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Extrapulmonary Tuberculosis in Minia Governorate in Years 1985-1990

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Abstract

A study of incidence of extrapulmonary tuberculosis in six years (1985-1990) was carried out in El-Minia Chest Hospital. The number of subjects examined was 16925, of which 2353 (14%) were diagnosed as tuberculosis. Out of the 2353 tuberculous cases, 535 (22.7%) had extrapulmonary lesions. Tuberculosis lymphadenitis accounts for 39.1%. There were 188 cases (35.1%) with pleural effusion, 23 cases (4.3%) with genitourinary tuberculosis, 42 cases, (7.9%) with skeletal tuberculosis, (2.6%) with meningeal tuberculosis, 18 cases (3.4%) with peritoneal tuberculosis, and 20 cases (3.7%) with miliary tuberculosis. From 1985 to 1987, the number of tuberculous cases (pulmonary or extra pulmonary) declined slowly (from 340 to 279, and from 93 to 68 respectively) then increased again in the subsequent 3 years. The proportion of extrapulmonary tuberculosis among all patients with tuberculosis, by age, was found to be highest in youngs and generally to decrease with increasing age, higher among female than male patients and higher among rural than urban natives. Considerable differences in susceptibility to different sites of extrapulmonary tuberculosis by age, sex, region of origin were found. The reasons of these differences remain largely unexplained.

Introduction

TUBERCULOSIS is one of the most wide spread infections known to man, a third of the world population harbour the pathogen mycobacterium tuberculosis, and every year 8 million individuals develop new clinical disease 0.8 million out of the 8 million new cases, have various forms of extrapulmonary tuberculosis[**1**]. Tuberculous meningitis is the major form causing mortality in children.

The burden of tuberculosis is not uniformly distributed throughout the world. It is a serious and significant public health problem in Egypt[**2,3**]. El-Minia Governorate lies in Upper Egypt with a total area 2.262 quare kilometers and total pupulation 2,648,043 according to the 1986 census [**4**]. Information about tuberculosis is lacking.

The aim of the present work is to throw a light on the map of extrapulmonary tuberculosis in El-Minia, an attempt

to reflect the magnitude of tuberculosis problem in this particular locality.

Methodology

The material studied in this work was collected from records of Minia Chest Hospital, Covering a period of 6 years, (1985-1990). The following data were estimated :

1. The total number of subjects examined yearly by the hospital.
2. The total number of pulmonary and extrapulmonary tuberculous cases recorded in the hospital.
3. Patients were divided by major site of disease into pulmonary and eight extrapulmonary categories : lymphatic, pleural, bone and joint, genito-urinary, peritoneal, miliary, meningeal, and all other forms combined. Patients were also stratified by age, sex, occupation and living area of origin.
4. Analysis of the information related to extrapulmonary tuberculous cases, and recorded in this particular hospital.

Results

The total number of subjects recorded in El-Minia Chest Hospital in 6 years (1985 to 1990) was 16925, of which 2353 (14%) were diagnosed as tuberculosis. The recorded number of patients with extrapulmonary T.B. lesions in these 6 years was 535 comprising 3.2% of the total recorded cases. Of 535 extrapulmonary tuberculosis, 209 cases (39.1%) were lymphatic, 188 cases (35.1%) were pleural, 42 cases (7.9%) were bone and joint, 23 cases (4.3%) were genitourinary, 18 cases (3.4%) were peritoneal 20 cases (3.7%) were miliary, 14 cases (2.6%) were meningeal and 21 (3.9%) were all other forms combined, table (3).

335 (63%) of extrapulmonary cases occurred among patients in rural areas and (37%) occurred among urban people inhabitants, table (6). The proportion of bacteriologically confirmed extrapulmonary was 3%.

All extrapulmonary forms combined :

The age group with the largest proportion of extrapulmonary tuberculosis cases was children youger than 15 year of age, table (2).

By living inhabitant, rural natives were most likely to have extrapulmonary tuberculosis, table (6). Female patients were more likely than males to have the lesions, table (2).

Extrapulmonary tuberculosis by site :

Lymphatic System : patients younger than 15 years of age, were the age group most likely to have lymphatic tuberculosis. Patients younger than 45 years of age in all age groups were relatively more likely to have lymphatic tuberculosis than patients in the 45 years and older reference group, but there was no regular pattern by age table (2).

Table (1) : Number of Patients Recorded in 6 Years (1985-1990).

Year	Pulmonary T.B.			Extrapulmonary T.B.			Non-Tuberculosis			Total
	Inpt.	Outpt.	Total	Inpt.	Outpt.	Total	Inpt.	Outpt.	Total	Records
1985	242	98	(340)	55	38	(93)	197	1697	(1894)	2327
1986	220	79	(299)	33	38	(71)	190	1290	(1480)	1855
1987	207	72	(279)	41	27	(68)	240	2169	(2409)	2756
1988	238	75	(313)	58	29	(87)	245	2423	(2668)	3068
1989	234	87	(321)	79	33	(112)	277	2734	(3011)	3444
1990	202	64	(266)	71	33	(104)	265	2845	(3110)	3480
Total	1343	475	(1818)	337	198	(535)	1414	13158	(14572)	16925
Total			(2353)					(14572)		16925
%			14					86		100

Table (2) : Age & Sex Distribution of Tuberculous Cases Recorded in 6 Years (1985-1990).

