Histopathological Profile of Nasal Cavity, Paranasal Sinuses, and Nasopharyngeal Masses in Hill State of Himachal Pradesh, India

ABSTRACT

Introduction: Nasal masses are common finding in the ear, nose, and throat outpatient department. Most patients present with complaints of nasal obstruction. A sinonasal mass can have various differential diagnoses. They may be congenital, inflammatory, neoplastic (benign or malignant), or traumatic in nature. A careful histopathological examination is necessary to decide the nature of any particular lesion.

Materials and methods: The retrospective study was carried out between January 2011 and December 2013. A total of 185 cases diagnosed with masses of the nasal cavity, paranasal sinuses, and nasopharynx were included. Data from histopathological records were retrieved to confirm the diagnosis.

Observations: Among 185 cases, 75% were non-neoplastic and 25% were neoplastic. Among neoplastic masses, 57% were benign and 43% were malignant. The age of presentation ranged from first to eighth decade of life (mean age 37.74 years). The lesions had a stronger predilection for males (1.68:1). Among non-neoplastic lesions, nasal polyp was the commonest lesion followed by ethmoidal mucocele (1.44%) and lupus vulgaris (0.72%). Among benign lesions, inverted papilloma (30.77%) and nasopharyngeal angiofibroma (30.77%) were the commonest followed by capillary hemangioma (15.38%), osteoma (7.68%), nasopharyngeal lymphoepithelioma (3.85%), chondroma (3.85%), pleomorphic adenoma (3.85%), and schwannoma (3.85%). Squamous cell carcinoma (40%) was the commonest malignant neoplastic lesion observed followed by adenoid cystic carcinoma (20%), malignant melanoma (15%), nasopharyngeal carcinoma (10%), esthesioneuroblastoma (10%), and non-Hodgkin lymphoma (5%).

Conclusion: Among the noninflammatory lesion, nasal polyp is the commonest lesion. Nasal polyps are more common in hilly area may be due to exposure to pine pollens. There is no difference in the histopathological profile of benign and malignant lesions.

MATERIALS AND METHODS

The retrospective study was carried out at Indira Gandhi Medical College, Shimla, which is a tertiary care hospital.
in Himachal Pradesh, India. The total duration of study was 3 years between January 2011 and December 2013. A total of 185 cases diagnosed with masses of the NC, PNS, and nasopharynx were included. Data from histopathological records were retrieved to confirm the diagnosis. The cases were classified into non-neoplastic and neoplastic lesions. The neoplastic lesions were further classified as benign and malignant.

OBSERVATIONS

A total of 185 cases presented as mass in NC, PNS, and nasopharynx. One hundred and thirty-nine cases (75%) were non-neoplastic and 46 (25%) were neoplastic (Graph 1). Among neoplastic masses, 26 (57%) were benign and 20 (43%) were malignant (Graph 2).

The age of presentation ranged from first to eighth decade of life. The mean age of presentation was 37.74 years. The lesions of NC, PNS, and nasopharynx had a stronger predilection for males (116) as compared with females (69), the ratio being 1.68:1.

Non-neoplastic Lesions

Among 139 cases of non-neoplastic lesions, mean age of presentation was 36.01 years. The lesions of NC, PNS, and nasopharynx had a stronger predilection for males as compared with females. Nasal polyp (Fig. 1) was the commonest non-neoplastic lesion observed. It constituted 136 (97.84%) cases of all non-neoplastic cases. Among nasal polyp, majority were inflammatory polyp with 107 (78.67%) cases followed by allergic polyp with 24 (17.65%) cases, nasal polyp with angiomatous change with 4 (2.94%) cases, and 1 (0.74%) case of fungal polyp. The other non-neoplastic lesions were ethmoidal mucocele with 2 (1.44%) cases, lupus vulgaris with 1 (0.72%) case (Table 1).

Table 1: Distribution of non-neoplastic lesions (n = 139)

