

## NASAL AND PARANASAL SINUS SPACE-OCCUPYING LESIONS: A CLINICOPATHOLOGIC ANALYSIS

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### ABSTRACT

**Introduction:** Aesthetically and practically, the nose is the face's focal point. Both benign and malignant nasal, sinus, and nasopharynx lesions are common. They span ages. Sinonasal lesions often cause nasal obstruction, discharge, epistaxis, face edema. The goal of this prospective study was to compare the occurrences of these lesions, define them as non-neoplastic or malignant, and assess their clinical and histological characteristics. **Method:** This was a hospital-based cross-sectional retrospective research from November 2019 to February 2022. All patients presenting to the Histopathology departments of Ghazi Al-Hariri hospital for surgical specialties, Baghdad, Iraq and nursing home hospital, Baghdad, Iraq for sinonasal region lesions were included in the research. Poorly preserved specimens, nasal skin neoplasms, and nasal bone tumors were excluded. **Results:** mean age of patients [34 ± 17] years. [64.9%] of patients are females, most common age groups are 20-45 years old and [66.4%] of patients have benign lesion. There is a significant association between diagnosis and age groups of patients, [47.2%] of patients with benign tumor at age group 46-60 years old. There is a significant association between diagnosis and gender of patients, [66.7%] of malignant tumor occur in males. There is significant association between diagnosis and clinical features of patients, [81%] of malignant lesion present as mass. There is significant association between diagnosis and site of tumor. [71.4%] of patients diagnosed as malignant tumor locate in nose. **Conclusion:** Most patients are female, 20-45, and have benign lesions. Most malignant lesions occur in patients at 20-45 years and above 60. Predominantly males and locate in the nose.

**KEYWORDS:** Nasal, Paranasal Sinus, Space-Occupying Lesions, Clinicopathologic Analysis.

### INTRODUCTION

The nose is the focal point of the face, both aesthetically and practically. Nasal cavity, paranasal sinuses, and nasopharynx lesions, both benign and malignant, are frequently seen in clinical practice.<sup>[1]</sup> They can be found across the age spectrum. Nasal obstruction, nasal discharge, epistaxis, facial edema are common initial presentations of sinonasal lesions.<sup>[2]</sup> Despite its apparent simplicity, the clinical complaint of a mass in the nose raises a wide range of diagnostic possibilities for both the treating physician and the diagnosing pathologist. A wide range of environmental factors, including pathogens, chemicals, allergens, mechanical stress, and more, impact the sinonasal cavity. These harmful experiences cause neoplastic and tumor-like states to develop.<sup>[3]</sup> Lesions can be anything from benign nasal polyps to malignant polypoidal tumors. With a prevalence incidence of 0.04%,<sup>[4]</sup> nasal polyps are the

most common cause of nasal obstruction. There is still much mystery around their cause, however they have been linked to conditions like asthma, allergies, infections, and even an intolerance to aspirin.<sup>[4]</sup> Inappropriately invasive procedures are sometimes performed on benign lesions of the sinonasal region because of a failure to recognize their prevalence. They tend to have a protracted course in the clinic, with local recurrences, leading to high morbidity rates. Malignant lesions affecting the nose, sinuses are a rare kind of cancer, making up less than 1% of all tumors and 3% of head and neck cancers. Geographically, they are most common among Africans, Japanese, the arabs and least common in Americans and Western Europeans.<sup>[5]</sup> Because there is such a wide range in malignancy types and stages, understanding their clinical and pathological facets is crucial. Histopathology, in conjunction with radiographic techniques, is now critical for the prompt

detection and treatment of these lesions.<sup>[6,7]</sup> The purpose of this prospective study was to compare the occurrences of these lesions, classify them as either non-neoplastic or cancerous, and examine their clinical and histological characteristics.

**METHOD**

This study was a hospital based cross sectional retrospective study of 134 patients in which patient data were collected from November 2019 to February 2022. All the patients presenting to the department of Histopathology, Ghazi Al-Hariri hospital for surgical specialties, Baghdad, Iraq and department of Histopathology, nursing home hospital, Baghdad, Iraq for histopathological examination of sinonasal area lesions were included in the study. Inclusion criteria were specimens which were adequate and representative pieces of the lesion whereas exclusion criteria were

poorly preserved specimens; neoplasms arising from nasal skin, bone tumors of the nose. SPSS 22 was used for statistical analysis, and the mean, median, and standard deviation were calculated for numerical data. Although the Chi-square statistic is used to analyses the degree of correlation between categorical variables, the correlation between continuous data is demonstrated by the Pearson product-moment correlation coefficient. To be statistically significant, a p-value must be less than or equal to 0.05.

