

Cytological Analysis of Lymphnode using Sydney System of Reporting : In A Tertiary Care Hospital**Sushmitha J.¹, G. Farheen², Shubha P. Biradar³**^{1,2} Senior Resident, Dept. of Pathology, Ballari Medical College and Research Centre, Ballari³ Associate Professor, Dept. of Pathology, Ballari Medical College and Research Centre, Ballari**Received: 19-05-2026 / Revised: 11-06-2026 / Accepted: 30-06-2026****Corresponding Author: Dr. G. Farheen****Conflict of interest: Nil****Abstract:**

Lymph nodes are collection of lymphoreticular tissue in the human body and play a crucial role in the immune system of the body. Lymphadenopathy (Lymph node enlargement) can arise from a range of conditions like infections or neoplasms. Apart from material for cytomorphological examination the aspirated material is also useful for additional tests like Ziehl-Neelsen stain (ZN) for finding acid fast bacilli.

Keywords: Lymphadenopathy, Ziehl-Neelsen stain.**DOI:** 10.25258/ijcpr.18.7.137

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Introduction

Lymph nodes are collection of lymphoreticular tissue in the human body and play a crucial role in the immune system of the body. Lymphadenopathy (Lymph node enlargement) can arise from a range of conditions like infections or neoplasms.[1]

As a frequent symptom seen in medical practice, it is important to assess it thoroughly to determine the underlying cause.[2]

Fine needle aspiration cytology (FNAC) of lymph node is a valuable diagnostic tool because it is minimally invasive, cost effective and typically provides quick results. [3]

It is used to evaluate infectious diseases particularly granulomatous infections and helps to distinguish between benign and malignant conditions

Apart from material for cytomorphological examination the aspirated material is also useful for additional tests like Ziehl-Neelsen stain (ZN) for finding acid fast bacilli. Previously, there was no uniform reporting system or standardized terminology for lymph node cytology, unlike the established systems used for cervical, salivary gland and thyroid cytology. [4]

In 20th International Congress of Cytology held at Sydney in 2019 a panel of experienced cytopathologists from all over the world proposed a standardized category-based lymph node cytology reporting system called as Sydney system of reporting.[5]

Materials & Methods

It is observational, prospective study over a period of 1 year.

All FNA procedure were performed under aseptic precautions with 23-gauge needle after explaining the procedure and taking a written consent.

All aspirate smears are stained with Hematoxylin and Eosin.

Study Site: Tertiary care hospital.**Duration:** 1 year.**Study Design:** Observational prospective study.**Case Selection:** All the lymphadenopathy cases referred to central lab for FNAC.**Inclusion Criteria:** Data of all cases of Lymph node aspirates from both sexes and all age groups are included.**Exclusion Criteria:** Non lymph node aspirates are excluded from the study.**Sample Size:** 153.**Results**

Table shows distribution of cases by age. Maximum number of cases 27 (17%) are found in the age group 31-40 years followed by 25 cases (16%) in the age group 11-20 years.

Table 1: Table shows distribution of cases by gender

Age (Yrs)	Number
1-10	22
11-20	25
21-30	20
31-40	27
41-50	18
51-60	14
61-70	18
71-80	8
>80	1

Table 2: Male to female ratio is 1.12 : 1 .

Gender	Number
Male	81
Female	72

Table 3: Table shows distribution of cases by site

Site of lymph node	Number
Cervical	93
Supraclavicular	10
Submandibular	10
Axilla	14
Inguinal	5
Postauricular	9
Posterior triangle	5
Submental	7

Table 4: sydney system of reporting lymph node

Category	Total Cases	Percentage
Inadequate (L1)	17	11%
Benign (L2)	76	50%
Atypical Lymphocytic Lesions (L3)	26	17%
Suspicious For Malignancy(L4)	16	10%
Malignancies (L5)	18	12%

Category L1(non-diagnostic /inadequate) included 17 cases

10 cases showed necrotic material without presence of any lymphoid cells

7 cases showed only elements of blood.

Category L2 of benign cytology included 76 cases.

The most common benign cytological diagnosis is granulomatous lymphadenitis (29 cases).