Age (years)	Extrapulmon. T.B.		Total	Pulmonary T.B. (M & F)	Total
	M	F			
0 - 15	115	158	(273)	(120)	(393)
16 - 30	85	73	(158)	(831)	989
31 - 45	30	56	(86)	(510)	596
> 45	7	11	(18)	(357)	375
Total	237	298	535	1818	2353
Percentage	22.7			77.3	100

Table (3) : Distribution of Extrapulmonary Tuberculous Cases (535) According to the Site.

Site	(Years) 1985	1986	1987	1988	1989	1990	Total No.	%
Lymphatic	25	22	18	34	37	73	209	39.1
Pleural effusion	31	29	16	25	35	52	188	35.1
Skeletal	7	6	5	8	7	9	42	7.9
Genito-urinary	3	1	1	3	5	10	23	4.3
Abdominal	4	2	1	2	2	7	18	3.4
Meningeal	2	1	1	2	3	5	14	2.6
Miliary	3	—	1	2	3	11	20	3.7
Mixed	3	2	1	3	4	8	21	3.9
Total	78	63	44	79	96	175	535	100

Rural natives were more likely to have lymphatic tuberculosis than were urban natives, table (6). Also, female patients were more likely to have lymphatic tuberculosis than were male patients, the trend that lymphatic tuberculosis is rising may be due to inadequate control of bovine tuberculosis[5].

Table (4) : Age & Sex Distribution of (535) Extrapulmonary Tuberculous Cases in 6 Years.

Site	Age & Sex								Total
	0 - 15 ys.		16 - 30 ys.		31 - 45 ys.		> 45 ys.		
	M	F	M	F	M	F	M	F	
Lymphatics	32	31	10	20	2	6	—	—	209
Plecural effusion	3	1	42	11	14	9	—	—	188
Skeletal	4	2	4	2	—	3	2	2	42
Genitourinary	—	—	—	—	—	1	—	—	23
Abdominal	1	—	M	F	—	1	—	—	18
Miliary	—	—	—	—	—	—	—	—	14
Meningeal	—	—	—	—	—	—	—	—	20
Mixed	1	—	2	1	—	1	1	—	21

Table (5) : Distribution of (535) Extrapulmonary Tuberculous Cases According to Occupation.

Occupation	Extrapulmonary		Pulmonary	Total	
	No.	%		No.	%
Farmers	219	41	713	932	40
Housewives	112	21	450	562	23.8
Children	92	17.1	177	269	11
Students	55	10.3	102	157	7
Non-skilled emp.	49	7.3	257	296	12.5
Skilled-emp.	11	2	59	70	2.9
Non-works	7	1.3	60	67	2.8
Total	535	100	1818	2353	100

Table (6) : Distribution of (535) Extrapulmonary T.B. Cases According to Site of Living.

Site of living	Extrapulmonary tuberculosis		Pulmonary tuberculosis	Total	
	No.	%		No.	%
Rural	335	63	1196	1531	65
Urban	200	37	622	822	35
Total	535	100	1818	2353	100

Pleural :

Patients younger than 15 year of age were least likely, and patients 16-30 and 31-45 yr. of age were most likely to have pleural tuberculosis. Rural natives patients were most likely to have pleural tuberculosis, table (6). No significant differences were found between male and female patients.

Genitourinary tuberculosis :

Genitourinary tuberculosis was least likely to occur in children, and increasing more likely to occur with increasing age. Cases among urbans were less likely to be genitourinary than cases among rurals. Female patients were more likely to have genitourinary tuberculosis, than were male patients.

Bone and Joint :

The proportion of cases with bone and joint tuberculosis increased with increasing age. Female patients were more likely to have bone and joint tuberculosis than male patients. No significant differences were found by living region of origin. Trend of skeletal tuberculosis is declining[**6,5**].

Miliary :

Patients younger than 15 or older than 45 yr. of age were more likely to have miliary tuberculosis. Rural natives were more likely to have miliary tuberculosis than were urban natives. No significant differences were found between male and female patients of Minia locality.

Meningeal :

Patients younger than 15 year of age were most likely to have meningeal tuberculosis than were any other age group. Rural natives were the most likely to have meningeal tuberculosis. Female patients were more likely than male patients to have meningeal disease.

Peritoneal :

Rural natives were more likely to have peritoneal tuberculosis than were cases among urban natives. No differences by age, or sex were found.

All Others :

Cases among female patients were more likely to be of any of the other extrapulmonary forms than were cases among male patients. No significant differences were found among other characteristics.

Discussion

The observation of a slow decline then gradual rising in extrapulmonary tuberculosis in El-Minia Governorate over the periods from 1985 to 1987 and from 1988 to 1990 respectively, has eluded attempt to explain the phenomenon satisfactorily, and to give an idea about efficiency of tuberculosis control programmes in this locality.

