A STUDY OF TUBERCULOSIS CONTACTS

Pages with reference to book, From 48 To 52

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Abstract

One thousand contacts of 197 index cases over a period of 30 months were examined. 39 were sputum positive while 158 were negative.
Of 912 (88 being defaulters) contacts, 600 (65.78%) were tuberculin positive and 188 (20.61%) had tuberculosis ;154 pulmonary and 34 had cervical adenitis. No other form of extra pulmonary disease was seen. Morbidity was highest in 0-5 age group, and children of 2-3 years group were at greatest risk. Youngest age group lesions were entirely of primary type; post primary lesions increasing with advancing age. Majority of the cases in youngest age group had active disease. Low income had adverse effect on infection and morbidity, while overcrowding and status of sputum positivity did not appear to have any significant effect (JPMA 37 : 48, 1987).

MATERIAL AND METHODS

One thousand family contacts of both sexes and all ages of 197 tuberculosis index cases, who had active disease for varying duration and receiving treatment at the Chest Clinic of Nishtar Hospital, Multan were examined by X-Ray chest and tuberculin test (5 TU) during the trial period. Treatment given was Streptomycin 1 gm, INH 300 mg and Ethambutol 1200 mg daily for 2 months followed by INH and Ethambutol in the same doses for further 16 months. Tuberculin used was RT-23 with Tween-80 and 10mm induration was taken as positive reaction. The contacts were divided into age groups. The contacts in age group 0.5 were further divided in sub-group. Tuberculin reaction was noted and disease classified as primary, post primary, extra thoracic and whether active or inactive.

Types of Lesion

A. Thoracic

Primary:-Simple when component of primary complex was visible. Atypical when abnormalities of bronchopulmonary nodes with unusual features in lungs and segmental when showing collapse, consolidation, obstructive emphysema of a segment or lobe. Pleural when effusion was present.
Post-primary;- Minimal lesion (M.L),
Moderately advanced (M.A) and
Far advanced (F.A).

B.Extrathoracic

When following were involved i.e. lymph nodes, bones and joints, gastrointestinal tract, meninges or urogenital tract.

Activity:, was denoted by the following criteria

When symptoms like cough, fever, sputum and chest pain or physical signs in chest were present with raised ESR, positive sputum and changing shadows in the X-Ray of lungs. Inactivity:- was denoted by absence of the above.
Adverse effect of poor socio-economic condition on morbidity was assessed by observing w'hether overcrowding (four or more persons occupying one room) and/or low income were present.
Contacts of "open" index cases were compared with contacts of "closed" index cases by tuberculin testing and X-Ray chest to detect difference in the degree of infectiousness and morbidity in the two groups by detecting number of cases present with positive tuberculin test and radiological lesion in the lungs.

RESULTS

Nine hundred and twelve contacts (88 were defaulters) of 197 index cases were examined. One hundred and fiftyfour had tuberculosis, 120 pulmonary and 34 extra-pulmonary exclusively cervical adenitis. Maximum number of cases were seen in 0-5 years age group, which declined as the age progressed (Table I).

TABLE – I
Morbidity and Type of Lesion in Contact Cases (All ages).

Sr. No.	Age	Male	Female	Extra thoracic	Thoracic			%age
					Primary	Post-primary	Total	
1.	0-5 Years	132	125	16	49	–	65	24.7
2.	6-10 years	144	117	13	26	3	42	16.1
3.	11-20 years	123	78	2	12	5	19	9.4
4.	21-40 years	122	71	3	7	8	18	9.3
5.	40 +	39	39	–	2	8	10	12.8
	Total	560	440	34	96	24	154	

Further sub-grouping of 0-S age showed that the disease was highest in 2-3 years (Table II).

TABLE - II
Morbidity and Type of Lesion in Contact Cases (0-5 Years).

Sr. No.	Age	Male	Female	Extra thoracic	Thoracic			%age
					Primary	Post-primary	Total	
1.	0-1 year	21	24	–	4	–	4	8.8
2.	1-2 year	21	23	2	10	–	12	27.3
3.	2-3 year	27	41	8	15	–	23	33.8
4.	3-4 year	29	28	3	8	–	11	19.2
5.	4-5 year	34	19	3	12	–	15	28.3
	Total	132	135	16	49	–	65	

Sputum status was not an important factor as both positive and negative sputum showed infectivity rate of 66% in the contacts (Table III).

TABLE – III

Relation of Infection and Morbidity in Contacts of Sputum Positive (Smear) Index Cases.

Type and No. of index cases	Number of contacts examined	Number of contracts re-examined	Defaul-ters	T.T. positive	T.T. Negative	Thoracic	Extra thoracic	Total	Percentage
Sputum (+) 39	253	245	8	163 (66.5%)	82	34	2	36	14.6
Sputum(-) 158	747	667	80	437 (65.5%)	230	79	39	118	17.7
Total	1000	912	88	600	312	113	41	154	

Similarly overcrowding also did not produce any noticeable difference (TableIV),

TABLE–IV

Relation of Social Status (Overcrowding) to Infection and Diseases in Contacts.

Type and No of index cases	Number of contacts examined	Number of contacts re-examined	Defaul-ters	T.T positive	T.T. Negative	Thoracic	Extra thoracic	Total	Percentage
OC 68	394	347	47	228 (65.7%)	119	44	21	65	18.7
Not 129	606	565	41	372 (65.8%)	193	69	20	89	15.7
Total	1000	912	88	600	312	113	41	154	

OC = Overcrowded Not = Not overcrowded

but low income group (upto Rs300/- p.m) showed higher percentage of tuberculin positivity, 67.7% compared to 60.7% amongst middle income group (Rs.500/- 1000/- pm). Higher income group (above Rs.l000/-p.m) showed highest conversion 82.6%, but number is too small to draw any conclusion (Table-V).