Category L3 (atypical cells of undetermined significance/atypical lymphoid cells of uncertain significance -ALUS) included 26 cases.

Category L4 (suspicious for malignancy) included 16 cases.

Category L5 of malignancy included 18 cases:

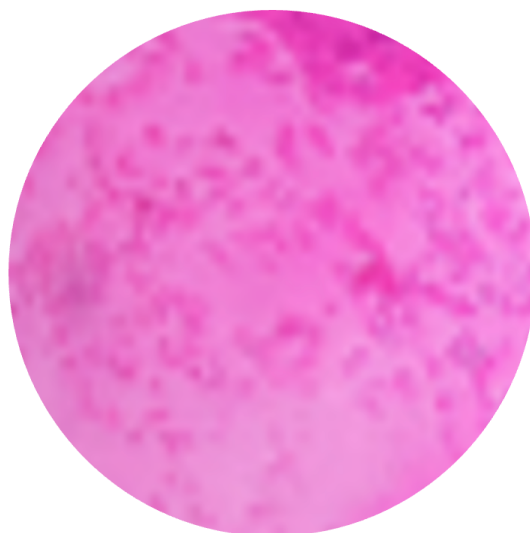
Metastatic deposits of squamous cell carcinoma are 14

Metastatic deposits of adenocarcinoma are 3.

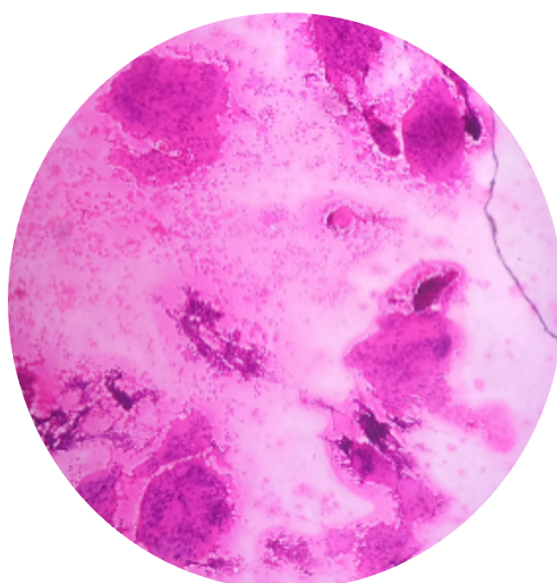
Lymphoproliferative disease is 1

Category L1 (Inadequate/non-diagnostic)

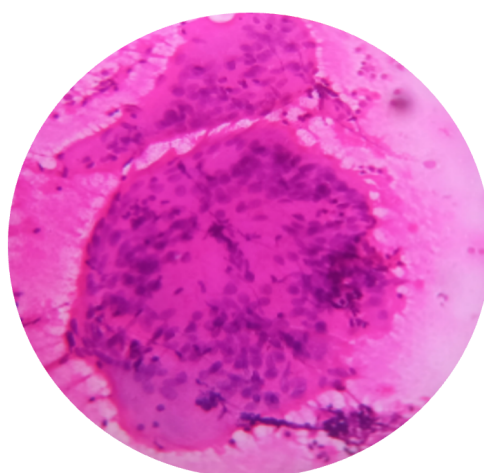
Only necrosis seen



Category L2 - Granulomatous Lymphadenitis – Epithelioid cells and lymphocytes seen against necrosis

