Panacea Journal of Medical Sciences 2024;14(2):453–455

Content available at: https://www.ipinnovative.com/open-access-journals

Panacea Journal of Medical Sciences

Journal homepage: http://www.pjms.in/

Original Research Article

Application of the milan system for reporting salivary gland cytopathology- An experience from a tertiary care center

Chhavi Gupta[1], **Mona Jamwal**[2], **Sindhu Sharma**[1], **Afsana Anjum**[2]*

[1]*Dept. of Pathology, Govt. Medical College, Jammu, Jammu and Kashmir, India*
[2]*Dept. of Pathology, Govt. Medical College, Kathua, Jammu and Kashmir, India*

ARTICLE INFO

Article history:
Received 16-02-2023
Accepted 25-05-2023
Available online 13-08-2024

Keywords:
Milan system
Salivary gland
Cytopathology

ABSTRACT

Background: Fine needle aspiration cytology (FNAC) is an established modality for cytological assessment of lesions arising from salivary glands. The Milan System for Reporting Salivary Gland Cytopathology (MSRSGC) is a recently introduced 6 tiered classification for reporting salivary gland fine needle aspirates.
Aims and Objectives: To assess the cytological features of salivary gland aspirates and to classify them into different categories of the Milan system.
Materials and Methods: It was an observational study conducted retrospectively in our institution. The salivary gland FNAC cases were retrieved and reviewed. The cytological features were examined, the Milan system criteria were applied and cases were classified.
Results: The study had a total of 69 cases. There were 33 males (48%) and 36 (52%) females. There were 7 cases (10%) in Non diagnostic, 21 cases (30.4%) in Non neoplastic, 6 cases (8.7%) in Atypia of undetermined significance (AUS), 24 cases (34.8%) in Neoplasm: Benign, 1 case (1.4%) in Salivary gland neoplasm of uncertain malignant potential (SUMP), 3 cases (4.3%) in Suspicious for malignancy (SM) and 7 cases (10%) in Malignant categories. Maximum cases were in IV A category followed by category II.
Conclusion: The use of this reporting system is recommended for effective communication among pathologists and clinicians thereby guiding further management.

1. Introduction

Salivary gland lesions range from non- neoplastic cystic and inflammatory conditions to benign and malignant neoplasms.[1] These neoplasms comprise 3-10% of the tumors of head and neck.[2] Fine needle aspiration cytology (FNAC) is an established modality for cytological assessment of these lesions. It is an inexpensive and minimally invasive test that can detect the nature of disease process. It can distinguish non-neoplastic from neoplastic lesions; and also differentiates benign neoplastic lesions from malignant neoplasms. It thus helps in deciding further management plan.[2–5]

Despite being a sensitive, specific test with a high diagnostic accuracy as documented by many studies in literature, there are still many pitfalls in the diagnosis of salivary gland lesions on FNAC. These may be due to problems with sampling, or due to overlapping cytological features of different tumor types.[2,3] Another challenge is lack of consensus regarding use of a uniform terminology for reporting salivary gland cytology.[2,3,5,6] The use of variable descriptive terms by different pathologists and across different institutions has created confusion in interpreting the salivary gland FNAC results thereby affecting the management decisions.

* *Corresponding author*.
E-mail address: afsanakohli6@gmail.com (A. Anjum).

https://doi.org/10.18231/j.pjms.2024.081

This led to introduction of the "Milan System for Reporting Salivary Gland Cytopathology" (MSRSGC), a tiered classification system by the American Society of Cytopathology and International Academy of Cytology [7,8] This reporting system consists of 6 diagnostic categories, each having specific cytomorphologic criteria. Besides, each Milan category is associated with an implied risk of malignancy (ROM) and this system also provides clinical management guideline for each diagnostic category. [7–9]

This study was carried out to assess the cytological features of salivary gland aspirates and to classify them into different categories of the Milan system.

2. Materials and Methods

It was an observational study conducted in our institution retrospectively w.e.f. June 2022 to July 2021. Salivary gland FNACs done during this period were included in this study. Relevant clinical details and investigations of these cases were noted from the requisition forms. The corresponding slides were retrieved from the cytology section. FNACs during this period were performed using 18-22 G needle and 20 ml disposable syringe with the help of Franzen handle. This procedure was carried out after taking written informed consent from the patients. Smears were prepared from the aspirate. Air dried and alcohol fixed smears were stained with May-Grunwald-Giemsa (MGG) and Papanicolaou (PAP) stains respectively.

