

Clinico Cytopathological Correlation in Lymphadenitis of Suspected Cases of Tubercular Lymphadenitis in Children

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Abstract:

Introduction: Lymphadenopathy is a common problem in children and may present as diagnostic problem to the children. Disease affecting cervical lymph nodes are of varying severity starting from simple curable infection to difficult incurable malignant disease.

Objective: The purpose of this study was to observe the various clinical presentations of lymphadenopathy and correlate histopathological finding with the clinical diagnosis.

Methods: This study was a prospective study done on 85 children with significant lymphadenopathy attended to Department of Paediatrics S. N. Medical College Agra during the period of 1996 to 1998. All the 85 cases were divided into two age groups; 35 cases were in less than 5 years age group and 48 cases were in-between 5-12 years of age. There were 45 males and 40 females.

Result: On cytology of the aspirated lymph nodes by FNAC there were 30 cases having granuloma with necrosis 36.6%, 24.4% cases of reactive hyperplasia, 19.5% cases of granulomatous changes, 15.9% cases of necrotic and 3.6% cases of purulent aspirates. Most of the reactive hyperplasia were children between 5-12 years of age. Mantoux test was possible in 52 cases out of 82 cases. 63.4% in which 40 cases were of tubercular and 12 cases were non tubercular. Parameters like positive mantoux test, Xray chest suggestive of pulmonary tuberculosis and presence of sinus or matted lymphnodes common in tubercular lymphadenitis (<0.05%).

Conclusion: FNAC of lymphnodes provides a diagnostic alternative to other investigations that it obviates the need for surgical biopsy. It does help in directing other persistent investigations, thus shortening the period of stay in the hospital.

In the Present study FNAC with smear reexamination for AFB have been undertaken for the diagnosis of tubercular lymphadenitis in suspected cases of Lymphadenopathy.

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Introduction

Lymphadenitis is the commonest extrapulmonary manifestation of tuberculosis (Gopinathan V P 1989) [1]. In order of decreasing frequency it can be of anterior, posterior, cervical, supraclavicular, submandibular, and occasionally the preauricular and submental nodes (SPECK W.T. 1987) [2]. Periadenitis and spread of inflammation causes adjacent nodes to adhere to one another, abscess formation as a result of necrosis and involvement of overlying skin may lead to sinus formation. (SETH V 1997) [3].

Cervical lymphadenitis is considered to have its origin in the lymphatic spread of organism from a pulmonary primary focus via the hilar and pretracheal nodes but not in a minority of cases they originate from a primary focus in the tonsillar fossa and some other point in the oropharynx or tissues of the head and neck. Tuberculous lymphadenitis at

other superficial sites will usually be associated with a primary focus distant search may be rewarded by a superficial tuberculous lesion at the same distal point (SETH V 1997).

Lymph nodes are easily accessible for the fine needle aspiration and this procedure is widely being used in early diagnosis of Lymphnodes disease. Fine needle aspiration cytology (FNAC) begins simple outpatient procedure is well accepted by patients and has practically no complications (BAILEY AND LOVE's 19th edition 1985) [4].

The diagnosis of tuberculosis based on clinical features can be erroneous (SHRINIVAS MR., DEWAN.M 1988) [5]. Soluble antigen fluorescent antibodies, indirect haemagglutination, Kaolin agglutination and ELISA are cumbersome and time consuming tests. False positive results are seen in

high prevalence areas (Agarwal A., Moudgil K.D. 1989) [6]. The efficacy of FNAC as a diagnostic procedure is already established and it has been found to be efficient as biopsy particularly in cases of tubercular lymphadenitis (Editorial IJ tuberculosis xxxII85).

In the present study FNAC with smear examination for AFB were been undertaken for the diagnosis of tubercular lymphadenitis in suspected cases of chronic cervical lymphadenitis (lymphadenitis more than 4 weeks of duration). This study was done with following aims and objectives :

1. To find out the cytological pattern in clinically suspected cases of tubercular lymphadenitis.
2. To establish the occurrence of bacteriologically positive smears in clinically suspected cases of tubercular lymphadenitis.
3. To establish correlation between clinically suspected cases of tubercular lymphadenitis and cytopathological/bacteriological positive smears.

