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RESEARCH ARTICLE

PATTERN OF LYMPHADENITIS AS DETECTED BY FNAC IN A HOSPITAL BASED STUDY ON THE WEST LUCKNOW POPULATION.

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Abstract

Background: Chronic non specific lymphadenitis and reactive lymphadenitis are two problems on rise in the current Indian population, both in adult as well as pediatric age group. The biggest problem being faced by the cytologists in the diagnosis of such disorders due to widespread chronicity of the diseases affecting the lymphnode as well as loss of patient compliance where early detection investigation and treatment of the disease is concerned. The incomplete or over enthusiastic antibiotic therapy which leads to incomplete resolution of the disease also adds to the confusion. The present study aimed at delineating the different types of lymph node lesions diagnosed by FNAC and the frequency of different benign and malignant lesions diagnosed.

Material and methods: We reviewed 213 cases of lymphadenopathy from May 2014 to June 2015. The cytomorphological features seen in the aspirate were critically analysed and correlated with their aetiology.

Results: In our study of 213 cases of lymphadenopathy analyzed in retrospect, the age groups ranged from 3-65 yrs, with 73% cases being of adults. There was a slight male preponderance with 56 % of the samples being from males. The first most common cause of lymphadenopathy visiting our hospital came out to be granulomatous lesions[41.7%], caseating [65.2%] more than non caseating granulomas[34.8%]. Second most common cause was chronic non-specific lymphadenitis [32.4%], while the third group being reactive lymphadenitis-a cause that does not warrant treatment was approximately, 23.9% of the total cases. Metastatic causes accounted for only 3 cases [1.5%] in our study-number being too small to draw any conclusion regarding their incidence. The filarial lymphadenitis was just 0.5% of the total diagnosis[1 case]. The most common site for FNAC was the cervical region, 165 out of 213 cases. The most common lesion occurring in the older age group is the 20-40 years while the reactive lesions had a more common predilection for patients less than 20 years of age.

Conclusions: Tuberculosis is still the dominant infection in the rural population specially in the adult age group while the paediatric age group presented with mainly chronic non specific pathology hence tuberculosis needs a vigilant detection, management and treatment protocol.

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Introduction:-

Lymphadenopathy is one of the most common clinical complains of patients, presenting to the outdoor clinics in most hospitals. The etiology of lymphadenopathy varies from an inflammatory process to a malignant condition [1]. Enlarged palpable cervical lymph nodes are common and worrying presentation in adults as well as in children. Cervical lymph nodes are involved most often in all types of lymphadenopathy [2]. A lymph node is said to be abnormal or pathologic if it is >1cm in size in adult population. In the pediatric population, >2cm is considered

abnormal. The cause of lymphadenopathy may range from reactive to tubercular to malignant. Types of adenopathy depending on duration of the disease is - Acute –duration of 2 weeks, Subacute-2 to 6 weeks, Chronic->6 weeks. In tuberculous lymphadenitis, it not only used for the cytological diagnosis but also used for other ancillary testing such as Ziehl- Neelsen staining and AFB Culture[3]

Fine needle aspiration cytology (FNAC) of lymph node has become an integral part of the initial diagnosis and management of patients with lymphadenopathy. Due to its early availability of results, simplicity, and, minimal trauma with less complication, FNAC is considered the first line of diagnosis in patients suffering from lymphadenopathy. [2]. FNAC has also been proved to be more useful as compared to biopsies ,especially in countries like ours, with limited financial and health care resources [3].

It almost offers an accurate diagnosis for reactive lymphoid hyperplasia, infectious disease, granulomatous lymphadenitis, and metastatic malignancy. Hence FNAC can lead to rapid diagnosis and prompt therapy negating the need of long drawn biopsy procedures and the delay caused in histopathology reports. [4].

Even the diagnosis of metastatic tumor to the lymph node on cytological smear, is crucial and highly reliable. This would be the sole indication for searching the primary tumor, especially in cases of occult carcinoma [5]. Most of metastatic carcinoma can be identified by their cytomorphological characteristics alone. However biopsy still remains important in accurate and definite diagnosis of a tumor [6]. Cytoimmunochemistry is opening up newer doors for diagnostic cytopathology specially in the field of oncology [7]. Some authors state that cytology is a more readily accepted methodology for the evaluation of deep seated lymph nodes where surgical resection is not possible.[8]Although the reliability of FNAC of cervical lymph node has been shown in some studies but there are also some reports in contrary [9,10]. The present study aimed at delineating the different types of lymph node lesions diagnosed by FNAC and the frequency of different benign and malignant lesions diagnosed.