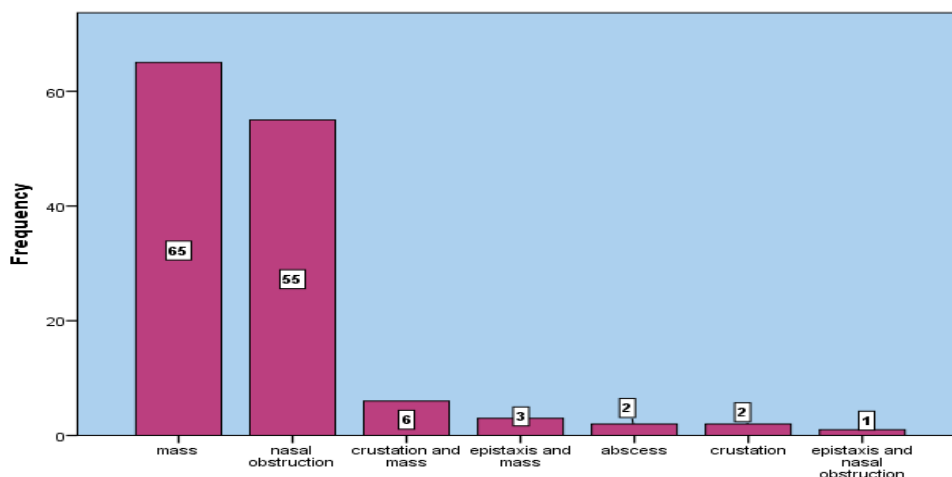
**RESULTS**

Cross sectional study of 134 patients with nasal and paranasal sinuses, mean age of patients [34 ± 17] years. [64.9%] of patients are males, most common age groups are 20-45 years old and [66.4%] of patients have benign lesion. As show in table 1.

**Table 1: Sociodemographic data of all females includes in study.**

| variables                          |                       | frequency | percentage |
|------------------------------------|-----------------------|-----------|------------|
| <b>Gender</b>                      | <i>Female</i>         | 47        | 35.1       |
|                                    | <i>Male</i>           | 87        | 64.9       |
| <b>Age group</b>                   | <20                   | 35        | 26.1       |
|                                    | 20-45                 | 63        | 47.0       |
|                                    | 46-60                 | 25        | 18.7       |
|                                    | >60                   | 11        | 8.2        |
| <b>Histopathological diagnosis</b> | <i>Benign</i>         | 89        | 66.4       |
|                                    | <i>malignant</i>      | 21        | 15.7       |
|                                    | <i>non neoplastic</i> | 24        | 17.9       |

According to fig 1, 65 patients have mass, 55 patients have nasal obstruction, and other clinical features show in fig 1.



**Fig. 1: distribution of patients according to clinical features.**

According to fig 2, 112 patients have tumor in nose, 9 patients have tumor in post nasal space, and other site of tumor show in fig 2.

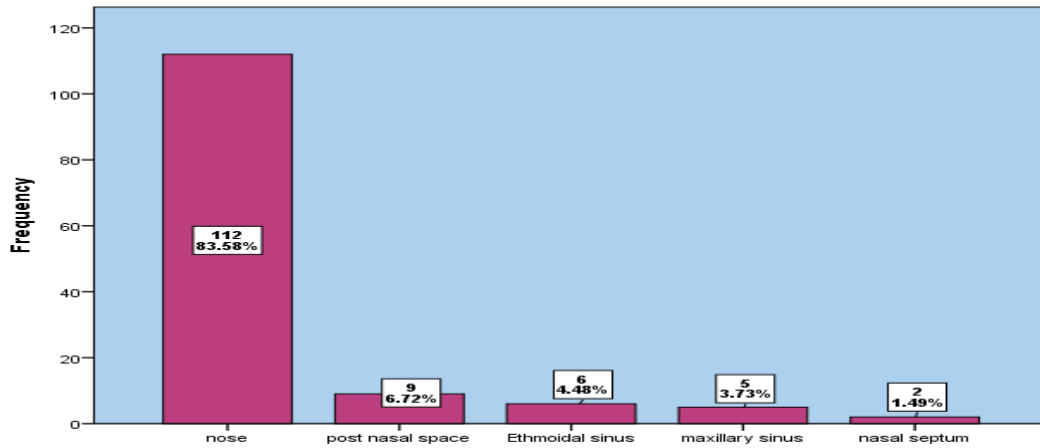


Fig. 2: distribution of patients according to site of tumor.

