

# Tuberculous and Toxoplasma Lymphadenitis in Lymph Node Biopsies Received at THP Laboratory from 2011 to 2013

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## **Abstract—**

**Background-** Lymph node biopsy is an important investigation which is helpful in coming to a diagnosis when patients present with lymphadenopathy. Tuberculous and Toxoplasma lymphadenitis are frequent findings in lymph node biopsies done in Sri Lanka compared to developed countries as both of these conditions are commoner in developing countries. Therefore we planned to review the lymph node biopsy results from 2011 to 2013 in Teaching hospital Peradeniya with a special interest on clinico-demographic characteristics of tuberculous lymphadenitis and Toxoplasmosis. However histopathological findings can only give a suggestive diagnosis of toxoplasmosis, whilst confirmation needs serological studies.

**Objectives-** To determine the incidences of histopathologically proven tuberculous and Toxoplasma lymphadenitis and the other commoner pathologies out of the lymph node biopsies done in THP from 1st January 2011 to 31<sup>st</sup> December 2013 and to identify the clinico-demographic characteristics of the former two conditions.

**Methods-** Lymph node biopsy reports and the request forms from 2011 to 2013 in THP were reviewed. Age, sex, site of lymphadenopathy and the pathological diagnoses were tabulated and analyzed using SPSS.

**Results-** Out of 293 lymph node biopsy reports, 47 (16%) showed tuberculous lymphadenitis, 16 (5.5%) showed toxoplasma lymphadenitis, 75 (25.9%) reactive changes and 54 (18.4%) lymphoma. Metastatic deposits were found in 33 (11.3%). With regard to tuberculous lymphadenitis, females (59.57%) were affected more than males (40.43%). A similar pattern was observed with 63% of those affected being females. In both of these conditions the commonly affected age group was 21-30 years.

The most commonly involved group of lymph nodes was cervical (78% of the TB cases and 100% of the cases of toxoplasmosis). The 2<sup>nd</sup> commonest affected site was axilla.

**Conclusion-** The incidences of both tuberculous lymphadenitis and toxoplasmosis are high. There is a female preponderance in incidence and the 21-30 years age group is commonly affected with cervical lymph nodes being the commonest site. However the commonest pathology affecting lymph nodes is reactive changes in this group.

**Keywords -** tuberculous lymphadenitis, nodal toxoplasmosis, lymph node biopsy

## I. INTRODUCTION

Peripheral lymphadenopathy may indicate various underlying pathologies and it has continued to pose a diagnostic problem in medical practice throughout time. These patients who are clinically diagnosed with lymphadenopathy usually need investigations to arrive at a definitive diagnosis. Of these, most often histopathological analysis of the lymph node tissue has the final say in diagnosis, except for serological studies and PCR with regard to infections.

The aetiology for lymphadenopathy may vary from non specific infections to conditions like tuberculosis and toxoplasmosis and to more grave pathologies like malignancy.

Of these infections, tuberculosis is documented to be a commoner cause in tropical countries while malignancies are reported as the predominant cause of lymph node enlargement in the developed countries with the rarity of infections (Tiwari et al, 2008).

With Sri Lanka being a tropical country we have concentrated mainly on tuberculosis and

toxoplasmosis to describe their clinico-demographical pattern and incidences, in addition to certain other aetiologies.

Tuberculosis (TB) remains a major global public health problem. It is estimated that about one-third of the world's population is infected with *Mycobacterium tuberculosis*. There were an estimated 8 million new cases of TB, resulting in 1.9 million deaths; with the greatest burden of disease in developing nations. Lymphadenopathy is one of the most common presentations of extra pulmonary tuberculosis as lymphatic system is a frequently involved. Tuberculous lymphadenitis occurs relatively early after primary infection with *M. tuberculosis* and often affects young people in countries with a high prevalence of tuberculosis (Eshete et al, 2011).