Material and methods:-

The aim of the present study is to assess tubercular/ non-tubercular lymphadenitis, as our set up caters to mainly the rural population where we anticipate poverty driven infections besides tuberculosis. 213 consecutive cases of lymphadenopathy from May 2014 to July 2015 received in the department of Pathology, Eras Lucknow Medical College and Hospital was analysed in retrospect. All the patients having palpable lymph node were included. All demographic details, clinical history and physical findings were noted. The cases were analysed under the subheadings of granulomatous [caseating+ non caseating],chronic non specific, parasitic[filarial] and metastasis in lymphnode. The results noted and analysed on the basis of age of distribution. Sex and percentage of cases suffering from lymphadenopathy in each category. The slides were stained by Haematoxylin and Eosin[HnE] and AFB[ZN staining where indicated.

Results:-

In our study of 213 cases of lymphadenopathy analyzed in retrospect, the age groups ranged from 3-65 yrs, with 73% cases being of adults.[Fig-1] There was a slight male preponderance with 56 % of the samples being from males.[Fig-2] The first most common cause of lymphadenopathy visiting our hospital came out to be granulomatous lesions[41.7%], caseating [65.2%] more than non caseating granulomas[34.8%].

Second most common cause was chronic non-specific lymphadenitis [32.4%], while the third group being reactive lymphadenitis-a cause that does not warrant treatment was approximately,23.9% of the total cases. Metastatic causes accounted for only 3 cases [1.5%]in our study-number being too small to draw any conclusion regarding their incidence. The filarial lymphadenitis was just 0.5% of the total diagnosis[1 case] which could be attributed to decreased frequency of occurrence of the parasite in this area or early treatment rates with prompt diagnosis on peripheral blood smears[Table-1]. The most common site for FNAC was the cervical region, 165 out of 213 cases[Table-2]. The most common lesion occurring in the older age group is the 20-40 years while the reactive lesions had a more common predilection for patients less than 20 years of age [Table-3].Images of various patterns of the common lymphadenitis have been discussed further on.[FIG. A-T]

Discussion:-

In India, tuberculous lymphadenopathy is one of the most common type of lymphadenopathy encountered [2-5].However tuberculosis is not the only disease entity diagnosed in fact most of the patients below age of 20 years are diagnosed as reactive lymphadenitis and cases with long standing lymphadenopathy may give a picture of

chronic non specific lymphadenitis. The cytological criteria for the diagnosis of possible tubercular lymphadenitis is epithelioid cell granulomas with or without multinucleated giant cells and presence or absence of caseating necrosis [4]. It should be kept in mind that lymphadenopathy is the most common presentation of extra pulmonary tuberculosis [6,7]. Pediatric cervical lymphadenopathy is a challenging medical condition for the patient, the parent, and the physician. 38-45% of normal healthy children [8] and 90% of children aged 4-8 years [9] will have cervical lymphadenopathy.

In our study it was clearly seen that caseating granulomatous lesions had the highest frequency of diagnosis. These findings corroborate with some other study findings like in a study done by [10] where they saw that among the four cytological patterns on FNAC, maximum cases demonstrated caseous necrotic material with degenerated inflammatory cells. Another study categorized lesions depending upon cytomorphological features, three patterns were found in tuberculous lymphadenitis:

- (1) Granulomatous lymphadenitis,
- (2) Caseating necrotizing lymphadenitis,
- (3) Acute inflammation with granulomas.