According to fig 3, 30 patients have inflammatory nasal polyps, 20 patients have nasal fungal infection, 22 patients have allergic polyp, 16 patients have allergic

fungal sinusitis, and other histopathological diagnosis of tumors show in fig 3.

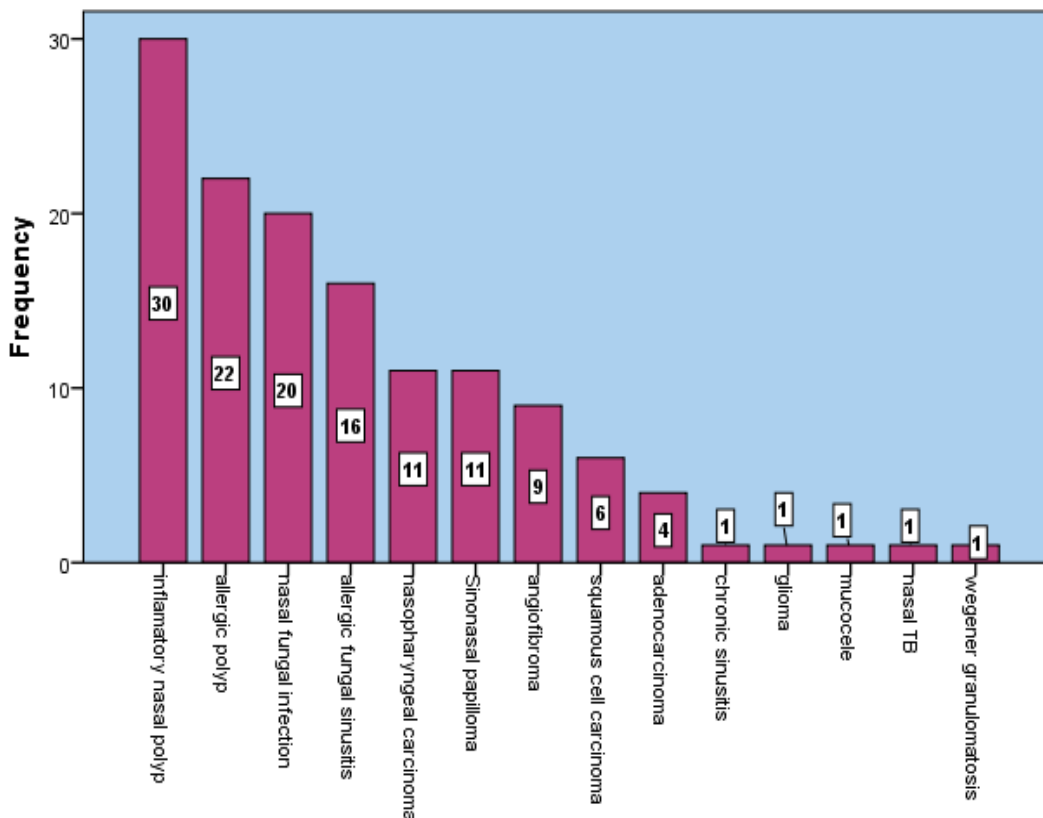


Fig. 3: distribution of patients according to in details histopathological diagnosis.

There is a significant association between diagnosis and age groups of patients, [47.2%] of patients with benign tumor at age group 46-60 years old, [33.3%] of patients with malignant tumor at age group 20-45 and more than

60 years old. There is a significant association between diagnosis and gender of patients, [66.7%] of malignant tumor occur in males and [33.3%] of malignant tumor occur in females. As show in table 2.