The present work revealed that extrapulmonary tuberculosis represented 3.2% of total cases recorded in Minia Chest Hospital. In Assiut Dispensary, it represented 0.64-1.64% from 1974 to 1978[**4**] while in Sohag Dispensary, the record was 9.8% in 1976, and 25.9% in 1986[**7**].

In lower Egypt, 15-24% were recorded in Kalifa Dispensary in the period

from 1970 to 1974[**8**]. In the same latter region other workers recorded 12.5% in 1979, and 8.02% in 1980[**9**]. In Sharkia Governorate extrapulmonary tuberculosis recorded 9% in 1989[**10**], and in Menoufya, it recorded 0.18% in 1987, and 0.13%, in 1991[**6**]. The wide differences between these results may be due to differences in efficiency of BCG vaccination, or due to methods of diagnosis.

In developed countries as United States 17.5% of tuberculous cases had an extrapulmonary site recorded as the major site in 1986[**11**].

In the present work tuberculous lymphadenitis was the most common extrapulmonary type representing 39.1% and this in agreement with other workers [**7,9,11,10,12,8**]. While the least common site was the meninges, maybe due to either management of these cases in Fever Hospital, or the patients died before diagnosis. These results are in agreement of Abbas et al[**7**].

The highest age onset of extrapulmonary cases was among age groups 0-15 and 16-30 years, table (2) while the highest incidence was among farmers, children and students, accounted for 41, 17.1, 10.3% respectively table (5).

Increased recorded extrapulmonary cases in Minia Chest Hospital in the period from 1988 to 1990 than previous years table (3), may be due to similar increases in pulmonary tuberculous cases, increases in over-diagnosis, recognised and/or over time of these cases.

In the immunologically competent host, recency of infection is an important factor in determining susceptibility to different forms of extrapulmonary tuberculosis. In an analysis of the occurrence of different forms of tuberculosis by interval between infection and manifestation of the disease, it was found that, different forms of extrapulmonary tuberculosis develop at different intervals after infection[**13**]. Because recency of infection is inextricably linked to age, a distinction can not be made between age and recency of infection in predisposing to extrapulmonary disease. We found large differences in susceptibility by age and sex for different forms of extrapulmonary tuberculosis. By age, on one extreme was the decreasing likelihood of tuberculous lymphadenitis with increasing age, on the other was the increasing likelihood of genitourinary tuberculosis with increasing age.

Tuberculous lymphadenitis particularly intra-thoracic is commonly perceived of as an expression of increased susceptibility, because of immunosupression[**14,15**] or recency of infection coupled with age maturational factors. Conversely, genitourinary tuberculosis is believed to be most often the result of recrudescence of long-standing latent tuberculous foci[**16**].

Pleural tuberculosis is virtually absent in small children. Pleural tuberculosis is generally perceived of as a delayed hypersensitivity reaction to antigens of Mycobacterium tuberculosis[**17**], often leading to sequesteration of antigen-reactive T.lymphocytes into the pleural space[**18**]. It is concivable that the virtual absence of

tuberculous pleurisy in very young schildren might be attributed to a lower sensitivity to tuberculin in that age group[19].

The site of extrapulmonary disease may be determined by the underlying genetic or environmental factors. In the present work, most extrapulmonary cases were born or living in rural regions. In other series the site of the disease varies according to country of origin of patients[11].

The most striking difference in the likelihood of developing extrapulmonary tuberculosis was found between male and female patients with tuberculosis. Among all forms of extrapulmonary tuberculosis, only pleural tuberculosis was equally likely to develop in patients with tuberculosis in both sexes. All other extrapulmonary forms were consistently more likelyl to develop in female than in male patients. The preponderance of tuberculous lymphadenitis among female patients has been noted in a large, detailed review[12]. The investigator noted that the female preponderance was relatively greatest in the 20-24 year old group.

For tuberculosis in general, there are age-dependent differences by sex. Younger female patients with tuberculous infection are more likely, and older infected female patients are less likely to develop tuberculosis than are male patients[8]. This suggests that maturational and endocrine changes may have a role in the risk of development of tuberculosis among infected persons.

Future trends will be impacted by the epidemic of human immuno-deficiency virus (HIV), which has been shown to promote the progression from latent subclinical tuberculous infection to overt clinical tuberculosis[3]. Tuberculosis in patients with AIDS is extrapulmonary in a much larger proportion of cases than in patients without the syndrome[14,15]. Thus accurate estimation of extrapulmonary cases will require assessment of HIV infection. Fourtunately AIDS is still rare in our locality.

In Conclusion :

1. The failure of extrapulmonary tuberculosis to decline, may be partially due to similar rise in pulmonary cases, and partially to differences in susceptibility to extrapulmonary tuberculosis.
2. Rise in both pulmonary and extrapulmonary cases, may be due to rise and spread of primary and secondary resistant strains, badly used antituberculous drugs, or due to infection with atypical mycobacterial strains which are not killed by available antituberculous drugs.
3. El-Minia tuberculosis control programmes need much more efforts to overcome the problem.

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