ORIGINAL RESEARCH PAPER

Pathology

SYDNEY SYSTEM FOR CLASSIFICATION AND REPORTING LYMPH NODE CYTOPATHOLOGY

KEY WORDS: Sydney System, Lymph Node, Cytopathology.

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ABSTRACT

Background- Biopsy in lymphadenopathy has been considered as gold standard but fine needle aspiration cytology is also a diagnostic technique as it has the advantages of being minimally invasive procedure with relatively fast results. Before the advent of the Sydney system for classification and reporting of lymph node cytopathology, there was no standardized reporting system or any other common terminology that was available for lymph node cytopathology **Aim-** The aim of the present study is to analyse and classify lymph node pathology as per new proposed Sydney system for classification. via fine needle aspiration cytology .Its application helps to screen infectious diseases and to differentiate between benign and malignant conditions. **Method**- In this retrospective study, 350 cases of lymph node FNAC from Nov 2020 to Dec 2022 were taken from department of pathology Gajra Raja Medical College Gwalior. Cases from both gender and all age groups were included. Cytology aspirated slides were retrieved and reevaluated as per the new reporting system. **Result**- 350 cases were evaluated according to Sydney sytem classification. Mean age of cases in the study is 31.24 years and age ranges from 1 year to 90 year. Of these, n=82(23.4%) categorised as inadequate/non diagnostic(L1); 222(7.4%) benign(L2);14 (63.4%) atypical cells of undetermined significance(L3); 06 (04%) suspicious for malignancy(L4); 82(41.7%) malignant(L5);(23.4%) **Conclusion-** Using Sydney system for classification of lymph node cytology uniformity and reproducibility in cytological diagnosis can be achieved. It also helps in risk stratification based on cytopathology.

INTRODUCTION:

Evaluation of lymph nodes (LN) by fine-needle aspiration cytology (FNAC) has been routinely used as an initial diagnostic tool. Lymph nodes are the commonest sites for FNAC and it help to assess whether the Lymphadenopathy is benign or malignant. However, due to occurrence of Lymphadenopathy in various diseases the cytological features can be wide and variable , and many times features may overlap thus preventing a definite diagnosis using FNAC.Previously there was no standardized reporting system for lymph node cytology like that for thyroid and cervical cytology.In the 20th International congress of Cytology held in Sydney in 2019 a panel of experienced cytopathologist fro all over the world proposed a standardized category based lymph node cytology reporting system . It provided a categorical classification of aspirates into five category based on specific cytological features and it also provides a management category for each class.

AIM & OBJECTIVES:

The aim of the present study is to analyse and classify lymph node pathology as per new proposed Sydney system for classification via fine needle aspiration cytology. Its application helps to screen infectious diseases and to differentiate between benign and malignant conditions.

METHOD:

In this retrospective study , 350 cases of lymph node FNAC from Nov 2020 to Dec 2022 were taken from department of pathology Gajra Raja Medical College Gwalior. Cases from both gender and all age groups were included. Cytology slides were retrieved and reevaluated as per the new reporting system and Statistical analysis was done.All FNA procedure were performed under aseptic precaution and all aspirated smear were stained with Giemsa stain and ZN staining was performed where ever required.The cytology smear were examined using defined cytological criteria.

Table-1, According to this system, the cytologic aspirates from Lymph node categorized into 5 categories based on their specific cytologic features

| S.No	Category	Criteria
1	I/ L 1 Category I/ L1t Ca I/ L 1	Inadequate/ Non diagnostic Blood only , Necrosis
2	Category II/ L2	Acute lymphadenitis, Reactive hyperplasia, Granulomatous lymphadenitis, Necrotizing granulomatous lymphadenitis
3	Category III/L3	Atypical non-lymphoid cell, Atypical lymphoid cell
4	Category IV/L4	Atypical cells of undetermined significance Suspicious for malignancy
5	Category V/L5	Malignant, Metastatic squamous cell carcinoma, Metastatic adenocarcinoma , Metastatic breast carcinoma, Metastatic small cell carcinoma, Metastatic melanoma, Metastatic poorly differentiated carcinoma , Metastatic thyroid carcinoma , Non-Hodgkin's lymphoma, Hodgkin's lymphoma Leukemia infiltration, Burkitt lymphoma

RESULT:
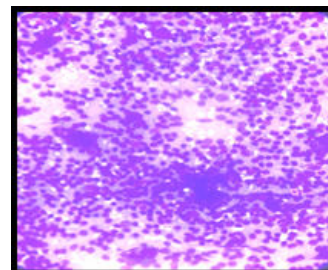
Fig:1 - Giemsa Stain Smear showing mixture of small and

large lymphocytes, plasma cells and macrophages in the necrotic background –Reactive Lymphadenitis (100x)