**Table 2: association between diagnosis and age groups, gender of patients.**

| variables        |                | Diagnosis |           |                | P-value      |
|------------------|----------------|-----------|-----------|----------------|--------------|
|                  |                | Benign    | malignant | non neoplastic |              |
|                  | <i>&lt;20</i>  | 25        | 3         | 7              |              |
|                  |                | 28.1%     | 14.3%     | 29.2%          |              |
|                  | <i>20-45</i>   | 42        | 7         | 14             |              |
| <b>Age group</b> |                | 47.2%     | 33.3%     | 58.3%          | <b>0.001</b> |
| <b>(years)</b>   | <i>46-60</i>   | 19        | 4         | 2              |              |
|                  |                | 21.3%     | 19.0%     | 8.3%           |              |
|                  | <i>&gt;60</i>  | 3         | 7         | 1              |              |
|                  |                | 3.4%      | 33.3%     | 4.2%           |              |
|                  | <b>Total</b>   | 89        | 21        | 24             |              |
|                  |                | 100.0%    | 100.0%    | 100.0%         |              |
|                  | <b>Females</b> | 25        | 7         | 15             |              |
| <b>Gender</b>    |                | 28.1%     | 33.3%     | 62.5%          |              |
|                  | <b>Males</b>   | 64        | 14        | 9              | <b>0.007</b> |
|                  |                | 71.9%     | 66.7%     | 37.5%          |              |
|                  | <b>Total</b>   | 89        | 21        | 24             |              |
|                  |                | 100.0%    | 100.0%    | 100.0%         |              |

**P-value ≤ 0.05 (significant).**

There is significant association between diagnosis and clinical features of patients, [81%] of malignant present

as mass while [39.3%] of patient’s have nasal obstruction are diagnosed as benign tumor. As show in table 3.

**Table 3: association between diagnosis and clinical features of patients.**

| variables       |  | Diagnosis |           |                | P-value       |
|-----------------|--|-----------|-----------|----------------|---------------|
|                 |  | Benign    | malignant | non neoplastic |               |
|                 | <i>Abscess</i>                         | 0         | 0         | 2              |               |
|                 |  | 0.0%      | 0.0%      | 8.3%           |               |
|                 | <i>Crustation</i>                      | 0         | 0         | 2              |               |
|                 |  | 0.0%      | 0.0%      | 8.4%           |               |
|                 | <i>Crustation and mass</i>             | 5         | 0         | 1              |               |
| <b>Clinical</b> |  | 5.6%      | 0.0%      | 4.2%           |               |
| <b>features</b> | <i>Epistaxis and mass</i>              | 3         | 0         | 0              | <b>0.0001</b> |
|                 |  | 3.4%      | 0.0%      | 0.0%           |               |
|                 | <i>Epistaxis and nasal obstruction</i> | 0         | 1         | 0              |               |
|                 |  | 0.0%      | 4.8%      | 0.0%           |               |
|                 | <i>Mass</i>                            | 46        | 17        | 2              |               |
|                 |  | 51.7%     | 81.0%     | 8.3%           |               |
|                 | <i>Nasal obstruction</i>               | 35        | 3         | 17             |               |
|                 |  | 39.3%     | 14.3%     | 70.8%          |               |
|                 | <b>Total</b>                           | 89        | 21        | 24             |               |
|                 |  | 100.0%    | 100.0%    | 100.0%         |               |

**P-value ≤ 0.05 (significant).**

There is significant association between diagnosis and site of tumor. [71.4%] of patients diagnosed as malignant tumor locate in nose while [28.6%] of patients diagnosed

as malignant tumor locate in post nasal space. As show in table 4.

**Table 4: association between diagnosis and site of tumor.**

| variables   |                        | Diagnosis |           |                | P-value |
|-------------|------------------------|-----------|-----------|----------------|---------|
|             |                        | Benign    | malignant | non neoplastic |         |
|             | <i>Ethmoidal sinus</i> | 3         | 0         | 3              |         |
|             |                        | 3.4%      | 0.0%      | 12.5%          |         |
|             | <i>maxillary sinus</i> | 5         | 0         | 0              |         |
|             |                        | 5.6%      | 0.0%      | 0.0%           |         |
|             | <i>nasal septum</i>    | 1         | 0         | 1              |         |
| <b>Site</b> |                        | 1.1%      | 0.0%      | 4.2%           |         |

|  |                         |        |        |        |              |
|--|-------------------------|--------|--------|--------|--------------|
|  | <i>nose</i>             | 77     | 15     | 20     | <b>0.001</b> |
|  |                         | 86.5%  | 71.4%  | 83.3%  |              |
|  | <i>post nasal space</i> | 3      | 6      | 0      |              |
|  |                         | 3.4%   | 28.6%  | 0.0%   |              |
|  | <b>Total</b>            | 89     | 21     | 24     |              |
|  |                         | 100.0% | 100.0% | 100.0% |              |

