SINO-NASAL EPITHELIAL TUMOURS: A CLINICO-PATHOLOGICAL STUDY

By
Mohamed M Abu-Samra1 M.D. And
Amira Kamal El-Hawary 2 M.D.

From
The department of Otolaryngology and Pathology, Mansoura University
Address: Otolaryngology department, Faculty of medicine, Mansoura University

ABSTRACT

BACKGROUND: Epithelial neoplasms are uncommon lesions affecting the sino-nasal tract.

AIM: To study the incidence, mode of presentation and histological types of sino-nasal epithelial tumours in the surgical pathology material and surgical procedures and outcome.

MATERIALS AND METHODS: All sino-nasal epithelial tumours, biopsied or surgically excised over a period of six years, were studied. The tumours were classified as benign or malignant. The histology was correlated with the clinical presentation, investigations, surgical procedures and outcome.

RESULTS: In six years, there were 139 sino-nasal tumours. One-hundred one epithelial tumors (72.6%) outnumbered the non-epithelial tumours were diagnosed on the basis of histopathology. Forty-five were benign (44.5%) and 56 malignant (55.5%); occurring predominantly in males. Benign lesions included three fungiform papillomas (exophytic) (6.6% of the benign tumors) and 42 inverted papillomas, with recurrence in five inverted papillomas (11.9%). Malignant changes were detected in two cases of inverted papillomas (4.8%) at initial surgery and in one of five recurrent cases (20%). Endoscopic and external approaches were of equivalent results. Squamous cell carcinomas were the commonest among malignant tumours with thirty cases (53.2%) and three of these

487

MANSOURA MEDICAL JOURNAL
MATERIALS AND METHODS

This is a retrospective study conducted at Mansoura University hospital-Otolaryngology department and Pathology department. The blocks and slides of all sino-nasal epithelial tumours, biopsied or surgically excised over a period of six years (2000-2005), were retrieved and reviewed. All slides were stained by the routine haematoxylin and eosin stains. Immunohistochemical stain was used in cases of undifferentiated carcinoma to differentiate these tumours from olfactory neuroblastoma and lymphoma. In the only case of spindle cell carcinoma, immunohistochemical studies of cytokeratin were performed to confirm the epithelial nature of the tumour. Immunohistochemical studies were performed on formalin-fixed, paraaffin-embedded sections using the labeled streptavidin-biotin-peroxidase complex method with DAB as chromogen. The following antibodies were evaluated immunohistochemically: Cytokeratin AE1/ AE2 (prediluted code N1590 DAKO cooperation carpenteria, CA93013 USA), Synaptophysin (prediluted code No N1586 DAKO cooperation USA) and leucocyte common antigen (1: 50 2B11 and PD 7:26 code No. M0701 Dako, Denmark A/S), Heat-induced epitope retrieval (0.01 mmo\L citrate buffer, PH 6.0) was performed as follows: slides were heated on microwave for 10 minutes, then cooled for 20 minutes. Primary antibody incubation was performed for 30 minutes at room temperature. The tumours were classified as benign or malignant. The histology was correlated with the clinical presentation and investigations and surgical techniques, obtained from medical record section in Otolaryngology department. A significance level of 0.05 (95% confidence level) was assumed for all calculations. P value of less than 0.05 indicated that there was a statistical difference of values compared.

RESULTS

In six years, there were 139 sino-nasal tumours. One-hundred one (72.6%) were epithelial in nature, while 38 (27.4%) were non epithelial. From these 101 epithelial there were 45 (44.5%) benign and 56 (55.5%) malignant. It was noted that most patients with benign tumours were in the fourth and fifth decades (median