The cytomorphological features observed were granulomatous lymphadenitis in 57.8% (52/90), caseating necrotizing lymphadenitis in 31.1% (28/90), and acute inflammation with granulomas in 11.1% (10/90) cases [11]. In a study [12] they concluded that FNAC is simple, quick, minimally invasive, and inexpensive technique to diagnose cervical lymphadenopathy. They also saw that FNAC can differentiate a neoplastic from a non-neoplastic process and therefore influence patient management preventing patient from being subjected to unnecessary surgery. Another study [13] showed that in 1926 cases of lymphadenopathy, 1136 cases (59%) were granulomatous lymphadenitis, 500 cases (26%) were Non-specific lymphadenitis, 232 cases (12%) of lympho-proliferative disorders (Hodgkin's and Non-Hodgkin's disease) 58 cases (03%) metastases from primary site. Hence they concluded that Fine Needle Aspiration Cytology is a simple, safe, rapid, cost effective and reasonably accurate method of establishing the diagnosis of lymphadenopathy. Fine needle aspiration cytology (FNAC) has assumed an important role in the evaluation of peripheral adenopathy as a possible noninvasive alternative to excision biopsy [14]. Overall accuracy of FNAC in comparison with the histopathological study is very high and may obviate the need of excision biopsy when the findings are compatible with the clinical diagnosis. The high accuracy rate of aspiration cytology of lymph nodes makes it an important tool of investigation in daily practice.

In one of the studies based on the cytomorphology of lymph node lesions the overall diagnostic accuracy of FNAC was 82.2%. Many other authors in similar studies have reported an accuracy rate of 85% to 94.4% [15,16,17]. In another study the authors found a much higher accuracy rate (97.6%) of FNAC in diagnosis lymphadenopathies [17]. The diagnostic accuracy of reactive lymphoid hyperplasia in the one study was seen as 85%. Al-Mulhim et al. reported 100% diagnostic accuracy in reactive lesions in lymph node by FNAC. [18]

In another study, the diagnostic accuracy of the chronic necrotizing lymphadenitis was 83.3%. Some authors report 93% diagnostic accuracy for such cases. [19] In some studies, the diagnostic accuracy of chronic granulomatous lymphadenitis has been seen to be 70%. [20,21]

Hence it is advisable to remember that tissue biopsy is gold standard in diagnosing lymphadenopathy specially if the clinical, radiological, or laboratory data are not consistent with granulomatous disease, to exclude a granulomatous response to a malignant neoplasm within the node.