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Number of cases</th>
<th>Percentage</th>
<th>Male</th>
<th>Female</th>
<th>Age at presentation (decade)</th>
<th>Mean age (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nasal polyp (97.84%)</td>
<td>107</td>
<td>78.67</td>
<td>70</td>
<td>37</td>
<td>2nd–4th</td>
<td>36.01</td>
</tr>
<tr>
<td>Inflammatory polyp</td>
<td>24</td>
<td>17.65</td>
<td>11</td>
<td>13</td>
<td>2nd–4th</td>
<td></td>
</tr>
<tr>
<td>Allergic polyp</td>
<td>1</td>
<td>0.74</td>
<td>0</td>
<td>1</td>
<td>3rd</td>
<td></td>
</tr>
<tr>
<td>Fungal polyp</td>
<td>4</td>
<td>2.94</td>
<td>2</td>
<td>2</td>
<td>4th–5th</td>
<td></td>
</tr>
<tr>
<td>Nasal polyp with angiomatous change</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethmoidal mucocele</td>
<td>2</td>
<td>1.44</td>
<td>1</td>
<td>1</td>
<td>3rd–4th</td>
<td></td>
</tr>
<tr>
<td>Lupus vulgaris</td>
<td>1</td>
<td>0.72</td>
<td>0</td>
<td>1</td>
<td>4th</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>139</td>
<td>100</td>
<td>84</td>
<td>55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Histopathological Profile of Nasal Cavity, Paranasal Sinuses, and Nasopharyngeal Masses in Hill State of Himachal Pradesh


Neoplastic Lesions

Among 46 cases of neoplastic lesions, 26 were benign and 20 were malignant.

Benign Neoplastic Lesions

Among 26 cases of benign lesions, majority were males. Inverted papilloma with 8 (30.77%) cases and nasopharyngeal angiofibroma (Fig. 2) with 8 (30.77%) cases were the commonest benign neoplastic lesion observed. The other benign neoplastic lesions were capillary hemangioma (Fig. 3) with 4 (15.38%) cases, osteoma with 2 (7.68%) cases, nasopharyngeal lymphoepithelioma with 1 (3.85%) case, chondroma with 1 (3.85%) case, pleomorphic adenoma (Fig. 4) with 1 (3.85%) case, and schwannoma (Fig. 5) with 1 (3.85%) case (Table 2).

![Fig. 2: Histopathology of capillary hemangioma (hematoxylin and eosin, 100×)](image)

![Fig. 3: Histopathology of angiofibroma (hematoxylin and eosin, 100×)](image)

![Fig. 4: Histopathology of pleomorphic adenoma (hematoxylin and eosin, 100×)](image)

![Fig. 5: Histopathology of schwannoma (hematoxylin and eosin, 100×)](image)

Table 2: Distribution of benign lesions (n = 26)

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Number of cases</th>
<th>%</th>
<th>Male</th>
<th>Female</th>
<th>Age at presentation (decade)</th>
<th>Mean age (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inverted papilloma</td>
<td>8</td>
<td>30.77</td>
<td>7</td>
<td>1</td>
<td>5th–7th</td>
<td>58.12</td>
</tr>
<tr>
<td>Capillary hemangioma</td>
<td>4</td>
<td>15.38</td>
<td>3</td>
<td>1</td>
<td>3rd</td>
<td>29.75</td>
</tr>
<tr>
<td>Nasopharyngeal angiofibroma</td>
<td>8</td>
<td>30.77</td>
<td>8</td>
<td>0</td>
<td>2nd</td>
<td>21</td>
</tr>
<tr>
<td>Nasopharyngeal lymphoepithelioma</td>
<td>1</td>
<td>3.85</td>
<td>1</td>
<td>0</td>
<td>5th</td>
<td>47</td>
</tr>
<tr>
<td>Osteoma</td>
<td>2</td>
<td>7.68</td>
<td>1</td>
<td>1</td>
<td>2nd</td>
<td>21</td>
</tr>
<tr>
<td>Chondroma</td>
<td>1</td>
<td>3.85</td>
<td>1</td>
<td>0</td>
<td>1st</td>
<td>6</td>
</tr>
<tr>
<td>Pleomorphic adenoma</td>
<td>1</td>
<td>3.85</td>
<td>0</td>
<td>1</td>
<td>5th</td>
<td>50</td>
</tr>
<tr>
<td>Schwannoma</td>
<td>1</td>
<td>3.85</td>
<td>1</td>
<td>0</td>
<td>7th</td>
<td>64</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td>100</td>
<td>22</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Malignant Neoplastic Lesions

Among 20 cases of malignant lesions, squamous cell carcinoma (Fig. 6) with 8 (40%) cases was the commonest malignant neoplastic lesion observed. The other malignant neoplastic lesions were adenoid cystic carcinoma with 4 (20%) cases, malignant melanoma (Fig. 7) with 3 (15%) cases, nasopharyngeal carcinoma with 2 (10%) cases, esthesioneuroblastoma with 2 (10%) cases, and non-Hodgkin lymphoma (Figs 8 and 9) with 1 (5%) case (Table 3).

DISCUSSION

In our study, sinonasal masses had predilection for males demonstrating M:F of 1.69:1 similar to the study by Khan et al., i.e., 1.7:1, while the study by Bakari et al. and Parajuli and Tuladhar revealed an opposite ratio, showing female preponderance (M:F ratio of 1:1.2 and 1:1.3 respectively).