TABLE – V

Relation of Social Status (Income Group) to Infection and Active Disease.

Type and No. of index cases	Number of contacts examined	Number of contacts re-examined	Defaulters	T.T positive	T.T. Negative	Thoracic	Extra thoracic	Total	Percentage
Grade-I 133	632	583	49	395 (67.7%)	188	82	14	96	16.46
Grade-II 61	342	306	36	186 (60.7%)	120	44	14	58	18.9
Grade-III 3	26	23	3	19 (82.6%)	4	–	–	–	–
Total 197	1000	912	88	600	312	126	28	154	

Tuberculin positivity increased with advancing age being 24.4% in 0-1 and 75.7% in 40 years and above (Table-VI).

TABLE – VI
Examination of Contacts
Relation of Primary Infection to Active Disease.

Age (in years)	No. of contacts	T.T (+)	Percentage	No. of active disease	Percentage
0–1	45	11	24.4	4	36.3
1–2	44	21	47.7	12	57.9
2–3	68	25	36.8	23	92.0
3–4	57	21	36.7	11	52.0
4–5	53	40	26.4	15	37.5
0–5	267	118	44.2	65	55.0
6–10	261	148	56.7	42	28.4
11–20	201	152	75.6	19	12.6
21–40	196	123	63.0	18	14.7
40 +	78	59	75.7	10	16.95
Total	1000	600		154	

Active disease was maximum in 0-5 years age group being 55%; 2-3 years age group was found the most vulnerable, showing 92% active disease, which decreased with advancing age. Glandular component of the primary disease was found to be most prominent during infancy. In 0-! year age group 3 out of 4 (75%) cases had glandular component. The glandular size decreased during early and

late childhood Table-VII).

TABLE -- VII

Examination of Contacts (0–5 years) Glandular Size.

Age group	Total number of contacts	Lesion detected thoracic/ primary	Size of glandular (+)	(++)	(+++)	Total
0–1	45	4	1	–	3	4
1–2	44	10	–	3	7	10
2–3	68	15	6	5	4	15
3–4	57	8	1	5	2	8
4–5	53	12	10	1	1	12
Total	267	49	17	14	17	49

(+) = Hilar and/or paratracheal glands just visible.
(++) = Between (+) and (+++).
(+++) = Gross enlargement.

DISCUSSION

Manifestation of tuberculosis infection are different in different age groups[1] In late childhood and adolescence, infection resembles adult type whereas in early child-hood the commonest is simple primary. Extent of lymph node lesions have a definite relation to age at which primary infection takes place and also upon degree and frequency of infection[2]. Glandular component is more extensive in infants and young children. Infants when infected 74% developed active disease, decreasing to 60% in[1-5] years age group, which further decreases as the age advances. Extra thoracic disease is more common in infancy, being 46% in 0-1 age group[1] Tuberculous meningitis and miliary tuberculosis occurred befote the end of first year, adult tuberculosis was not seen in 0-1 age group[1] but was encountered more as the age advanced. In the present study 2-3 years appeared as the most vulnerable age, 92% of which when infected developed active disease as opposed to 0-1 year. The incidence decreased with advancing age being 363% at 0-1 and 12.6% amongst 11-20 age groups. This difference

is difficult to explain. Simple primary was seen in 44.6% in 0-5 years, glandular component was more extensive in infancy which decreased as the age advanced. No disseminated tuberculosis was seen and extra thoracic tuberculosis exclusively glandular was highest in 2-3 years rather than infancy. No adult type was seen in 0-5 years but the incidence was 57% at 5-10 years. There was slight increase in morbidity in males, maximum activity was also seen in 2-3 years.

Dingly[3] found high prevalence in poor socio-economic group as compared to general population. In the present study overcrowding does not seem to have any adverse effect,but low income groups-I and II had higher proportion of tuberculin reactors than in general population[4]. This observation is in agreehient with Yad[5] , who also concluded that poverty rather than overcrowding had adverse effect on morbidity.

Grzbowsky[4] and Van Guens et al[6]. reported infectious to contacts hence the importance of isolation and sputum conversion. The present study showed no significant difference in the infectivity of “open” and “close” cases. This conclusion is supported by the findings of Yad[5] pointing to the fact that sputum negative cases should not be ignored in adopting any programme for control of tuberculosis.

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INTRODUCTION

Tuberculosis, both pulmonary and extra pulmonary is a common disease and a major health problem of our country. Many predisposing and precipitating factors are operative in spread of disease caused by Mycobacterium tuberculosis.

Age has an important bearing on the incidence, morbidity and mortality of the disease. The younger age group especially 0-5 years is highly vulnerable to tuberculosis. Type of lesion and activity of disease are peculiar to this age group. Adverse social conditions seem to favour the onslaught and contacts of sputum positive index cases at home, at work or at play, are at considerable risk of infection and active disease.

The aim of this multipurpose study was to elucidate the relationship of disease in tuberculosis contacts in various age groups as to infectivity, type of lesion, and effect if any of poor socioeconomic conditions and over.crowding, as also to compare the infectiousness of sputum positive and sputum negative index cases.