Total 350 LN FNAC done in this study period. Mean age of cases in the study is 31.24 years and age ranges from 1 year to 90 year. The most common age group undergoing LN FNAC in the study was age 21 to 35 years group. The gender ratio in the study was 1.09:1 for male to Female. Cervical nodes were the commonly aspirated lymph nodes in the study.
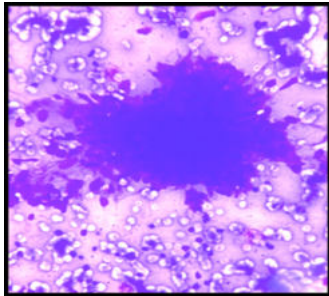
Fig:2 - Giemsa Stain Smear showing Large casseating necrosis and epitheloid cells with interspersed lymphoid cells – Granulomatous Lymphadenitis (400 x)
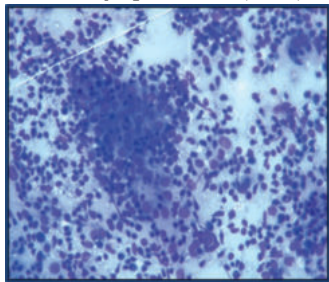
Fig:3 - Giemsa stain smear showing many scattered atypical keratinized cells with variable appearance, pleomorphic nuclei and high nucleocytoplasmic ratio with necrotic background –Metastatic Squamous Cell Carcinoma.(400x)
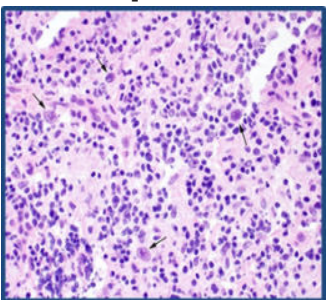
Fig:4 - Giemsa stain smear showing mixed population of small and large cells with neutrophiles and eosinophils in the background with few Reedsternberg/ Hodgkins cells .-Hodgkin Lymphoma (50x)
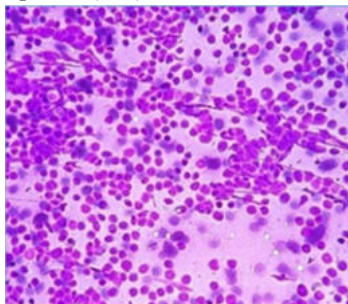
Fig:5 - FNAC Smear of non-Hodgkin's Lymphoma showing Monomorphic Population of Atypical Lymphoid cells with round nuclei (50x)

Table 2, This table shows that the maximum no. of cases lies in between 21 to 50 years of age group.

AGE IN YEARS	NO. OF CASES
1 -10	08
11 -20	22
21-30	73
31-40	108
41-50	76
51-60	32
61-70	18
71-80	10
81-90	03
TOTAL	350
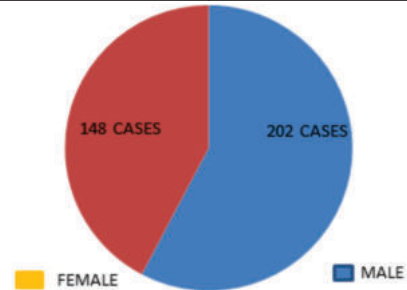
Fig-6 Male : Female -1.09:1, showing predominance of male population
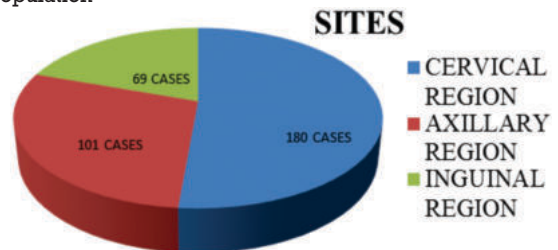
Fig 7 – Most common region affected was cervical, followed by axillary and inguinal.

DISCUSSION:

Lymph node enlargement is a very common symptom in the outpatient department. The application of FNA to evaluate the lymph node swelling is advantageous as it is rapid and relatively faster method . The present retrospective study included cases of FNA of lymphadenopathy over period of 2.5 year and included 350 cases. The current study had more number of males as compare to female, the age range of patient undergoing FNAC are 1 year to 90 year.

Table 3, These findings are in concordance with studies done by Parikshaa et al and Joshee et al . Table shows comparison of the present study with these studies

STUDIES	L1	L2	L3	L4	L5
Parikshaa et al.	4.1%	48.6%	0.5%	1.4%	41.7%
Joshee A et al.	10.5%	66.2%	2.1%	5.18%	15.7%
Present study	7.4%	63.4%	04%	1.7%	23.4%

The most common cytological diagnosis in our study was reactive hyperplasia of lymph node . The most common malignant lesion diagnosed on cytology in our study was metastatic squamous cell carcinoma which is similar with study done by Pariksha et al and Joshee A et al.

Table 4. In this study , 7.4 % cases were inadequate and were included in the L1 category, 63.4 %cases were in the L2 category, 04% cases in the L 3 category, 1.7% cases included in the L4 category and 23.5% cases in the L5 category.

S.No.	Category	Cytological Diagnosis	Number
1	L1- Inadequate /Non diagnostic	Blood only 17 Necrosis 09	26
2	L2- Benign	Reactive Lymphadenitis 151 Granulomatous Lymphadenitis 71	222

3	L3-Atypical cells of undermined significance		14
4	L4-Suspicious for malignancy		06
5	L5- Malignant	Metastasis 18 Metastatic Squamous Cell Carcinoma 46 Non Hodgkin Lymphoma 15 Hodgkin Lymphoma 02 Leukemia infiltration 01	82

CONCLUSION:

FNAC is a reliable, cost effective, and minimally invasive procedure for diagnosing lymph node pathology.FNAC has important application and diagnostic significance in lymph node swelling.By using Sydney system for classification of lymph node cytology, uniformity and reproducibility in cytological diagnosis can be achieved.It also help in risk stratification based on cytopathology.

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