Patterns of lymphadenitis in cytology:-

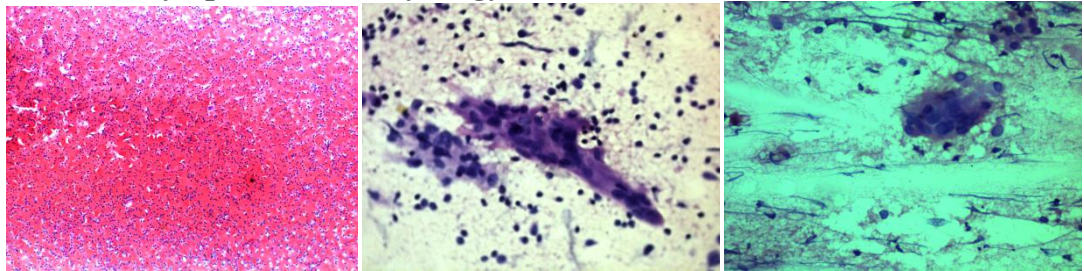


Fig-a-reactive lymphadenitis;fig.b&c-epithelioid cells forming granulomas

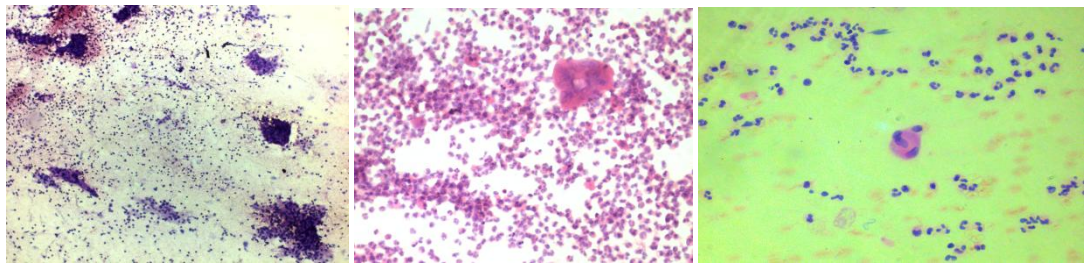


Fig-d-10x showing granulomas on fnac;fig.e&f giant cells in tubercular abscess

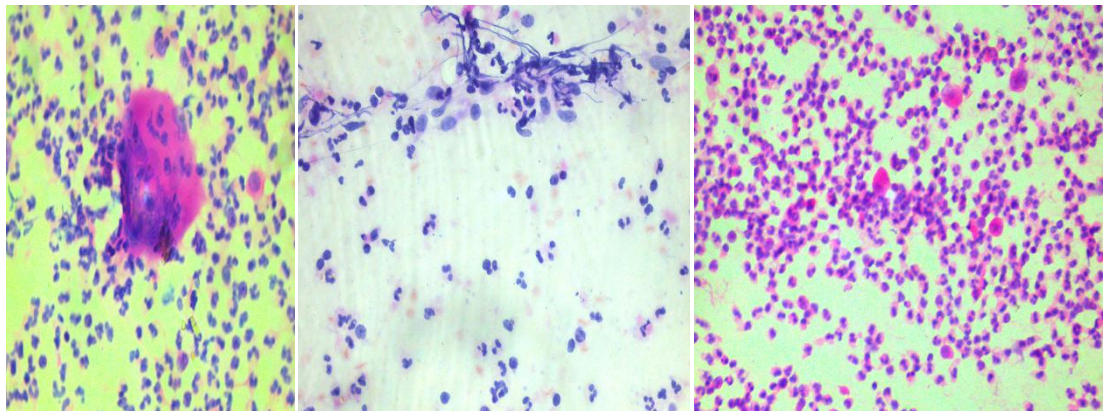


Fig-g-40x of giant cell;fig-h epithelioid cell granuloma;fig-i tubercular abscess with histiocytes

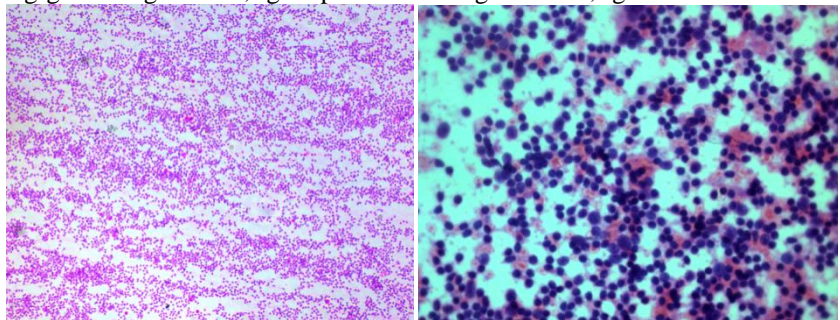


Fig j-reactive lymphnode 10x;fig-k-reactive lymphnode 40x

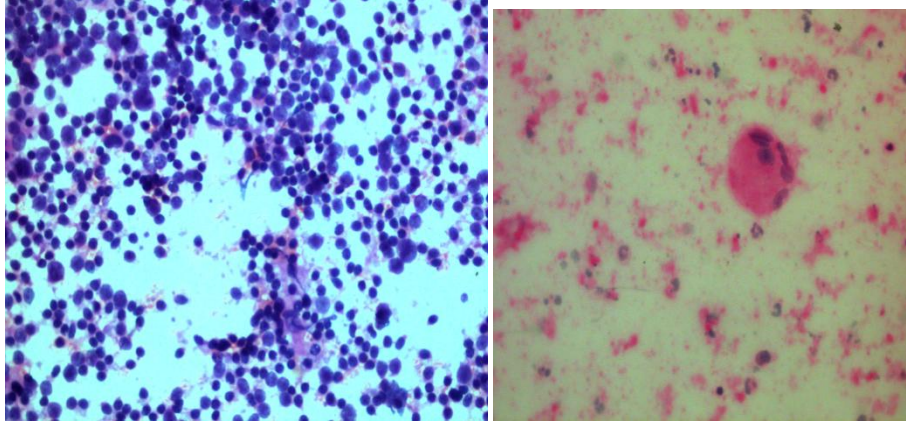


Fig-l reactive lymph node[40x]; fig-m giant cell in tb[40x]

