

APPLICATION OF SYDNEY SYSTEM FOR CLASSIFICATION AND REPORTING OF LYMPH NODE CYTOPATHOLOGY IN A TERTIARY CARE CENTER in GWALIOR

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ABSTRACT

Background: Lymphadenopathy is an abnormal increase in size and/or altered consistency of lymph nodes. Fine needle aspiration cytology (FNAC) is widely accepted as the first line approach in the evaluation of lymphadenopathy of unknown etiology. To standardize the reporting of FNAC of lymph node, the Sydney system of lymph node cytology reporting and classification was proposed in 2020. **Aim & Objective:** To assess the applicability and accuracy of the system in the diagnosis of lymph node cytology. **Materials and Methods:** A total of 320 Lymph node FNAC were done prospectively over a period of one & half year in Department of Pathology, Gajra Raja Medical College Gwalior. All the FNAC were reported according to recently proposed Sydney system of reporting Lymph node cytopathology. **Results:** In the present study classification was done according to Sydney system of classification out of 320 cases 1(0.3%) was categorised as L1 (Inadequate/nondiagnostic), 229 (71.6%) were classified as L2 (Benign), 2 (0.6%) were classified as L3 (Atypical), 2 (0.6%) were classified as L4 (Suspicious) and 86 (26.9%) were classified as L5 (Malignant). **Conclusion:** By implementing the Sydney system, a more standardized method of reporting and categorization can be achieved. This system may lead to greater acceptance and utilization of Lymph node-FNAC, as well as better interdisciplinary understanding of the result.

INTRODUCTION

Lymphadenopathy is the most common clinical presentation with variable etiologies and is one of the major cause of morbidity. Etiology varies from an inflammatory process to a malignant condition. Etiological diagnosis of enlarged lymph nodes is of immense importance to the clinician as well as to the patients. The commonest cause of lymphadenopathy is non-specific reactive hyperplasia in which underlying etiology is frequently found. Tuberculosis is the commonest cause of lymphadenopathy in developing countries like India and should be considered in every case of granulomatous lymphadenopathy unless proved otherwise. Fine needle aspiration cytology (FNAC) is widely accepted as the first line approach in the evaluation of lymphadenopathy of unknown etiology. Minimum invasiveness, rapidity, cost effectiveness, and the capability to provide material for several ancillary techniques contribute to its wide applicability in evaluation of lymphadenopathy. However, the conventional system of reporting lymph node smears lacks standardized diagnostic

classification, a common language of reporting among cytopathologists and clear communication to clinicians about risk of malignancy and further management. To address this problem, the Sydney system of lymph node cytology reporting and classification was proposed in 2020 by an expert panel where the use of five diagnostic categories was introduced.

The present study thus aims to assess the applicability and accuracy of the system in the diagnosis of lymph node cytology. Only a few studies have been done regarding the Sydney system of reporting lymph node cytology. This study was carried out in a tertiary care center Gajra Raja Medical College, Gwalior and this system was introduced in routine patient care as a pilot project in this region.

MATERIALS AND METHODS

The present study is a hospital based study on the routine materials from the Department of Pathology, Gajra Raja Medical College, Gwalior. A total of 320 Lymph node FNAC were done from April 2019 to September 2022 & retrospectively studied over a

period of 3 years in Department of Pathology GajraRaja Medical College, Gwalior M.P.

Inclusion Criteria: All the cases which have underwent FNAC in the study hospital with complete report of FNAC available

Exclusion Criteria: Incomplete FNAC report & Unsatisfactory Smear

After taking written consent from patient for FNAC enlarged lymph node will be examined. Under aseptic conditions with direct supervision by using needle 22-27 gauge which is inserted into lesion with several short rapid strokes made in different directions with the needle tip in the nodule. In case of unsatisfactory smears FNAC is repeated. In case of cystic nodules, aspirated fluid is centrifuged and smears are prepared from the sediment. The smear is immediately spread onto glass slides, air dried smears stained with Giemsa stain and smears which are fixed

in 95% ethanol, stained with Papanicolaou stain (Rapid PAP method).