MANSOURA MEDICAL JOURNAL
teeth, facial deformity, epiphora, sensory changes in the same order of frequency (Table-2). In addition to the usual symptoms of malignancy, two of the patients developed cervical lymphadenopathy 4-7 months postoperatively. C-T scan was the primary image of modality in all cases. By C-T scan, the tumours were multi-centric, with involvement of more than one site at initial presentation making difficulty in localizing original site. MRI were recommended to evaluate intracranial and/or intraorbital soft tissue invasion in suspicious lesions on C-T scan, where 8 cases showed intracranial extradural invasion, 4 with intracranial intradural invasion, 27 cases with intraorbital extraconal invasion, 3 with intraorbital intracanal invasion. Late stages were the usual at time of presentation where 21 patients were T4, 32 were T3, and 3 were T2, non in T1. Squamous cell carcinoma with its variants (basaloid and spindle cell carcinoma) reported in 30 patients (53.5%). Well or moderately differentiated squamous cell carcinoma was diagnosed in 21 while six lesions showed a poorly differentiated subtype. There were 2 cases of basaloid squamous carcinoma. Histologically, the tumors were widely invasive with solid, trabecular and cribriform growth Patterns. The neoplastic infiltrate included predominantly pleomorphic, basaloid-appearing cells. The cells are more hyperchromatic and are smaller than those of conventional squamous cell carcinoma. The peripheral layer of cells display palisading. Spindle cell squamous carcinoma was seen in a 55-year-old male which was characterized by squamous cell carcinoma with additional fascicular spindle cell component with pleomorphism and mitoses (figure 1). Adenoid cystic carcinomas were the second most frequent malignant tumour as it was diagnosed in twelve cases (21.4% of the malignant tumors). All the adenoid cystic carcinomas showed a characteristic cribriform pattern. Peri-neural invasion were seen in four cases (figure 2). Sino-nasal undifferentiated carcinoma was seen in five cases (8.9%) these tumors were composed of pleomorphic cells in sheets and lobules with focal necroses. The cells possessed scanty cytoplasm, bizarre hyperchromatic or vesicular nuclei and prominent nucleoli (figure 3). They need to
Table-1: Shows epidemiology of sinonasal neoplasms

<table>
<thead>
<tr>
<th></th>
<th>Benign neoplasms</th>
<th>malignant neoplasms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidence</td>
<td>44.5%</td>
<td>55.5%</td>
</tr>
<tr>
<td>Age</td>
<td>25-60 years</td>
<td>18-80 years</td>
</tr>
<tr>
<td>Gender</td>
<td>males 71.1%</td>
<td>males 67.8%</td>
</tr>
<tr>
<td></td>
<td>females 28.9%</td>
<td>females 32.2%</td>
</tr>
<tr>
<td>Smoking</td>
<td>64.4%</td>
<td>71.4%</td>
</tr>
</tbody>
</table>

Table-2: Shows incidence of symptoms in malignant sinonasal neoplasms

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Incidence</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epistaxis</td>
<td>42.56</td>
<td>75%</td>
</tr>
<tr>
<td>Nasal obstruction</td>
<td>39.56</td>
<td>69.6%</td>
</tr>
<tr>
<td>Hyponasal speech</td>
<td>32.56</td>
<td>57%</td>
</tr>
<tr>
<td>Loose teeth</td>
<td>25.56</td>
<td>44.6%</td>
</tr>
<tr>
<td>Facial deformity</td>
<td>18.56</td>
<td>32%</td>
</tr>
<tr>
<td>Epiphora</td>
<td>8.56</td>
<td>14.2%</td>
</tr>
<tr>
<td>Sensory changes</td>
<td>5.56</td>
<td>8.9%</td>
</tr>
</tbody>
</table>
Figure (1): shows spindle cell carcinoma which is formed of islands of squamous cell carcinoma and pleomorphic spindle cells (H&E 200x)

Figure (2): shows perineural invasion in a case of adenoid cystic carcinoma (H&E 200x).

Figure (3): shows undifferentiated carcinoma formed of pleomorphic cells in sheets and lobules (H&E x200)

Figure (4): Shows moderate cytoplasmic staining of a case of undifferentiated carcinoma for cytokeratin (DABx 400)

MANSOURA MEDICAL JOURNAL
carcinoma in both fungiform and inverted papillomas is explained by the presence of the human papilloma virus infection. Other malignant subtypes rarely coexist with the papillomas. We therefore feel that a thorough sampling of the entire material received in the laboratory is the golden rule to reach the final diagnosis. Orlandi et al advised to apply this also to specimens excised as inflammatory polyps in which might lurk papillomas.

The search for an ideal surgical approach to removing inverted papillomas has been fairly controversial with proponents for radical surgery to combat aggressive nature of the disease and others convenient with endoscopic approach with same rate of recurrence plus avoiding external scar problems. Kaza, et al had recurrence rate of 14% with endoscopic approach and said that it is convenient. Han, et al reported near similar results between external approach (8% recurrence) and endoscopic approach (10% recurrence).

In current study no statistically significant difference between endoscopic and external approach as recurrence rate was 13.3% and 11.1% respectively, favoring endoscopic approach to avoid external facial scar and leaving external approach for salvage in case of recurrence.

