Variable Presentations of Sinonasal Polypoid Masses: A Tertiary Institution Experience

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ABSTRACT

Background
Lesions of the sinonasal area are varied, but they mostly present as polypoid masses which require meticulous work-up to reach at the most probable diagnosis.

Objective
Analysis of polypoid sinonasal masses in terms of etiology, clinical presentations, brief demographic profile, clinico-histologic correlate where possible, and follow-up results.

Method
In this descriptive, longitudinal study, 198 patients with polypoid sinonasal masses attending the otolaryngology clinic of a tertiary teaching institute were selected using proper selection criteria and analyzed through a pre-set proforma and algorithm for a diagnostic work-up (that included histopathology where necessary).

Result
Common presentations were nasal obstruction (~89%), discharge (~70%) and hyposmia (~22%). Though nearly 87% was clinically benign and 8% indeterminate, therapeutic and diagnostic interventions (including histopathology) showed 91% truly benign, of which polyposis formed the bulk. Sensitivity of clinical detection was 75% for benign lesions and 62% for malignancies. Diagnosis depended on histopathology in 52.52% cases, including the clinically malignant, the “grey zone”, and more than 40% of the clinically benign lesions. There was male predilection (2.16 for benign lesions and 1.57 for malignant), rural preponderance, and above 60% of the patients were within 50-70 years. There was ~26% recurrence in the follow-up period of a minimum of one year, predominantly in polyposis (29.55%) and malignancies (~39%).

Conclusion
Presentations of polypoid sinonasal masses are variable, etiology of which is mostly benign. Proper clinico-histologic correlate is necessary for correct diagnosis. A low threshold of suspicion is required because of this variability, necessitating follow-up for further evaluation.

KEY WORDS
Histopathology, nasal obstruction, polypoid mass, presentation, sinonasal
INTRODUCTION

Nasal polyp (Gk; poly = many, pous = footed) by definition is the edematous, hypertrophied mucosa of the nose and the paranasal sinuses and refers to ethmoidal polyps (nasal polyposis) if not stated otherwise. However, there are hosts of other pathologic entities involving the nose and paranasal sinuses with polypoid presentation; and not all of them are polyps in the truest sense. For the clinician, it often becomes impossible to distinguish them with the help of history and imaging and find out their etiology. Hence, a combination of clinics and histopathology becomes necessary for diagnosis. In this study, the presentations of the polypoid sinonasal masses have been analyzed and a comparative analysis between the clinical and subsequent tissue diagnosis where necessary has been attempted.

METHODS

The study was performed in the department of ENT and Head-Neck Surgery, R. G. Kar Medical College and Hospital, Kolkata, a tertiary-level Government teaching institution, from April 2008 to March 2013. The cross-sectional study design had two sections (Fig. 1) - one for the selection of patients (from April 2008 to March 2012), and the rest for follow-up, thus adding a prospective component too. The follow-up period for an individual patient did therefore vary, and there had been considerable overlap between the two sections. However, a minimum of one year follow-up period was maintained. One hundred and ninety-eight patients presenting with sinonasal polypoid mass were selected according to the following selection criteria:

Inclusion criteria - a) age range from two to 70 years, b) the nasal mass assuming a polypoid look in gross appearance (both unilateral and bilateral lesions were included); Exclusion criteria - a) age <two years and >70 years, b) associated comorbidities like diabetes mellitus, hypertension and other systemic disorders like coagulation abnormalities and infections, c) epistaxis secondary to hypertension or coagulation disorders, d) history of recurrence at first presentation.

Exclusion of the extremes of ages reduced the difficulties encountered due to irregular follow-up and to some extent decreased the load of associated comorbidities. For example, an elderly hypertensive male subject with coincidental sinonasal polyposis presenting with epistaxis might rake up suspicion of malignancy if not the history of hypertension be excluded totally. Coagulation defects and systemic infections might present similarly creating confusion. Patients with polyps with a history of recurrence have also been excluded from the study to add clarity to our plan of management and in the subsequent follow-up sessions.

Each patient selected was put through a pre-designed proforma [vide Appendix] which provided his/her details and gave a subjective analysis of his/her clinical presentation. This helped in the assessment and classification of complaints and provided an idea regarding the nature of the presenting lesions. Next, he/she was put through a series of tests [routine hemogram, nasal endoscopy, CT scan and/or MRI, biopsy (wherever applicable/felt necessary)] for a subjective evaluation from the observer’s point of view. Tissue diagnosis was attempted before initiating treatment in clinically suspicious cases and those with equivocal presentations to confirm the provisional diagnosis, and following surgical interventions (where needed) as excisional biopsy. History, presenting complaints and clinical evaluation aided by investigations and histopathology in suitable situations were combined following an algorithm leading to the diagnosis of sinonasal polypoid masses (Fig. 2).