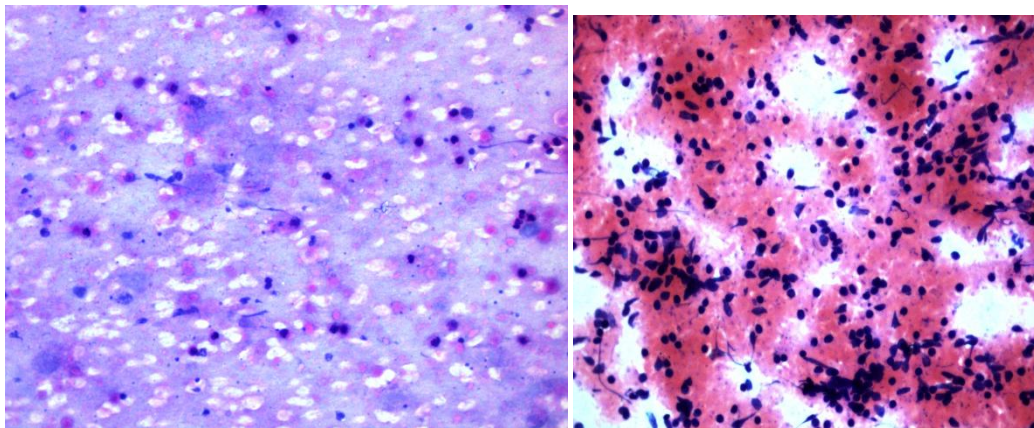


Fig- n suppurative pathology in lymph node ?tb[40x] ; fig-o- chronic lymphadenitis[40x]

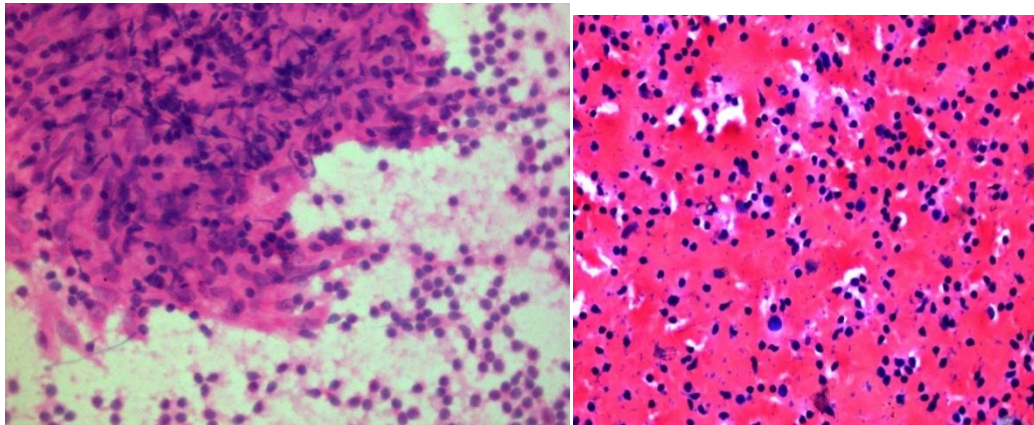


Fig p- well formed tb granuloma[40x]; fig-q-chronic lymphadenitis[40x]