In our study, second to fifth decade of life are most vulnerable period for development of sinonasal masses with mean age of presentation 37.74 years, while Khan

Table 3: Distribution of malignant lesions (n = 20)

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Number of cases</th>
<th>Male</th>
<th>Female</th>
<th>Age at presentation (decade)</th>
<th>Mean age (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Squamous cell carcinoma</td>
<td>8</td>
<td>4</td>
<td>4</td>
<td>6th</td>
<td>57.62</td>
</tr>
<tr>
<td>Adenoid cystic carcinoma</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>5th–6th</td>
<td>47.75</td>
</tr>
<tr>
<td>Malignant melanoma</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1st, 5th, 8th</td>
<td>43.67</td>
</tr>
<tr>
<td>Nasopharyngeal carcinoma</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>6th–8th</td>
<td>66</td>
</tr>
<tr>
<td>Esthesioneuroblastoma</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2nd, 5th</td>
<td>30</td>
</tr>
<tr>
<td>Non-Hodgkin lymphoma</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>3rd</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>10</td>
<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
et al. had reported a peak incidence of 22.5 years. The studies by Humayun et al. and Bakari et al. showed mean age of presentation of 32.38 and 33 years respectively. Malignancies have been reported generally after fourth decade of life.

In our study, there are 75% non-neoplastic lesions and 25% neoplastic lesions, which is similar to the study by Tondon et al. (74.61 and 25.41%), whereas Khan et al. reported 60 and 40% respectively.

**Non-neoplastic Lesions**

In this study, nasal polyps are the most common lesions of the NC (73.5%), which is higher as compared with the study by Dasgupta et al. (62.5%), but similar to the study by Parajuli and Tuladhar (71.6%) – another study conducted in hilly area. This may be due to increased exposure to pine pollens in hilly areas.

We observed one case (0.5%) of lupus vulgaris, which is similar to the study done by Waldman et al. and Nayar et al., who described sinonasal tuberculosis as rare entity.

We observed two cases (1.44%) of ethmoidal mucocele, which is not consistent with other studies.

There are no cases of rhinosporidiosis and rhinoscleroma in our study, whereas studies by Dasgupta et al. (31.5%) and Kulkarni et al. (14%) showed incidence for rhinosporidiosis and incidence of 1.2% and 15.84% for rhinoscleroma. Rhinosporidiosis and rhinoscleroma are more common in hot and humid environment.  

**Benign Lesions**

The commonest benign tumor in our study was angiofibroma (30.7%) of all the benign lesions, which is similar to the study done by Kulkarni et al. (30.76%).

Inverted papilloma is also common (30.7%) of all the benign lesions, which is similar to the study done by Khan et al. (26.8%).

In our study, capillary hemangioma was 15.4%, which is similar to the study done by Swamy and Gowda, who reported 10%.

Angiofibroma showed peak age of presentation in the second decade and inverted papilloma showed peak age of presentation in the fifth decade of life, which is similar to the study done by Synder and Perzin and Dasgupta et al.

We have also reported single rare case of schwannoma. Solitary nasal schwannomas are rare. Lesions presenting in the PNS and NC account for approximately 4% of head and neck schwannomas. In the study by Dharia et al., they found only 62 reported cases in the English language literature from 1943 to 2006.

In our study, we found two cases (7.68%) of osteoma, one case (3.85%) of nasopharyngeal lymphoepithelioma, one case (3.85%) of chondroma, and one case (3.85%) of pleomorphic adenoma, which is not consistent with other studies.

**Malignant Lesion**

Our study shows that squamous cell carcinoma was most common (40%) followed by adenoid cystic carcinoma (20%). Results are similar to the study done by Dasgupta et al., which shows 36.6% and 19.5% of squamous cell carcinoma and adenoid cystic carcinoma respectively.

There were three cases of malignant melanoma (15%) similar to the study done by Khan et al. (10%).

We have reported two cases (10%) of olfactory neuroblastoma, which is similar to the study done by Khan et al. (5%) and one case (5%) of non-Hodgkin lymphoma, similar to the result of the study done by Dasgupta et al. (4.9%).

**CONCLUSION**

Among the noninflammatory lesions, nasal polyp is the commonest lesion. Nasal polyps that are more common in hilly area may be due to exposure to pine pollens, whereas rhinosporidiosis and rhinoscleroma are more common in hot and humid environment (low altitude and coastal areas). There is no difference in histopathological profile of benign and malignant lesions.

**REFERENCES**