Each patient was followed up for a minimum of one year. Recurrences were noted, and their possible causes evaluated retrospectively. The results have been calculated with basic statistical applications like percentages and proportions, and data was extracted from the composite grand chart put in the Microsoft Excel software.
RESULTS
Considering the nasal mass (or the sensation of fullness) as the yardstick, 138 of the 198 patients evaluated (69.7%) had nasal discharge and 43 (21.72%) complained of diminished or absent smell (fig. 3). Airway obstruction was present in 176 of them (88.89%), but not in all. Pain and epistaxis were present in 28 (14.14%) and 19 subjects (9.6%) respectively. Though external deformity due to mass effect was often encountered, complaints related to cosmesis were relatively lesser (16.16%).

Clinically, 173 cases (87.37%) were considered benign, 9 (4.54%) malignant, and as many as 16 (8%) were in the “grey zone” of equivalence (fig. 4, Table 1). Out of the 173 clinically benign lesions, 126 (72.83%) were provisionally taken as benign inflammatory polyps (polyposis), seven as fungal sinusitis, 10 as rhinosporidiosis, and eight as lesions of non-specific/other etiologies (Table 1). The clinically diagnosed polyposis lesions were put on systemic/intranasal corticosteroid therapy, of which 106 responded.

Figure 3. The figure shows a comparative representation of presenting complaints of the patients presenting with sinonasal polypoid masses.

Table 1. The table shows the detailed classification of patients presenting with sinonasal polypoid masses.

<table>
<thead>
<tr>
<th></th>
<th>CLINICAL</th>
<th>FINAL</th>
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<tbody>
<tr>
<td>Benign</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polyposis</td>
<td>126;20*4</td>
<td>132</td>
</tr>
<tr>
<td>Choanal polyps</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Meningocele</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Rhinosporidiosis</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Fungal sinusitis</td>
<td>7*</td>
<td>7</td>
</tr>
<tr>
<td>Hemangioma</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>JNA</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Undecided</td>
<td>8*(5)</td>
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<table>
<thead>
<tr>
<th></th>
<th>Malignant</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Malignant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hodgkin’s lymphoma</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Inverted papilloma</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Mucosal malignant melanoma</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Squamous cell carcinoma</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Adenocarcinoma</td>
<td>4</td>
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</tbody>
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JNA = juvenile nasopharyngeal angiofibroma
N. B.: 1) Figures in parenthesis in the CLINICAL section denote number of cases that ultimately proved malignant.
2) Figures with asterisk (*) indicate lesions subjected to histopathology before initiation of definitive treatment. These included the 20 cases of clinical polyposis found resistant to corticosteroid therapy.

Dataset: The dataset shows the proportions and sensitivities of the clinical diagnosis of polypoid sinonasal masses.

Histopathologic examination required for the clinically evaluated sinonasal masses [CH] = 60
Of them, true benign lesions = 42, true malignant lesions = 18
Proportion of true benign lesions among the CH = [42/60]x100 = 70%
Proportion of true malignant lesions among the CH = [18/60]x100 = 30%
Sensitivity of clinical detection of benign lesions = [42/(42+2+12)]x100 = 75%
Sensitivity of clinical detection of malignant lesions = [18/(18+7+4)]x100 = 62.07%
(Sensitivity calculations included the Grey Zone lesions)

Table 2. Analysis of the gender and social background of the patients presenting with sinonasal polypoid masses reveals a male preponderance and rural predilection.

<table>
<thead>
<tr>
<th>PATIENT CHARACTERISTICS</th>
<th>BENIGN</th>
<th>MALIGNANT</th>
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</thead>
<tbody>
<tr>
<td>Male</td>
<td>123</td>
<td>11</td>
</tr>
<tr>
<td>Female</td>
<td>57</td>
<td>7</td>
</tr>
<tr>
<td>Rural</td>
<td>128</td>
<td>10</td>
</tr>
<tr>
<td>Urban/Industrial</td>
<td>52</td>
<td>8</td>
</tr>
</tbody>
</table>

All the fungal lesions (seven), the suspected polyposis not responding to steroids (20), the clinically malignant lesions (nine) and the so-called “grey zone” (16) were among the 60 lesions that were subjected to histopathology before initiation of definitive treatment (Table 1).