All the slides were reviewed by 2 Pathologist & reported under Sydney System of reporting Lymph node Cytopathology under the following categories: Category 1 – L1 (Inadequate/non-diagnostic) Category 2 – L2 (Benign) Category 3 - L3 (Atypical) Category 4 - L4 (Suspicious) Category 5 - L5 (Malignant)

RESULTS

The lymph node cytology of 320 cases were analyzed and categorized into 5 categories from L1 to L5. There were 1 case in L1 category, 229 cases in L2 category, 02 cases in L3 category, 02 cases in L4 category and 86 cases in L5 category.

Table 1: Age Wise Distribution

S. No.	Age	No. of Cases	Percentage
1	01-10	26	8.1%
2	11-20	53	16.6%
3	21-30	81	25.3%
4	31-40	52	16.3%
5	41-50	40	12.5%
6	51-60	39	12.2%
7	61-70	21	6.5%
8	71-80	8	2.5%
	Total	320	100%

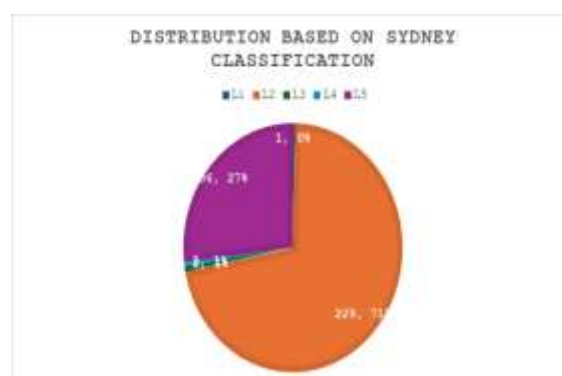
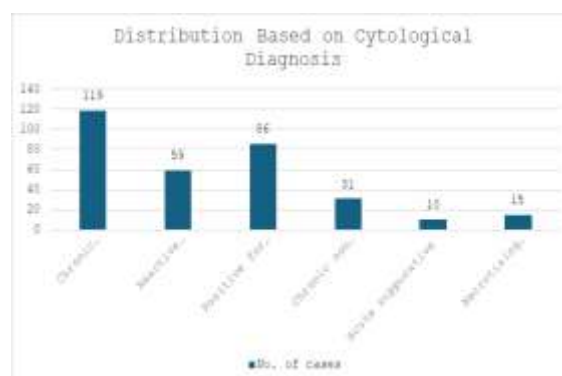
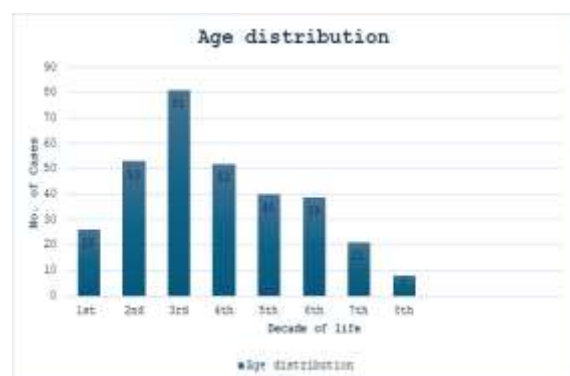


Table 2: Age Distribution

Age (Years)	
Mean	34.49
Median	30.5
Standard Deviation	18.15
Range	01 - 80

Table 3: Sex Distribution

Gender of the Patients	No. Of Patients	Percentage
Females	160	50%
Males	160	50%
Total	320	100%