In the mean time, toxoplasmosis, a parasitic disease caused by the protozoan *Toxoplasma gondii* can be seen throughout the world (Ryan, Ray, 2004). The commonest presenting sign of acquired toxoplasmosis in man is the enlargement of superficial lymph nodes. Cats are the primary source of infection to human hosts, although contact with raw meat, especially lamb, is a more significant source of human infections in some countries with faecal contamination of hands also being a significant risk factor ((Ryan, Ray, 2004; Torda, 2001). It is also documented that up to a third of the world's human population is estimated to carry a *Toxoplasma* infection (Montoya, Liesenfeld, 2004)

This study aims at finding causes of lymph node enlargement and their pattern of lymph node involvement with more focus on tuberculosis and toxoplasmosis in order to find more specific information relevant to our country.

## II. OBJECTIVES

To determine the incidences of histopathologically proven tuberculous and *Toxoplasma* lymphadenitis and the other commoner pathologies out of the lymph node biopsies done in THP from 1st January 2011 to 31<sup>st</sup> December 2013. To identify the clinico-demographic characteristics of the first two conditions.

## III. METHODOLOGY

This is a retrospective study of lymph node biopsies received by the department of Pathology, Faculty of Medicine, University of Peradeniya, from Jan 2011 to Dec 2013. Demographic and clinical data and the pathological diagnoses were obtained from the request forms. The lymph node excisions done as a part of malignancy treatment were excluded from this study.

With regard to *Toxoplasma* lymphadenitis, the presence of the following characteristic features have been considered in diagnosing; marked follicular hyperplasia, associated with intense mitotic activity and phagocytosis of nuclear debris, small granulomas composed almost entirely of epithelioid cells, located within the hyperplastic follicles and at the periphery, encroaching on and blurring their margins and distension of marginal and cortical sinuses by monocytoid B cells. The presence of immunoblasts and plasma cells in the medullary cords was also taken into account.

Similarly, biopsies with appearances ranging from multiple small epithelioid granulomas to huge caseous masses surrounded by Langhan's type giant cells, epithelioid cells, and lymphocytes were taken as being positive for tuberculosis. Although Ziehl-Neelsen stain had been performed in these specimens, visible acid fast bacilli were not identified in any of them.

All these biopsy findings and other previously mentioned clinical and demographical data were tabulated and analysed using SPSS version 20 software.

## IV. RESULTS

Of the two hundred and ninety three lymph node biopsies reviewed during the 3 year period (2011-2013) of study, 179 biopsies were from the cervical group of lymph nodes constituting 61.1% of all lymph nodes biopsies. Analysis of the data on these 293 patients showed that 19.4% and 18.7% were in the age group of above 60 years and 21-30 years respectively. The male to female ratio was 1:1.

**Table 1.Histopathological diagnoses**

<b>Pathological diagnosis</b>	<b>Frequency</b>	<b>Percentage</b>
Tuberculous lymphadenitis	47	16
Toxoplasma lymphadenitis	16	5.5
Lymphoma	54	18.4
Reactive change	76	25.9
Metastatic deposits	33	11.3
Necrotizing lymphadenitis	20	6.8
Other	47	16
Total	293	100

Table 1 shows the histopathological diagnoses of lymphadenopathy as obtained in this study. Tuberculosis was seen in 47 (16%) cases, 16 (5.5%) showed toxoplasmosis, 75 (25.8%) showed reactive changes and 54 (18.4%) showed lymphoma while metastatic deposits were found in 33 (11.3%) cases.

The age range of patients with tuberculous lymphadenitis was 1.2 to 62 years with the peak age being the 3<sup>rd</sup> decade. Overall, the male to female ratio for tuberculous lymphadenitis was 2:3. The commonly affected site was cervical group of lymph nodes (78%).