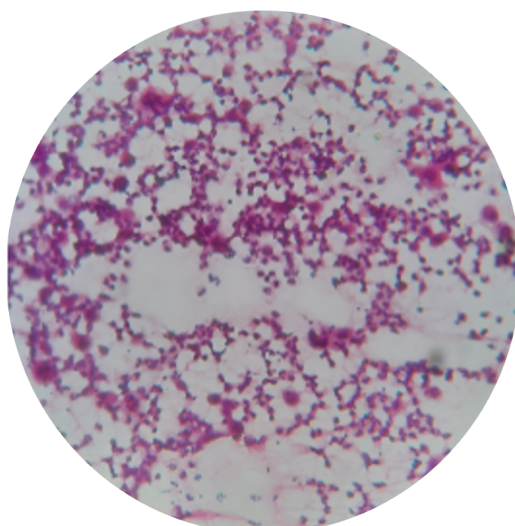


Low power view

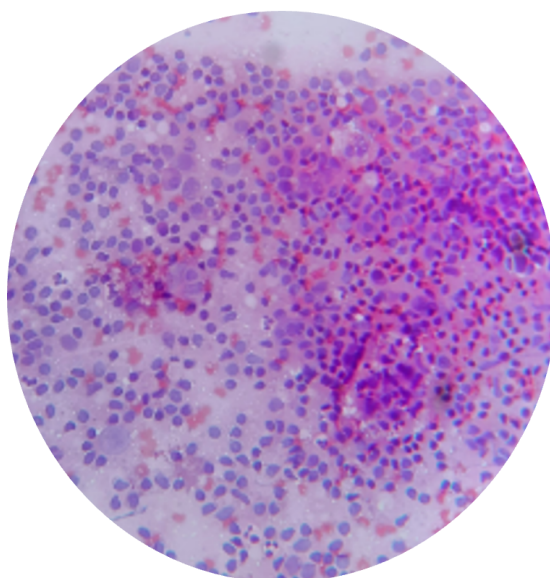


High power view

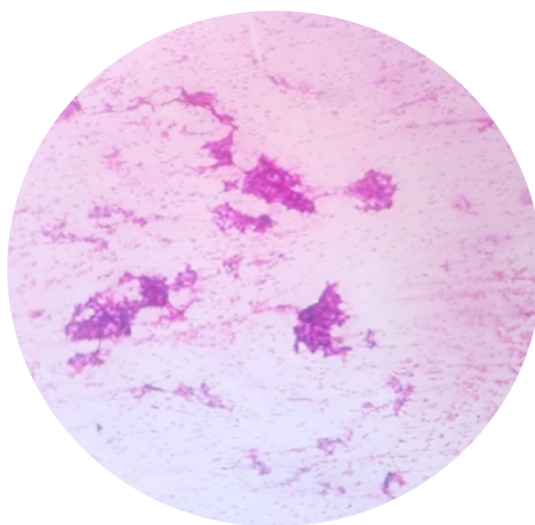
Category L2 – Suppurative Lymphadenitis – Neutrophils and lymphocytes are seen in a hemorrhagic background



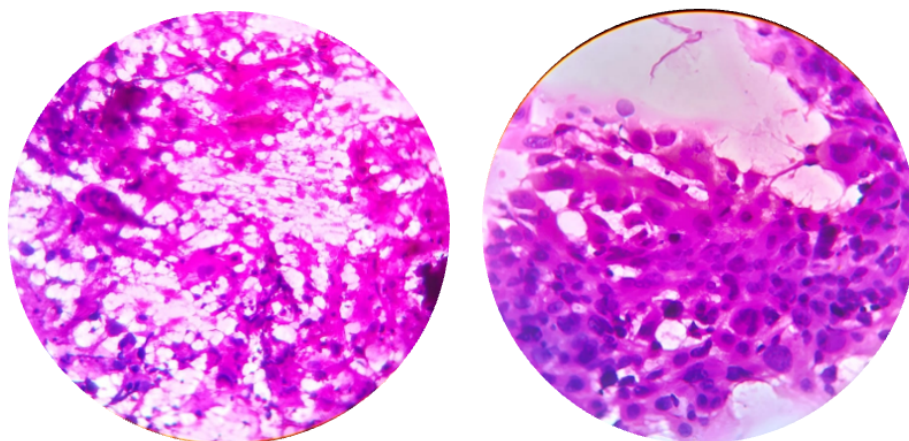
Category L3 - Atypical cells of undetermined significance/atypical lymphoid cells of uncertain significance (AUS/ALUS)



