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A Survey of Tuberculosis Cases at Kanti Children's Hospital

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Abstract: One Hundred and Seventy cases of Tuberculosis were admitted in Kanti Children's Hospital during the period of 18 Months (1st Baiskha 2036-30th Aswin 2037), which constituted 4.1% of the Total admission (4049) during the same period. Out of that 66 cases or 38.8% showed Pulmonary tuberculosis 236 cases or 21.15% showed Abdominal tuberculosis, 36 cases or 21.15% showed Tubercular Meningities, 29 cases or 17% showed Glandular Tuberculosis and 3 cases or 1.8.% showed Bone and Joint Tuberculosis.

Key words: *BCG: Mantoux Test; Koch's Abdomen; Malnutrition.*

Introduction :-

Childhood tuberculosis is widely prevalent throughout Nepal specially among the malnourished children. It is one of the leading causes of mortality & morbidity in countries like ours. Though treatment with specific anti-tubercular durgs are available, it is not always easy to diagnose the disease with certainity. The high incidence is probably in the Kathmandu Valley and in towns laying on the main roads and hill trade routes, the people of some of the remoter areas may still be found to have little tuberculosis. A tuberculosis survey of school children of Kathmandu valley done in 1963 has put the infection rate of tuberculosis at 91.3% at the age of 14 years. (1) A tuberculosis survey done at Bhaktapur in 1965 has put the tuberculosis positivity rate at 50.9%. The corresponding figures for the three age group was shown as follows.

0— 4 years	—	20.8%
5—10 years	—	35.3%
11—20 years	—	48.2%

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The active tuberculosis rate was estimated by these workers was 1.0% (2). A tuberculin Survey done in the district of Patan in 1966 showed that in the age group of 10—14 years 44% of the persons had a tuberculin reaction 9mm or less (3). The state of Tuberculosis in the Kathmandu valley in the mid-sixties was not different from the situation existing in Hong Kong in 1952 when a tuberculin survey indicated that 77% in the age group of 7—14 yrs age group are already affected (4). Comparable figures for the rest of the country are vary limited. A Tuberculin survey of Palpa district by Dr. Iwamura during the years 1962—66 showed the relevant positive figures to be:-

Age Group		+ve rate%
0— 4 years	—	19.3%
5—10 years	—	37.6%
11—20 years	—	52.6%

Workers in the Kosi Anchal (Zone) from November 1968 onwards for two years have estimated that the over all incidence of active cases for the whole country to be probably between 3 to 6% (5). Another Group of workers at T.B. Clinic at Dhankuta in 1969 found pulmonary tuberculosis to be 69% of total number of cases (6). A tuberculin survey in the upper Rolwaling valley in 1973 came to the conclusion that there was a comparatively low incidence of tuberculosis in the hills in comparison to the higher incidence in Kathmandu valley (7).

A survey done by D. J. N. Giri in Bhaktapur district in 1976/77 on children without B.C.G. scars had given the under mentioned figures.

under 1 yr	—	4.6%	Tuberculin Positive
1— 4 yrs	—	6.66%	" "
5—14 yrs	—	33.37%	" "

But on the other hand however the tuberculin positive rate in children with B.C.G. Scares are as follows:-

a) All the 11 children in the 1—4 yrs group were still negative
b) A total of 34 out of 99 in 5—14 yrs group were still negative (8)

This leads us to conclude that a substantial number to those given B.C.G. are in fact not being protected at all. The protection offered by B.C.G.

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2036 to 30th Aswin 2037 (Mid April 1979 to Mid Oct. 1980) was done. To make comparison of two years possible, the figure for 6 months of 2037 has been projected to give correct figure of whole year.

As the Kanti Children's Hospital only deals with children up to the age of 14 yrs. from & around Kathmandu valley it is possible that this survey might be slightly biased. It also must be noted that the cases are mainly diagnosed clinically with perhaps X-rays confirmation. According to W.H.O. and International Agency for Tuberculosis this is not strictly correct as one must regard a case of Pulmonary tuberculosis to be only possible when it is bacteriologically confirmed. I believe that this survey does give some idea of the incidence and types of cases seen in the children of Kathmandu valley mainly (10).