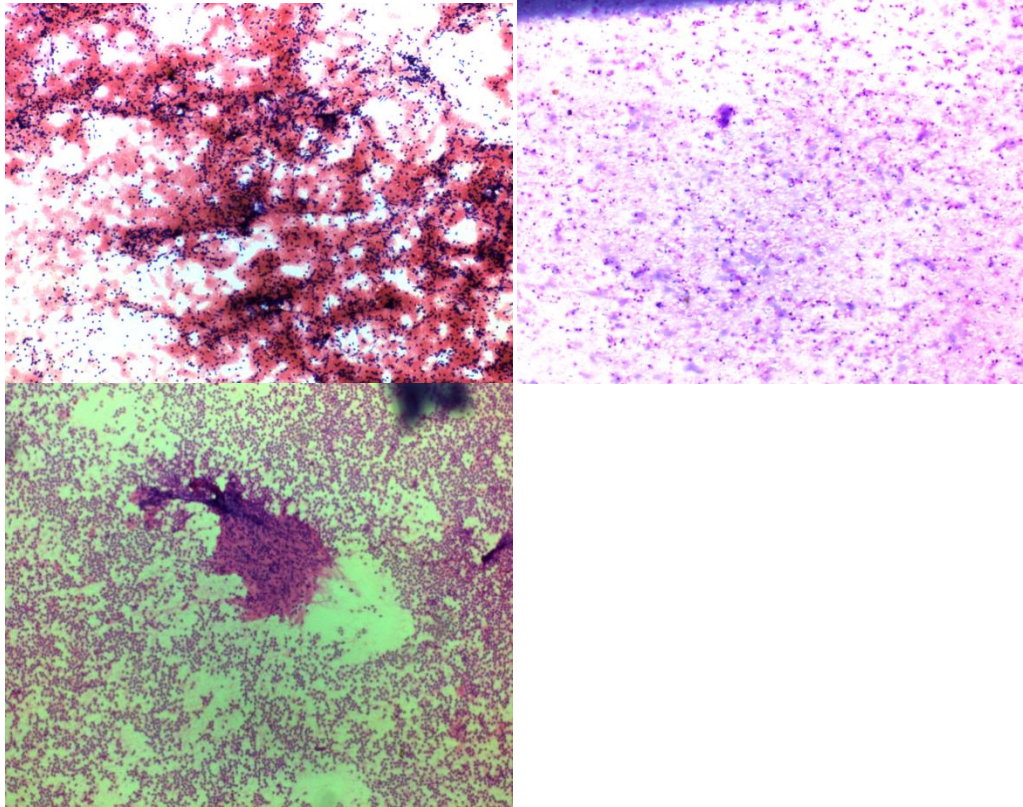


Fig-r-chronic lymphadenitis[10x], fig-s- tubercular abscess[10x]; fig t- tb granuloma[10x]

Charts and figures:-

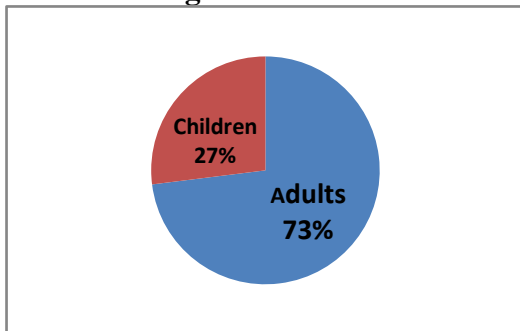


Figure 1-Percentage of children and adults

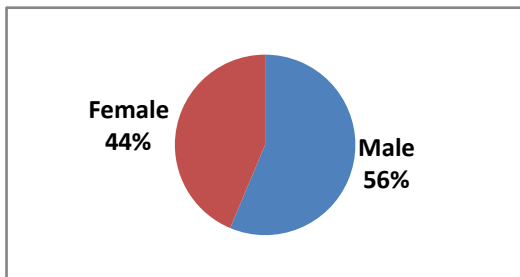


Figure 2-the distribution of lymphadenopathy in males and females

Table 1-distribution of different patterns of

Cytological diagnosis	no. of cases	Percentage
1]granulomatous lymphadenitis		41.7%
A) with caseation	58	65.2%
B) without caseation	31	34.8%
2]reactive lymphadenitis	51	23.9%
3]chronic non-specific lymphadenitis	69	32.4%
4]metastaic lymphadenitis	3	1.5%
5]filarial lymphadenitis	1	0.5%

lymphadenitis

Table 2-distribution as per site of fnac

Site	Number
Cervical	165
Submental	06
Submandibular	06
Supraclavicular	01
Inguinal	20
Arm	15
Occipital	00
Total	213

Table 3-distribution as per age

Type		0-20yrs	21-40yrs	41-60yrs	>60 yrs
Casesating garnuloma	M	2	13	10	5
	F	6	10	10	10
Non casesating garnuloma	M	5	8	2	1
	F	6	10	4	2
Reactive	M	20	7	7	1
	F	5	5	2	1
Chronic non specific inflammation	M	5	22	2	8
	F	5	10	3	2
Filaria	M	0	1	0	0
	F	0	0	0	0
Metastasis	M	0	0	1	0
	F	0	0	0	2

Conclusion:-

Despite its limitations and pitfalls, FNAC appears as a good first line method for investigating the cases of cervical lymphadenopathy. Tuberculosis is still the dominant infection in the rural population, especially in the adult age group, while the paediatric age group presented mainly with chronic non-specific pathology. Hence tuberculosis needs a vigilant detection, management and treatment protocol. The high incidence of tuberculosis in our set up may be due to the fact that our hospital caters to a large population of low socioeconomic strata.

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