**P-value  $\leq$  0.05 (significant).**

## DISCUSSION

Nasal masses, which include tumors of the nasal cavity, paranasal sinuses, and nasopharynx, are a varied group of lesions with different causes. Nasal polyp is the most common clinical diagnosis because it is difficult to distinguish between non-neoplastic and neoplastic lesions. Infectious and allergic causes are often overlooked by professionals. The majority of hospitalizations are for benign sinonasal diseases. Because it is sometimes impossible to tell at first glance whether an illness is benign or malignant, the time it takes to receive an accurate diagnosis and begin treatment often increases.<sup>[8]</sup> In current study the mean age of patients  $[34 \pm 17]$  years. [64.9%] of patients are males, most common age groups are 20-45 years old and [66.4%] of patients have benign lesion. This is similar to other study done in India stated that these masses had predilection for males demonstrating a male to female ratio of 1.98:1.<sup>[9,10]</sup> Regarding age, current study revealed 2nd and 3rd decades of life were the most vulnerable period as observed by Bakari et al.,<sup>[11]</sup> and Zafar et al.,<sup>[9]</sup> Malignant lesions have been generally reported in 6th-7th decades in concordance with Patel et al.,<sup>[12]</sup> In current study 30 patients have inflammatory nasal polyps, 20 patients have nasal fungal infection, 22 patients have allergic polyp, 16 patients have allergic fungal sinusitis, this is also similar to other study stated that the most common abnormality of the nasal cavity is a polyp in the nose. Although its precise cause is unknown, it is linked to a number of conditions including asthma, allergies, sensitivity to aspirin, and infections. Tondon et al.<sup>[13]</sup> (64%) and Dasgupta et al.<sup>[14]</sup> (62.5%) both found an incidence of nasal polyp of 65.9% among masses of the nasal cavity and paranasal sinuses. Similar to Modh et al.,<sup>[15]</sup> An abnormality of breathing is seen in nasal glioma, a congenital deformity of choristoma of mature glial tissue that is discontinuous with an intracranial component. The lesion was found in a single patient younger than one-year-old, making it extremely uncommon.<sup>[16]</sup> In their analysis of nine instances with nasal glioma, Rahbor et al.<sup>[17]</sup> found that the average age of presentation was nine months. In current study there is a significant association between diagnosis and age groups of patients, [47.2%] of patients with benign tumor at age group 46-60 years old, [33.3%] of patients with malignant tumor at age group 20-45 and more than 60 years old, patients between the ages of 21 and 30 presented with benign lesions at a higher rate than those older than that (33.64%). Malignant tumours were typically found at a median age of 49.14 years. Our findings were consistent with those of Das Gupta et al.<sup>[18]</sup> who found that inflammatory and tumor-like lesions

were more common in those aged 21 to 40. We found 22 cases of benign sinonasal masses; 8 of them occurred in patients aged 21–30. Benign lesions were uncommon in patients aged 50 and up; this finding was consistent with that of Khan et al.<sup>[19, 20]</sup> There is a significant association between diagnosis and gender of patients, [66.7%] of malignant tumor occur in males and [33.3%] of malignant tumor occur in females, other study shows that the male to female sex ratio for sinonasal lesions was found to be 1.3:1 and for inflammatory lesions was 1.08:1. Kumari S et al.<sup>[21]</sup> reported the sex ratio of 1:1 for inflammatory and tumor like lesions. Whereas for malignant sinonasal lesions we found a sex ratio of 0.75:1 comparable to Khan et al.<sup>[19]</sup> In current study there is significant association between diagnosis and clinical features of patients, [81%] of malignant present as mass while [39.3%] of patient's have nasal obstruction are diagnosed as benign tumor. And there is significant association between diagnosis and site of tumor. [71.4%] of patients diagnosed as malignant tumor locate in nose while [28.6%] of patients diagnosed as malignant tumor locate in post nasal space. Retrospective review by Ahmet et al.<sup>[22]</sup> revealed 19 patients with fungal sinusitis, of the patients 11 were male and 8 females with age range 5–74 years and mean age of 37.1 years. All patients had an underlying immunocompromised state.

## CONCLUSION

Most patients are females, common age group are 20\_45 years old and predominant patients have benign lesions. Most of patients with malignant lesions at age groups 20\_45 and more than 60 years old, predominant in males, most of malignant lesions is mass presentation and located at nose.

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