Material & Methods :

Cases of tuberculosis infection were seem to fall into five main groups:

1. GLANDULAR:- including cervical, hilar, paratracheal, axillary or inguinal glands. In this group too are the primary complex cases with glands or pleural effusion.
2. ABDOMINAL— either localised or generalised mass with or without a ascites.
3. PULMONARY:— showing mainly infiltration, miliary spread, cavity with or without accompanying glands
4. BONE & JOINTS:- showing involvement of long or short bones or joints.
5. MENINGITIS:— Most of the cases were evaluated on the basis of history or clinical signs. X-ray showed pulmonary involvement in certain number of cases. Lumber puncture has been done in most of the cases except those who died soon after the admission. Cerebrospinal Fluid examination showed in these cases increase protein, lower sugar & increase in the number of cells mainly lymphocytes. Only in one case A.F.B. could be demonstrated from the cobweb

Results

The numbers of cases of Tuberculosis admitted during 1 year & 6 months of study is given below. To make the comparison between two years easier, figure of last 6 months has been projected for twelve month period. A similar exercise has been done with total in patient admissions at Kanti Children's Hospital.

	2036	2037 Projected	Actual six months
Total number of admission	2540	3018	1509
Total number of T.B. Cases	103	132	66
T.B. Cases as % of admission	4.0%	4.3%	4.3%
Total number & deaths/LAMA	342 (161)	408 (186)	204 (93)
Deeaths as % of total admission	13.6%	13.5%	13.5%

Table I comparison of General & Tubercular admission for 2036 and 2037.

Actual number of tubercular cases admitted in the hospital over peroid of 18 months was 170. The breakdown of this figure is given in Table II below.

Type of Tubercular Case	Glandular	Abdominal	Pulmonary	Bone joints	Meningitic
Number of cases	29	36	66	3	36
Percentage of the case Total T.B .cases	17%	21.2%	38.8%	1.8%	21.2%

GLANDULAR

Here, almost all cases presented as cervical adenitis except one which presented with enlargement of Axillary gland with ulcers. One case showed

Tuberculosis of Abdomen where as in one cases there was extensive pulmonary infiltration and the patient died. (X-ray investigation showed plural effussion in 7 cases and Hilar gland involvement in 8 cases. It was found to be slightly more common in male than female.

Total	Male	Female	Age Group 0—1	2—5	6—9	10—14	Result
29	17	12	4	10	10	5	Improved-28 Expired—1

Age, Sex, distribution of Glandular Tuberculosis

2. **ABDOMINAL :-**

Here out of 36 cases 11 cases (30.5%) presented with ascites and 15 cases complained some sort of abdominal symptoms like constipation and diarrhoea or pain abdomen. One case was admitted with subacute intestinal obstruction, who ultimately expaired. 9 cases had pulmonary involvement or glandular enlargement viz. either hilar or para tracheal glandular involvement or effussion. In two cases there was associated Tuberculous Meningitis. In most of the cases Abdomen was slighly doughy on palpation but in five cases mass could be palpated.

Total	Male	Female	Age Group 1—2	2—5	6—9	10—14	Result
36	18	18	1	12	13	10	Improved—24 LAMA—6 Expired—6

Age, Sex, distribution of Abdominal Tuberculosis.

3 **PULMONARY:-**

All X-rays showed A.F.B. infiltration of some sort, of this 20 cases showed advanced bilateral infiltration, (four being with cavities), out of which 5 expired. Another 15 cases showed bilateral infiltration, 12 cases showed consolidation of one lobe or other & 9 cases were miliary. Of all these only two cases had positive sputum & 3 cases gave a previous history of measles & 2 cases

gave a previous history of whooping cough. Marked glandular involvement of either hilar, para-tracheal or mediastinal glands, was seen in 12 cases and associated Koch's abdomen was seen in 5 cases & 3 cases had associated T.B.M.

Total	Male	Female	Age Group 0—1	2—5	6—9	10—14	Result
66	34	32	6	26	24	10	Improved—54 LAMA—5 Expired—7

Age, Sex distribution of Pulmonary Tuberculosis.

Only three cases of Bone & Joint tuberculosis were admitted in the hospital during last 18 months. 2 cases whowed involvement of dorsalvertebra along with para vertebral abscess & one case was in Lumber vertebra.

Total	Male	Female	Age Group 0—1	2—5	6—9	10—14	Result
3	2	0	1	2	0	0	Improved—3

Age & Sex distribution of Bone & Joints tuberculosis.

5. **MENINGITIS:-**

X-ray examination of these tubercular meningitis cases showed that 3 3 had Miliary spread, 8 cases had pulmonary infiltration & 6 cases showed hilar adenitis.

Total	Male	Female	Age—Group 0—1	2—5	6—9	10—14	Result
36	22	14	7	18	8	3	Improved—23 LAMA—4 Expired—9

Age & sex distribution of tubercular Meningitis.