The final composition of the cases studied revealed 180 truly benign lesions (91%); the rest 18 were malignant (Table 1), with a ratio of 10: 1 in favor benignity. While all malignant lesions had to be confirmed by histopathology, only 70 of the benign lesions (i.e., ~38.89%) needed it for final diagnosis (fig. 4). Sensitivity of clinical detection of
The present study attempted to explore the clinico-histopathologic correlate of the sinonasal polyoid masses. The term clinical implied entities preliminary to the stage of tissue diagnosis, including meticulous history-taking, proper assessment of the presenting complaints, clinical examinations (anterior rhinoscopy, nasal endoscopy), and empirical treatment (steroids in nasal polyposis); followed by imaging (CT and/or MRI). Interestingly, there was gross disparity between the proportion of benign and malignant lesions assumed clinically and on histopathology. Of the 173 clinically benign lesions, 166 (96%) were confirmed as truly benign from histopathology. Of the 17 malignant lesions, seven (41%) were truly malignant (78%) (Table 1). This reflects an overdependence on the clinical parameters to reach a diagnosis. However, when only cases subjected to histopathology were considered, the proportion of true malignant lesions was 62% and 62% respectively [Dataset]. This indicates the importance of histopathology overdependence on the clinical parameters to reach a diagnosis.

Whereas in some literature hyposmia/anosmia has been said to be a more common presentation, we have found only a little less than 22% of patients having such problem. Cosmesis did not constitute a sizeable fraction of the complaint-chart, probably because of the rural background of most of the patients under evaluation.

It is evident from the results that although most of the lesions were benign, there was proportionate increase in the incidence of malignancy with age.5 Also there was a definite male preponderance in both benign and malignant categories, keeping with the established world literature.1 Though patients with benign lesions were mainly from rural background, malignancies were seen proportionately more in the urban segment (Table 2). There was a proportionate increase in fungal sinusitis with each year of our study with a growing urban predilection. Rhinosporidiosis was also found to be prevalent in eastern India (where the study was done), though it is known to be more common in the southern Indian states and Sri Lanka.5

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with a polypoid look. Inverted papilloma on the other hand may present at times as a unilateral polypoidal sinonasal mass and epistaxis. With an apparent belief as an entity that constitutes 0.67% of malignant melanomas in the body. Apart from the two cases of midline granuloma of nose (T-cell/non-Hodgkin’s lymphoma), there was a 24 year old woman with a grossly destructive, exophytic unilateral polypoidal sinonasal mass later confirmed as inverted papilloma.

Almost a quarter of the nasal polypoid masses recurred in the minimum of one year follow-up. The bulk formed benign inflammatory polyps but more than 13% were malignant. Probable explanations could be the chronicity, and mild nature of the polypoid lesions true to their intrinsic pathology. Incomplete surgical removal at the microscopic level and subsequent metastasis could be the possible reasons for recurrence of malignant lesions. We have in our records a case of a 23 year old female patient diagnosed with adenocarcinoma of nasal cavity that later developed ovarian carcinoma following a 5 year symptom-free period after successful excision of the nasal mass by lateral rhinotomy approach. The association was later revealed clinically and histologically to be synchronous indicating a probable syndromic disorder requiring genetic analysis for further confirmation.

This study would have been more complete if the follow-up period could have been extended. The treatment aspect of individual cases has been deliberately omitted here, but the recurrence of the polypoid sinonasal masses could have been better comprehended had the treatment outlines been considered in details. A further study waits in future that would describe the result of the primary management of these polypoid masses of the sinonasal tract in the long term by retrospective record-review of the patient details obtained in successive follow-up sessions. Moreover, the proforma could have been improved had the “allergy” factor been incorporated in to the analysis of history of the patients; this could help us evaluate the association between allergy/atopy and polyposis or fungal sinusitis. In such case, there could have been scope to classify the “fungal sinusitis” lesions, especially to find out the proportion of allergic fungal rhinosinusitis. However, evaluation of radioallergosorbent test (RAST) and serum immunoglobulin E were beyond the scope of the present study.

Again, since the study was based on a single institution experience, it might have a regional bias in the patient profile and the ultimate disease classification. That incidence of diabetes mellitus, hypertension and coagulation disorders have uneven distribution in different parts of the world, the population sample under review in the present study might not be representative of that of the world. More elaborative statistical studies like a meta-analysis would have been more suitable to analyze the variability of the polypoid sinonasal masses; but given the heterogeneous and unpredictable nature of human disorders, such effort would only be a better approximation, rather than be accurate.
CONCLUSION

The present study shows the clinical and histologic variations in patients presenting with sinonasal polypoid masses with an attempt to compare the efficacy of the two, and it is wise to accept from the evident resources that a surgeon-clinician cannot afford to have one without the other to get the true idea about these variations. A high index of suspicion however is required; observations regarding the patient profile and variable presentations would aid in the process. A stringent follow-up schedule also leaves the scope of retrospection, apart from highlighting the inadequacy of our understanding of the sinonasal polypoid masses.

REFERENCES