4. To study the incidence of tubercular lymphadenitis in children in clinically diagnosed cases of tuberculosis.

Material and Methods – Patient between the age of 9 months to 12 years attended outdoors as well as indoor in the Department of Paediatrics S.N. Medical College, Agra having lymphadenopathy of more than 4 weeks of duration and showing clinical signs, symptoms and radiological features suggestive of pulmonary tuberculosis were taken up for the FNAC, cases were studied in detail including history, clinical features and investigations.

Results

A total of 85 cases between the age of 9 months to 12 years having suspected tuberculous lymphadenitis were included in the study. The patient age varied from 9 months to 12 years. 37 cases were below the age of 5 years and 48 cases were above the age of 5 years. There were 45 males (53%) and 40 females (47%).

Nutritional Status of Cases

Table 1:

S.No.	Grade of Malnutrition	Nos. of Cases	Percentage
1.	Normal	28	33%
2.	PEM Grade - I	30	35.3%
3.	PEM Grade – II	18	21.1%
4.	PEM Grade – III	7	8.2 %
5.	PEM Grade – IV	2	2.4%
	Total	85	100%

33% of the children had normal nutrition (28 cases). 35.3% were in Grade-I (30 cases) and 21.1% in Grade-II malnutrition (18 cases), 8.2% (7 cases) had Grade-III and IV malnutrition respectively. The nutritional grading was done according to Indian Academy Of Paediatric Classification.

Characteristics of Involved Nodes

The nodes were firm in most of the cases 37 out of the 85 (43.6%), the node were matted in 26 (30.5%), discrete and mobile in 19 (22.3% cases). Sinus and ulcer was present in 2 (2.4% cases) fluctuation was present in 1 (2% cases only).

Status of X-ray Chest of Cases

Xray chest (P.A.) view was done in every case in which 46 cases (54.1%). Xray chest was suggestive of pulmonary tuberculosis and in 39 cases was not suggestive of it.

Mantoux test was positive in 54 cases (63.5%) and mantoux was negative in 31 cases (36.5%).

Aspiration of LN

Aspiration were performed in all 85 cases, In the 3 aspiration were inadequate or contained mostly blood and a specific diagnosis could not be given, 82 cases yielded adequate material on aspiration and specific diagnosis could be given.

Cytology of aspirated lymphnode

On cytology of the aspirated lymphnodes by FNAC, there were 20 (24.4%) cases of reactive hyperplasia, 16 (9.5%) cases of granulomatous lymphadenitis, 30 (36.6%), cases of granuloma with necrosis, 13 (15.9%) cases of cheesy necrotic and 3 (3.6%) cases of purulent aspirate. It was seen that majority of the cases of reactive hyperplasia fell in the age group of 5 to 12 years, granulomatous, necrotic and purulent lymphadenitis cases were distributed approximately equally in both age group.

Table 2:

Cytology	Nos. of Cases		Total Number of Cases	Percentage
	In less than 5 years of age	5 to 12 years		
Reactive Hyperplasia	6	14	20	24.4%
Granuloma	7	9	16	19.6%
Graulomatous Necrosis	14	16	30	36.6%
Cheesy / Necrotic	7	6	13	15.9%
Purulent	2	1	03	3.6%
Total	36	46	82	100%

Table 3: Cyto Pathological Features and AFB Positivity

Cytology	Nos. of Cases	Total Number of Cases	Percentage
Reactive Hyperplasia	20	0	0
Granuloma	16	2	12.5%
Graulomatous Necrosis	30	15	50.0%
Cheesy / Necrotic	13	8	61.5%
Purulent	03	02	66.6%
Total	82	27	

27 out of 82 cases were diagnosed as mycobacterial lymphadenitis (32.9%).

Biopsy Corelation: Open biopsy (excisional biopsy) were performed only in 6 cases because most of the patient refused for open biopsy. Two cases diagnosed as reactive lymphadenitis on FNAC were found to have same diagnosis as on open biopsy. Four cases diagnosed as granulomatous lymphadenitis on FNAC were subjected to biopsy. They were also diagnosed as tuberculous lymphadenitis (either granulomatous or granuloma

with necrosis) on biopsy on the basis of histological findings.