The stained slides were reviewed and the cytomorphological features were examined under light microscope. The adequacy of the specimen was evaluated as per the criteria of Milan system and the cases were classified into the six diagnostic categories of this system (MSRGC) that include I Non diagnostic; II Non-neoplastic; III Atypia of Undetermined Significant (AUS); IV Neoplasm A- Benign; B- Salivary gland neoplasm of uncertain malignant potential (SUMP); V Suspicious for malignancy (SM); VI Malignant categories.

3. Results

The present study included salivary gland aspirates from a total of 69 cases. There were 33 males (48%) and 36 (52%) females. The cases ranged in age from 5 months to 77 years with mean age 43 years. Maximum cases of our study belonged to 41-60 years age group as depicted in Table 1.

The classification of cases of this study into the various Milan categories is depicted in Table 2. Maximum cases were in IV A (Neoplasm Benign), 24 (34.8%) followed by Category II (Non-neoplastic), 21(30.4%). There were 7 (10%) cases in category I (Non diagnostic), 6 (8.7%) cases in category III (AUS), 3 (4.3%) cases in category V (Suspicious for Malignancy) and 7(10%) cases in category VI (Malignant). There was one case included in IV B (SUMP) category.

Parotid gland was the most commonly involved salivary gland (37, 53.6%). The submandibular gland and minor salivary glands were involved in 23, (33.3%) and 9, (13%) cases respectively. Mucinous cysts were included in AUS category. The most common lesion in IV A category was pleomorphic adenoma. Sialadenitis constituted the maximum cases of category II lesions.

Table 1: Age wise distribution of cases

Age (years)	No. of cases	Percentage (%)
0-20	13	18.8
21-40	17	24.6
41-60	27	39.1
61-80	12	17.4
Total	69	100.0

Table 2: Distribution of cases according to the milan system

Milan diagnostic category	No. of cases	Percentage (%)
I. Non-diagnostic	07	10.0
Insufficient cellularity	04	5.7
Non mucinous cyst fluid only	03	4.3
II. Non-neoplastic	21	30.4
Sialadenitis	09	13.0
Sialadenosis	07	10.1
Abscess	02	2.9
Granulomatous inflammation	01	1.4
Reactive lymphadentis	02	2.9
III. AUS	06	8.7
IV. Neoplasm	25	36.2
A. Benign	24	34.8
Pleomorphic adenoma	19	27.5
Warthin tumor	04	5.7
Oncocytoma	01	1.4
B. SUMP	01	1.4
V. Suspicious for malignancy	03	4.3
VI. Malignant	07	10.0
Mucoepidermoid carcinoma	03	4.3
Adenoid cystic carcinoma	02	2.9
Acinic cell carcinoma	01	1.4
Non Hodgkin lymphoma	01	1.4
Total	69	100.0

4. Discussion

A total of 69 salivary gland aspirates were included in this study. There were 33 males (48%) and 36 (52%) females. The females are slightly more than males, also seen in study by Gaikwad et al. [5] The mean age of cases was 43 years; comparable to studies by Gautam et al [10] and Pahwa et al. [2] 41-60 years age group was the most common, also seen in study by Meenai et al. [11] Parotid gland was the most frequently involved salivary gland in the present study followed by submandibular gland. This was also observed in

studies by Singh et al,[12] Legaspi et al[13] and in many other studies.

The aspirates were categorized using the Milan system for reporting salivary gland cytopathology. Maximum cases were seen in Category IV Neoplasm comparable to many studies by Meenai et al,[11] Archondakis et al[14] and many others. Within this category majority lesions were in IV A Neoplasm Benign category; comparable to these studies.[10,11,14] Pleomorphic adenoma was the most common lesion diagnosed in this category. This was also seen in studies by Pahwa et al[2] and Vaithy. K et al.[4] However in studies by Singh et al[12] and Mahammadtalha et al,[15] maximum cases were in the non neoplastic category.

The next commonest category in our study was category II (Non neoplastic). This was also observed in studies by Pahwa et al[2] and Giakwad et al.[5] Sialdenitis was the most common diagnosis in this category similar to study by Giakwad et al.[5] Non diagnostic category cases in our study were 7(10%); comparable to studies by Mahammadtalha et al[15] (16, 10.67%) and Singh et al[12](31,12.15%).

Malignant category constituted 7(10%) cases in our study; comparable to studies by Singh et al[12](22,8.62%) and Mahammadtalha et al[15](12, 8%). There were 6(8.7%) cases in AUS category in the present study, higher than other studies by Gaikwak et al[5] (4, 5.06%) and Kala et al[3] (8,2.7%). Cases in Suspicious for Malignancy category (V) in our study were 3(4.3%) comparable to study by Mahammadtalha et al[15] There was only one case in SUMP (IVB) category, comparable to study by Archondakis et al[14] (2,1.9%).