Table 4: Group of Lymph nodes involved in present study

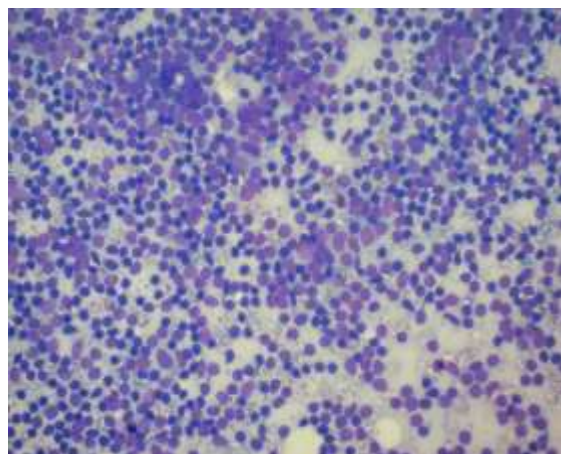
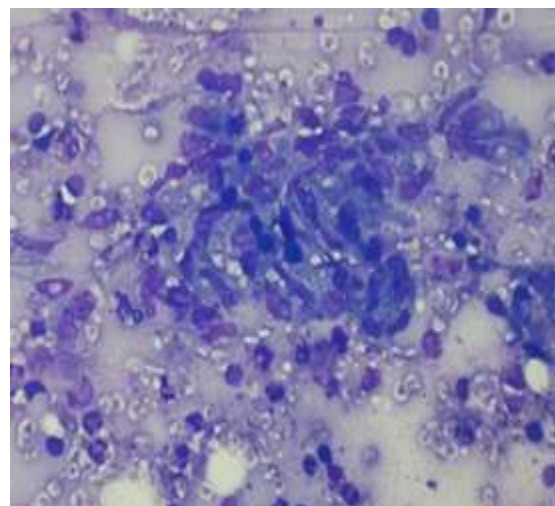
Group of Lymph Nodes	No. of Cases	Percentage
Cervical	208	65%
Axillary	17	5.3%
Submandibular	40	12.5%
Inguinal	15	4.7%
Submental	8	2.5%
Post Auricular	13	4.1%
Supraclavicular	16	5%
Jugulo Digastric	3	0.9%
Total	320	100%

Table 5: Distribution based on Cytomorphological Diagnosis

S.no.	Diagnosis	No.	%
1	Chronic Granulomatous Lymphadenitis	119	37.1%
2	Reactive Lymphadenitis	59	18.4%
3	Positive for malignant	86	27%
4	Chronic non specific lymphadenitis	31	9.7%
5	Acute suppurative lymphadenitis	10	3.1%
6	Necrotising Granulomatous Lymphadenitis	15	4.7%
	Total	320	100%

Table 6: Distribution based on Sydney Classification

S.no.	Type	No.	Percentage
1	L1 (Inadequate/non-diagnostic)	1	0.3%
2	L2 (Benign)	229	71.6%
3	L3 (Atypical)	2	0.6%
4	L4 (Suspicious)	2	0.6%
5	L5 (Malignant)	86	26.9%
	Total	320	100%

Figure of cytological smears of various lymph node lesions**Figure 1: Reactive lymphadenitis****Figure 2: Granulomatous lymphadenitis**