Meanwhile, of the 16 cases with toxoplasmosis, the age range of the patients was 13 to 68 years with the peak age being the 3<sup>rd</sup> decade. Overall, the male to female ratio for toxoplasma lymphadenitis was 3:5. A marked decline in the incidence of toxoplasma lymphadenitis was observed after the 5<sup>th</sup> decade with 43.7% of cases occurring before the age of 30 years. The commonly affected site was cervical group of lymph nodes.

Neoplastic disease was seen in 87 (29.7%) cases, and this group constituted Hodgkin and non Hodgkin lymphoma as well as metastatic deposits.

## V. DISCUSSION

Tuberculosis and toxoplasmosis are two infections which have been noted in the past by various studies as a common cause of lymph node enlargement in tropical countries. But not many studies have been done in Sri Lanka to show more specific information relevant to our country.

In our study, reactive changes was found to be the most common pathology found in lymph node biopsies, followed by lymphoma. Malignant deposits were seen only in 11.3% of the cases which is a very low incidence in comparison to a 65.0% incidence documented in the western series yet our incidence is in accordance to other Asian studies (Tiwari, 2008). This shows that metastatic deposits are more common in western countries where socioeconomic status is high and possibly due to the reduced incidence of tropical diseases like tuberculosis and toxoplasmosis. However, when lymphoma and metastatic deposits are taken together, the incidence is much higher than that of tuberculous and Toxoplasma lymphadenitis indicating that we are also moving from infectious diseases towards non communicable diseases like neoplastic conditions.

Overall, the pathologies of lymph nodes were seen to be affecting males and females equally. Those in their sixties or above were found to present more commonly with lymphadenopathy than young people and these mostly involved the cervical group followed by axillary group. But these figures were observed to differ with each individual pathology.

Tuberculosis was found to be high in our study but it was noted to be lower than the figures found in a similar Nigerian study (26.7%) (Adesuwa, Chibundu, 2006) and in a Nepal study (47.0%) (Tiwari, 2008). Both TB and toxoplasmosis showed a similar pattern of involvement, with being more prevalent in females than males and involving the cervical group of lymph nodes mostly. Also, they were seen to be more prevalent in the young age group (21- 30). In the mean time both lymphoma and metastatic deposits were prevalent in old age (>60 years) and in males. This pattern of disease was comparable to similar studies done in other countries (Olu-eddo, Omoti, 2011, Eshete et al, 2011, Daudpota et al, 2013, Tiwari, 2008, Durlach et al, 2003).

This shows that an importance should be given to those who present with lymphadenopathy with regard to tuberculosis and toxoplasmosis as misdiagnosis of these two can lead to unnecessary morbidity and mortality which could have been prevented with early diagnosis and treatment.

Although diagnosis based on histopathological features is not the gold standard in nodal

toxoplasmosis and tuberculous lymphadenitis, there is evidence to justify the use histopathology for diagnosing these two conditions. Previous studies have shown that toxoplasmosis lymphadenitis can be diagnosed using specific histopathological features with a high degree of confidence (Eapan, 2005) and in the case of tuberculous lymphadenitis, histopathology has shown a sensitivity of 96% and a specificity of 78.5 % ( Patwardhan, 2011).

In our study, Ziehl Neelsen staining has not shown acid fast bacilli in any of the tuberculous lymphadenitis specimens. This test needs the presence of more than 10 000 bacilli for it to be positive for tuberculosis. Also it has been proven in past studies that a negative result for this staining doesn't exclude tuberculosis (Gupta, 1999).

One of the main limitations of this study was being unable to use more sensitive advanced molecular techniques like PCR and culturing method for the detection of *M. tuberculosis* and serological tests for toxoplasmosis in addition to histopathology as ours was a retrospective study.

#### VI. CONCLUSION

The findings of this study reveal that tuberculosis and toxoplasmosis are two common aetiologies for lymphadenopathy especially in the young female population of our country which need to be considered in clinical practice in order to target early diagnosis and proper treatment.

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