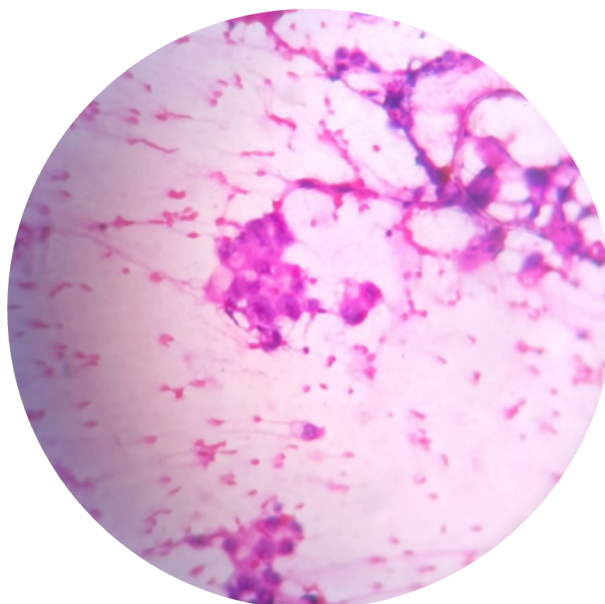
Category L4 - Suspicious of squamous cell carcinoma



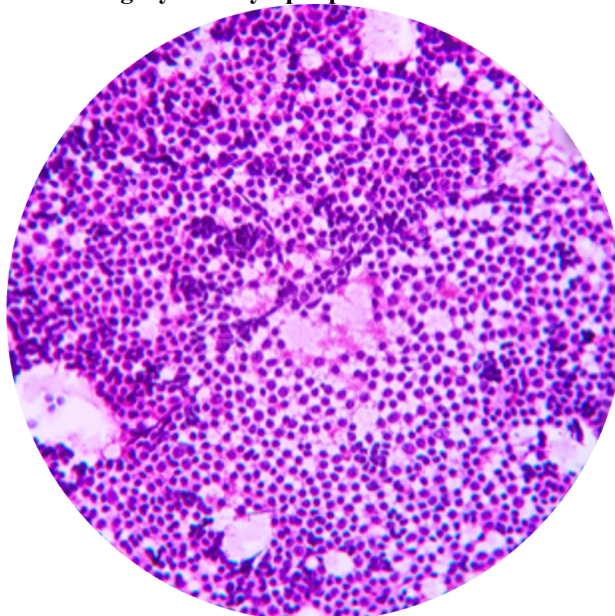
Category L5 - Metastatic Squamous cell carcinoma



Category L5 - Metastatic adenocarcinoma



Category L5 - Lymphoproliferative disease



Discussion

Fine Needle Aspiration Cytology (FNAC) is widely regarded as the primary method for evaluation, providing material that is essential for additional diagnostic techniques.[7]

A thorough understanding of the patient's clinical history, physical examination findings, and radiological imaging is crucial.[8]

Despite this, reporting on lymph node cytopathology remains challenging due to the absence of a standardized classification system.

To address this issue, an expert panel has introduced the Sydney System for reporting lymph node cytopathology Sydney system of reporting of lymph nodes[9]

L1 (Inadequate/Insufficient): The sample is not adequate for a conclusive diagnosis.

L2 (Benign): No signs of malignancy are observed, indicating non-neoplastic conditions.

Granulomatous lymphadenitis

Reactive lymphadenitis

Non-specific lymphadenitis

Acute suppurative lymphadenitis

Necrotizing lymphadenitis

L3 (Atypical Cells of Undetermined Significance, AUS/ALUS): Presence of atypical cells that are indeterminate, which may be indicative of uncertain clinical significance.

Atypical lymphocytes

Atypical non-lymphocytic cells

L4 (Suspicious): Features suggestive of malignancy but not definitive.

L5 (Malignant): Clear evidence of malignancy.

Table 5: Comparison of distribution of cases in the present study with other studies

Category	Present study	Sreelekshmi (2023)	Vigliar E et al., (2021)
L1	11%	5.60%	6.7%
L2	50%	63.60%	34.7%
L3	17%	1.60%	8.3%
L4	10%	2%	4.3%
L5	12%	27.20%	46%

Conclusion

Lymph node FNAC (fine needle aspiration cytology) helps in the primary diagnosis of lymphadenopathy which is very useful for further management according to the lesions.

The proposed Sydney system for reporting lymph node cytology would be helpful in the improvement of quality of reports with uniform reporting,

better understanding and communication between clinician and pathologist and thereby improving patient care.

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