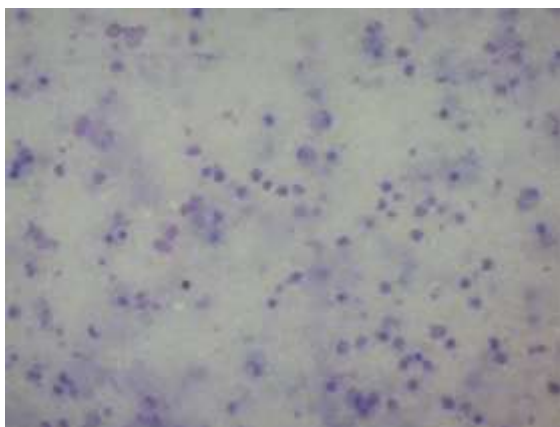


Figure 3: Suppurative lymphadenitis

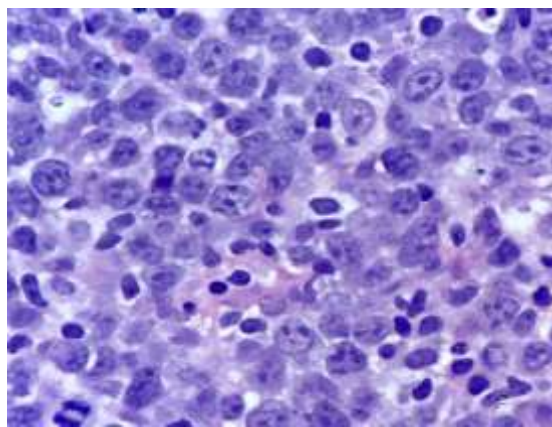


Figure 7: Hodgkin's Lymphoma



Figure 4: Necrotizing lymphadenitis

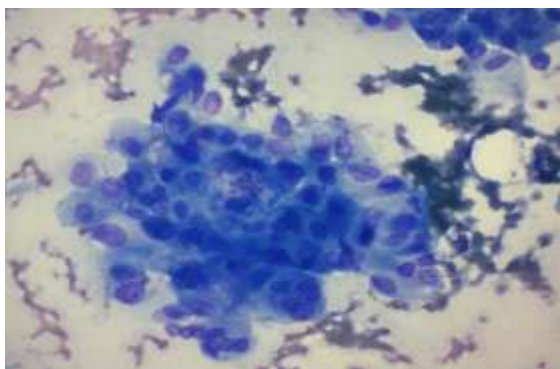


Figure 5: Positive for malignancy

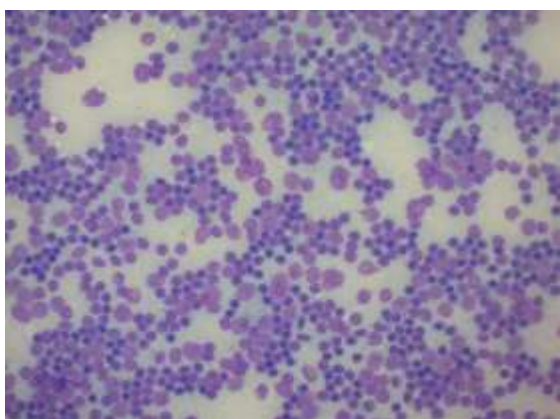


Figure 6: Non hodgkin lymphoma

DISCUSSION

FNAC is rapid, repeatable, minimally invasive, accessible and cost-effective with diagnostic accuracy of about 90-99 %. It provides the clinician with a quick correlation clinically especially in limited resource settings of developing countries. However, non uniformity and inter-observer variability in reporting have made clinicians wary of relying solely on FNAC. The recently proposed Sydney system of classification and reporting lymph node cytopathology has provided a standardized reporting system. In the present study, an attempt has been made to apply this system for evaluation of the spectrum of lymph node lesions. In this retrospective study a total of 320 cases of lymph node fine needle aspirations were collected, analyzed and categorized according to Sydney classification.

AGE DISTRIBUTION

The age of patient with thyroid lesion ranged from 01-80 year. The mean age of presentation of patients in present study is 34.49 years. Similar results were noted in the study performed by Asheesh Joshee et al (2022) done on 1409 cases with mean age 31.24 years and majority of patients belonged to age group 21 - 40 which was similar to Das et al (2024), Sreelekshmi et al (2023).

GENDER DISTRIBUTION

The present study showed that out of 320 cases 160 (50%) were females and 160 (50%) were males with female to male ratio 1:1. There was no gender predisposition in our study, which was similar to study done by A K Baruah et al with 54.2% female and 45.8% male patients. In Vigliar et al 57.7% patients were female and 42.3% patients were male and in study done by Sreelekshmi et al Out of the 250 aspirates obtained, there were 55.60% males and 44.40% females patients. This clearly shows that Lymphadenopathies have no gender predisposition.

DISTRIBUTION OF LESIONS

The cervical group of lymph nodes was the most commonly affected (65%) in our study, which was concordant with the studies by Roy et al (72.9%), Das et al (60%), Sreelekshmi et al (57.60%), Ankita and Crysle et al (61%) followed by Submandibular (12.5%) and Axillary (5.3%) lymph nodes.

In the present study, the L2 Benign category showed the highest prevalence (71.6%), followed by L5 (26.9%). This finding was consistent with the studies by Roy et al. L2 (54.41%) and L5 (28.28%), Das et al. L2 (60%) and L5 (23%) and Gupta L2 (48.6%) and L5 (45.4%) et al. However, in the study by Vigilar E. et al., the L5 category showed the maximum prevalence (46%). FNAC alone can provide a sufficiently detailed diagnosis, avoiding the need for surgical biopsy.

CONCLUSION

The systemic use of lymph node Fine Needle Aspiration Cytology reporting using the new Sydney system in the initial assessment of lymphadenopathy is both clinically and economically advantageous. The introduction of Sydney system for performing and reporting LN-FNAC may improve the quality of the procedure, the report, and communication between cytopathologists and clinicians. By implementing the Sydney system, a more standardized method of reporting and categorization can be achieved. This system may lead to greater acceptance and utilization of LN-FNAC, as well as better interdisciplinary understanding of the result.

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