5. Conclusion

The findings of our study are comparable to many other studies available in the literature. The uniformity in reporting of salivary gland FNAs will improve the clarity, quality, and reproducibility of diagnoses among various institutions. Thus the present study encourages the use of this reporting system for effective communication among pathologists and clinicians thereby guiding further management.

6. Source of Funding

None.

7. Conflict of Interest

None.

References

1. Chopra S, Jindal R, Joseph M. Application of Milan System for Reporting Salivary Gland Cytopathology: A 7 Year Study. *J Cytol Histol*. 2021;12(6):576.
2. Pahwa S, Panjwani P, Gnanapriya V. Reclassification of salivary gland aspirates based on "The Milan system for reporting salivary gland cytology": A five-year retrospective study. *J Cytol*. 2022;39(3):98–104.
3. Kala C, Kala S, Khan L. Milan System for Reporting Salivary Gland Cytopathology: An Experience with the Implication for Risk of Malignancy. *J Cytol*. 2019;36(3):160–4.
4. Vaithy KA, Venkat-Raghava ATM, Sri ESK, Umadevi KR. Cytohistological correlation of salivary gland tumours with emphasis on Milan system for reporting: A novel step towards internal quality assurance. *IP Arch Cytol Histopathology Res*. 2020;5(4):283–7.
5. Gaikwad VP, Anupriya C, Naik LP. Milan System for Reporting Salivary Gland Cytopathology- An Experience from Western Indian Population. *J Cytol*. 2020;37(2):93–8.
6. Kumari M, Sharma A, Singh M, Rupp NJ, Ikenberg K, Broglie MA, et al. Milan system for reporting of salivary gland cytopathology: to recognize accuracy of fine needle aspiration and risk of malignancy- a 4 years institutional study. *Int J Res Rev*. 2020;7(2):201–7.
7. Rossi ED, Baloch Z, Pusztaszeri M, Faquin WC. The Milan System for Reporting Salivary Gland Cytopathology (MSRSGC): An ASC-IACesponsored system for reporting salivary gland fine-needle aspiration. *J Am Soc Cytopathol*. 2018;7(3):111–8.
8. Rossi ED. The Milan System, from Its Introduction to Its Current Adoption in the Diagnosis of Salivary Gland Cytology. *J Mol Pathol*. 2021;2(2):114–22.
9. Mathiyazhagan D, Patil ST, Thiripurasundari R. The Milan system for Reporting Salivary Gland Cytopathology (MSRSGC) - An international effort to improve patient care. *Eur J Molec Clin Med*. 2022;9(7):712–23.
10. Gautam D, Thapa R. The Milan System for Reporting Salivary Gland Cytopathology: A 3-year Retrospective Analysis in Patan Hospital. *Nepalese Med J*. 2022;5(1):528–32.
11. Meenai FJ, Durrani N, Siddique SS, Ali MA, Singh M. Reporting Risk of Malignancy in Salivary Gland Cytopathology and Histopathology: A Cross-sectional Study. *J Clin Diagn Res*. 2021;15(6):23–7.
12. Singh M, Sudarsini S, Khan L, Singh P, Barik SK. The Milan System for Reporting Salivary Gland Cytopathology: Assessment by Recategorization and Predicting Risk of Malignancy: An Experience from a Tertiary Health Care from North India. *J Med Sci Clin Res*. 2021;9(6):112–7.
13. Legaspi CM, Alcazaren EA, Carnate J. Application of the Milan System of Reporting Salivary Gland Cytopathology: A Retrospective Cytohistological Study in a Tertiary Medical Center. *Phil J Path*. 2022;7(1):15–23.
14. Archondakis S, Roma M, Kaladelfou E. Two-Year Experience of the Implementation of the Milan for Reporting Salivary Gland Cytopathology at a Private Medical Laboratory. *Head Neck Pathol*. 2021;15(3):780–6.
15. Mahammadtalha B, Swami SY. Cytopathological study of salivary gland lesions in rural population: Use of the Milan system for reporting. *Trop J Path Micro*. 2019;5(2):100–6.

Author biography

Chhavi Gupta, Senior Resident https://orcid.org/0000-0001-6556-7903

Mona Jamwal, Senior Resident

Sindhu Sharma, Professor

Afsana Anjum, Senior Resident

Cite this article: Gupta C, Jamwal M, Sharma S, Anjum A. Application of the milan system for reporting salivary gland cytopathology- An experience from a tertiary care center. *Panacea J Med Sci* 2024;14(2):453-455.