Tuberculous Lymphadenitis : On the basis of criteria taken i.e. granuloma with or without necrosis, necrotic / cheesy material only but positive for AFB, the overall incidences of tuberculous lymph nodes in clinically and radiologically diagnosed case of tuberculosis was 56 out of 82. (68.2%). So 56 cases were tubercular and 26 were non tubercular.

Table 4: Cytopathological Co-relation (with Sex) in Tissue

Sex	Number	Tubercular	Non Tubercular
Male	44	30	14
Female	38	26	12
Total	82	56	26

Table 5: Cytopathological Co-relation to Age with AFB

Age Group	Number	Tubercular	Non Tubercular
Less than 5 years	36	26	10
5 to 12 years	46	30	16
Total	82	56	26

Table 6: Co-relation with characteristics of Lymphnodes

Characteristics	Number	Tubercular	Non Tubercular
Firm	36	23	13
Matted	26	24	02
Discrete	17	07	10
Sinus	2	2	0
Fluctuant	01	0	01
Total	82	56	26

Table 7: Cytopathological Co-relation with Mantoux Test

Mantoux	Number	Tubercular	Non Tubercular
Positive	52	40	12
Negative	30	16	14
Total	82	56	26

Table 8: Cytopathological Co-relation with X-ray Chest

X-ray Chest	Number	Tubercular	Non Tubercular
Suggestive of T.B.	44	38	06
Non Suggestive of T.B.	38	18	20
Total	82	56	26

Discussion

All 85 cases were divided into two age groups 37 cases were less than 5 year of age and 48 were between 5 to 12 year of age. There were 45 males and 40 females.

Characteristics of Involvement Nodes: In 37 cases out of 85 lymph nodes were firm 43.6%, matted in 26 cases (30.5%), discrete and mobile in 19 cases (22.3%), sinus in two cases (2.4%) and fluctuant in one case (1.2%). Seth and kabra 1997 [7] analyzed 310 cases of tuberculous lymphadenitis and found firm lymph nodes in 129 cases (41%) matted in 92 cases (30%), discrete and mobile in 49 cases (16%) discharging sinus in 29 cases (9%) and fluctuant in 11 cases (4%).

Status of Chest X-ray: In 46 cases (54.1%) of X-ray chest was suggestive of pulmonary tuberculosis. in 39 cases (45.9%) skiagram of chest was not suggestive of pulmonary tuberculosis. Purohit et al (1987) [8] while studying 401 cases of tubercular lymphadenitis found x ray chest was positive in 33% cases and x ray chest was normal in 67% cases. Seth et al (1997) [3] while studying 310 cases of tubercular lymphadenitis found xray chest was positive in 60% cases and xray chest was normal in 40% of the cases

Monteaux test: Monteaux Test was positive in 54 cases (63.4%) and negative in 31 cases (36.5%). Purohit et al (1987)[8] which extended 401 cases of tuberculous lymphadenitis observed 72% positivity of mantoux test. Seth et al (1997) [3] while studying 301 cases of tuberculous lymphadenitis observed 86% positivity of monteaux test.

Clinical Cytopathological co-relation: 30 cases out of 44 males and 26 cases out of 38 female diagnosed as tuberculous lymphadenitis were statistically insignificant [$P > 0.5$].

26 cases out of 36 cases of less than 5 years of age and 30 cases out of 46 cases of 5 to 12 year of age were diagnosed with tuberculous lymphadenitis (P greater than 0.05) which is statistically insignificant. So it was observed that the sex and age of the patient did not bear any co-relation to the cause of lymphadenitis. Purohit et al 1987 [8] while studying 409 cases of suspected tubercular lymphadenitis also found that 172 cases out of 246 males cases and 126 cases out of 162 females cases were tuberculous [$P > 0.05$]. 22 cases out of 36 cases having firm lymph nodes and 7 cases out of 17 cases having discrete and mobile lymph nodes were diagnosed as

tubercular lymphadenitis (P greater than 0.05%). So result were statistically insignificant.

24 cases out of 26 cases having matted lymph nodes and 2 cases out of 2 cases in which sinus was present diagnosed as tubercular lymphadenitis ($P < 0.001$ and $P < 0.001$). So result was statistically highly significant.

Purohit et al (1987)[8] studying 409 cases found that 203 cases out of 250 cases having matted lymph nodes and 39 cases out of 39 cases having sinus were tubercular ($P < 0.05$).

