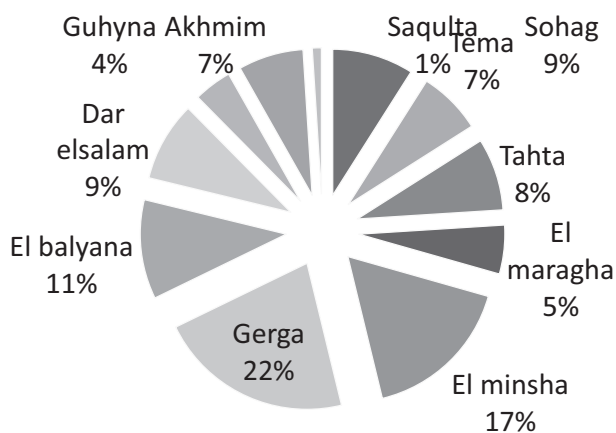


Fig. 2. Number and proportion of EPTB patients by health facility.

common in women. Distribution of cases according to their residence revealed that most of them are from rural areas (68.6%) while (22.4%) of them are from semi urban areas and (9%) are from urban areas and this agrees with [2].

The pattern of their presentation was tuberculous lymphadenitis (187 cases, 37.4%) TB pleural effusion (106 cases, 21.2%), and these results agree with [1].

As shown in this study the commonest presentation was tuberculous lymphadenitis, which represents 187 cases (37.4%) all of them were represented clinically by painless neck or axillary swellings firm in consistency amalgamated without discharging sinuses

and were diagnosed by lymph node biopsy which show characteristic inflammatory cells of tuberculosis like: langhans giant cells, epithelioid cells and lymphocytes and show central caseation, and this result is in agreement with [4]. The second form was tuberculous pleural effusion which included 106 (21.2%) cases, they were represented clinically by dyspnea and chest pain (pleuritic), night fever and some cases came with dry irritating cough. These cases are investigated by chest X-ray and we found that (60%) have right while (40%) have left effusion. And by chest U/S (20%) have septated pleural effusion. And by fluid study the predominant cells were lymphocytes and in some cases Adenosine deaminase (ADA) was done to confirm diagnosis and it was more than 35 u/l and this agrees with [3].

Conclusion

Sohag has a high proportion of patients registered as having EPTB, for whom treatment outcomes are satisfactory. Frequency of severe forms of EPTB is more often in younger ages in lower social economical condition areas.

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