DISCUSSION

It will be seen from the above tables that except for the Glandular & T.B. Meningitis cases, where there is pre-ponderance of males, the other group show a fairly equal distribution of sex & in Bone, Joints Tuberculosis out of 3 cases – were Female & one male.

Cases of tubercular Adenitis or Pleural effussion were more prevalent in the 2—5 years the 6—9 years group. The over all results in these were good, except for the one death, the other were already recovering & were refered to central chest clinic for continuation of treatment.

In the Abdominal Tuberculosis there is also a fairly even age distribution & ths sex distribution was same. 6 cases (16.6%) exipred & other 6 cases left against Medical advice & rest improved & were refered to central chest clinic.

Of the Pulmonary cases 26 cases (39.3%) were in the age group of 2-5 years & 24 cases (36.3%) were in the age group of 6-7 years that is 75% of cases were in the age group of 2-9 years.

As already stated above 30% cases were in advanced state, 22% showed bilateral infiltration & 13.6% showed miliary Tuberculosis of these 7 cases expired (10.6%) & 5 cases (7.5%) left against medical advice.

Of the three bone cases there were two cases of Pott's spine in dorsal vertebra with para vertebral abscess paraparesis with distal sensory impairment & extensor planter responses & one with involvement of lumber vertebra.

Tuberculosis Meningitis is certainly the most serious in that nearly 55% either died or recovered with sequale. The relevant figures are:-

Improved at the time of referal to Chest Clinic	16
Recovered with Sequale	7
Left Against Medical Advice	4
Expired	9

The sequale that are seen commonly were usually hemiplegia or paralysis of one limb or optic atrophy or Hydrocephalous. Four cases who had left against medical advice were considered in died or recovered with sequale as most of these case were in bad condition when the left Hospital.

These figures may on the one hand give a slighly biased view of incidence & type of tuberculosis in Nepal as the cases admited in Kanti Hospital are mainly from Kathmandu valley or from the surrounding area. Except for the tubercular meningitis mortality rate is not that high it may be partly due to the fact that most of the cases once diagnosed & after an initial period of treatment are refered to central chest clinic or other chest clinic in the valley.

It must also be noted that except for the three cases in which the sputum was positive & one case in which tuberculoues bacilli was demonstrated in cobweb; the other diagnosis were based on the clinical history, physical examination, the tuberculin test & the X-ray diagnosis. Problem of diagnosis occurs in children because non Pulmonary tuberculosis is more common in children than in adults (10) this had been borne out by my figure too.

The dissatisfaction with this survey dealing with the cases of tuberculous meningitis was that the diagnosis was on clinical ground & some cerebro spinal fluid findings only such as raised protien, with lower or absent sugar & increased number of cells mainly lymphocytes, clear fluid, cobweb formation & in one case only Tuberculous Bacilli could be demonstrated in cobweb. Evidences of tubercular manifestation elsewhere in the body was helpful. Tubercular Meningitis can often be confused with partially treated Pyogenic meningitis or Viral encephalitis. In such cases according to a survey done in Hyderbad, India it was observed that "Bromide Partition test" was helpful in confirming the diagnosis (11).

The other way by which the tuberculosis in children could be diagnosed is by the help of B.C.G. vaccination.

A study done in Gwalior, India showed that only 19.3% children showed a positive tuberculin response whereas B.C.G. test give positive result in as many as 86.66% children. The High B.C.G. positivity could be attributed to its capability of detecting infra-allergic state of tuberculosis infection. B.C.G. test showed uniformly high positive results at all age groups (86-88%) and in both normal as well as under nourished children (92.47% & 78.6% respectively), while tuberculin test was positive in correspondingly fewer number of cases in infants & with malnutirition (12). It must be noted however that in the B.C.G. test 5 mm diameter of papules within a specific duration was considered positive while in Mantoux test 10 mm diameter of induration was

taken as positive. But Dr. H.D. Ziegler & Dr. P.B. Ziegler has found a significant difference in the induration of B.C.G. vaccination in malnourished & well nourished children in Nepal (13). So, I think there is some justification in using this test in the investigation of tuberculosis in children.

Only 12 cases (7%) gave the history of contact with tuberculosis. 66 cases (38%) had the scar of B.C.G. vaccination & only 99 cases (58%) showed mantoux test positive, in 5 cases (2.9%) reading could not be taken as patient expired within 48 hours of admission. 60 cases (35.2%) had associated feature of malnutrition in the form of swelling of the limbs or under weight. Among the malnourished cases only 35.5% showed tuberculin positive.

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