40 Cases out of 52 having mantoux test positive cases were tubercular lymphadenitis(76.9%) and 16 cases out of 30 mantoux negative cases were diagnosed as tubercular lymphadenitis (53.33%) amongst 40 tubercular cases, 25 were children less than 5 years age (62.5%). Thus the mantoux test was positive in 25 out of 36 cases below 5 years of age.

Deep Jyoti et al (1991) [9] found mantoux positive in 24 tubercular out of 54 (44.5%) and non-tubercular cases out of 24 (33.33%). Seth et al 1997[3] found mantoux positive in 52% of tubercular cases having granuloma with necrosis with any cytology with AFB positive slide and 39% in granulomatous cases combined positively was 45.5%.

38 cases out of 44 in which X-ray chest was suggestive of pulmonary Tuberculosis were diagnosed tubercular lymphadenitis (86.4%). $P < 0.001$. These results were statically highly significant.

Purohit et al (1987)[8] found 85.7% incidences of tubercular lymphadenitis was suggestive of pulmonary tuberculosis.

Seth et al (1997)[3] observed 140 cases out of 234 cases of positive X-ray Chest were diagnosed as tuberculous lymphadnitis 59.7%.

It can be thus suggestive that FNAC forms an important diagnostic tool to aid in the diagnosis of cervical lymphadenopathy as FNAC is very cost effective(Hemant Kumar Borse-[10].

Summary & Conclusion

All the 85 cases were divided into two age groups. Thirty seven cases were <5 years of age 48 cases were between 5-12 years of age. There were 45 males and 40 females. The lymph nodes were firm in most of the cases (43.6%) followed by matted and mobile that is 30.5% and 22.3% respectively. Sinus/ulcer was present in 2.4% and fluctuation in

1.2% cases only. All cases were subjected to FNAC. Adequate material was obtained in 82 cases (96.5%). Inadequate aspirate were generally due to lymph nodes being small in size or aspirate was blood. The aspirated material was spread over slides, air dried and subjected to MGG staining and Z-N staining. On cytology of the aspirated lymph nodes by FNAC there were 30 cases having granuloma with necrosis (36.6%). 24.4% cases of reactive hyperplasia, 19.5% cases of granulomatous changes 15.9% cases of necrotic and 3.6% cases of purulent aspirates. Most of the cases of reactive hyperplasia were children between 5-12 years of age because lymphoid tissue development is at its peak Mantoux test was positive in 52 cases out of 82 cases (63.4%) in which 40 cases were tubercular and 12 cases were nontubercular. Among 40 tubercular cases 25 were children below the age of 5 years. This shows that Mantoux test has significance in the diagnosis of tuberculosis in children below 5 years. On statistical analysis, It was found that sex and age of the patient did not bear any correlation to the cause of lymphadenitis ($p > .05$). But parameters like positive Mantoux test, X-ray chest suggestive of pulmonary tuberculosis and presence of sinus or matting in lymph nodes were common in tuberculous lymphadenitis ($p < .05$). Parameters like presence of matting or sinus and X-ray chest suggestive of pulmonary tuberculosis were highly specific of tuberculous aetiology ($p < .001$).

Thus FNAC of lymph nodes provides a diagnostic alternative to other investigations. It obviates the need for surgical biopsy, it does help in directing other pertinent investigations, thus shortening the period of stay in the hospital and increasing the availability of beds which are in great demand.

Tuberculosis is an important disease, one of the commonest diseases affecting lymph nodes. It is curable with anti-tubercular drugs if administered according to WHO guidelines. A constitutional symptom in cervical tubercular lymphadenitis has limited significance and clinical behaviour can be highly variable. Early diagnosis and complete treatment will prevent further progression of the

disease and helps to cure it. (Hemant Kumar Borse-10)

FNAC has higher accuracy for diagnosing tuberculous lymphadenitis. It can also be concluded that FNAC is reliable diagnostic tool in helping invasive surgical procedure undertaking for the diagnostic of tubercular lymphadenitis. The ZIEHL Neelsen stain to identify AFB should be incorporated as an adjuvant to increase the diagnostic accuracy of tubercular lymphadenitis. In cervical lymphadenopathy clinical evaluation followed by FNAC is most reliable diagnostic tool which is easy to perform cost effective speedy results can be obtained and accurate.

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