Sino-nasal carcinomas are also uncommon neoplasms, constitute less than 1% of all malignancies in the body and about 3% of all head and neck cancers with incidence among males is twice that of females. Tobacco and air pollution have been implicated in the pathogenesis of these lesions. Nickel and chrome refining processes have been implicated in the development of squamous cell carcinoma and undifferentiated carcinoma, while exposure to wood dust predispose to adenocarcinomas.

In current study, males were more affected than female nearly twice, smoking habits were high (71.4%). Occupational exposure to carcinogens as nickel, chrome, wood dust did not detected in our study as most of our patients are farmers (males) and house wives (females), so suggesting smoking and environmental
one must understand that this neoplasm is a variant of squamous cell carcinoma. Although it has a component that resembles spindle mesenchymal cells, these are simply dedifferentiated squamous cells. Immunohistochemistry can be used to view these same spindle cells. Any evidence of keratin (a broad range of molecular weight is the most useful finding) and indicates the true squamous nature.

Adenoid cystic carcinoma was seen in twelve of our patients (21.4%). In our study, six out of eight adenoid cystic carcinoma still alive and free of disease at 2 years (at least) follow up. Muco-epidermoid carcinomas are also rare, but prognosis depends on histological grade with excellent prognosis for low grade tumour. Only four cases in our series, two were low grade muco-epidermoid carcinoma followed up to 42 months with neither recurrence nor metastasis. The other 2 cases were high grade with one patients died at 22 months while the other still alive at 3 years postoperative.

Undifferentiated carcinoma is a high-grade tumour with very poor prognosis with 50% of patients died before one year postoperatively. They need to be distinguished from other poorly differentiated sino-nasal tumours as olfactory neuroblastoma (which has fairly good prognosis), since they require aggressive therapy that includes a combination of craniofacial resection, chemotherapy and radiotherapy. In current study, there were five cases of undifferentiated sino-nasal carcinoma which is an example of a high-grade tumor.
ed papilloma) is locally aggressive disease with high tendency for recurrence and may harbors foci of epidermoid carcinoma, so entire postoperative tissue sampling for histopathology is mandatory. Endoscopic and external approaches are of equivalent results in favor for endoscopic approach to avoid open wound problems. Malignant neoplasms present late, environmental, occupational hazards and tobacco are incriminated. Advance in surgery and combined therapy improves locoregional control but still of bad prognosis.

REFERENCES


2-Jackson RT, Fitz-Hugh GS and Constable WC (1977) : Malignant neoplasms of the nasal cavity and paranasal sinuses: A retrospective study, Laryngoscope; 87: 726


دراسة إكلينيكية وباحثولوجية للأورام الطبلانية للأنف والجيوب الأنفية

إن أورام الأنف والجيوب الأنفية الطبلانية غير شائعة. الغرض من هذه الدراسة توضيح نسبة حدوث هذه الأورام، بيان أعراضها، أنواع الأنسجة الورمية من خلال فحص الميلانات المرضية مع دراسة الطرق العلاجية الجراحية وبيان نتائجها.


النتيجة: خلال 6 سنوات تم فحص 139 ورم أنفي حيث وصل عدد الأورام الطبلانية منها إلى 101 ورم بنسبة 74%. ضمن هذه النسبة يوجد 5 ورم حميد (مرهق 44%) و6 ورم خبيث (مرهق 55%).

ويحذو معظمها في الذكور. الأورام الحبيبية كلها أورام حليمية منها 3 أورام حليمية مقلوبة و4 ورم حليمي منغلق. الورم الحليمي المنغلق يرجع في 5 حالات بنسبة (41%) وتم إكتشاف خلايا سرطانية بشكل متزامن في 2 حالتين (15%) ويشكل تألي في حالة واحدة من الحالات المرتبطة عندنامرة الشائبة (20%) ولا يوجد عوارض ذات أهمية من ناحية النتائج بين التدخل الجراحي.

استخدام معايرة الجيوب الأنفية وبينس الفتح الخارجي. الأورام الخبيثة غالبها أورام حرشفية سرطانية بنسبة (36%) وتأتي في المرتبة الثانية الأورام السرطانة الفردية الكيسية بنسبة (34%) وتعزى إلى التثبيت البيئي والتدخين كأسباب مؤدية إلى السرطان. على الرغم من التدخل الطبي متعدد الأركان ويشمل التدخل الجراحي والعلاج الأشعاعي والعلاج الكيميائي مجتمعي.

لإحداث أفضل النتائج مازالت النتائج دون المرجو منها.

الخلاصة: الأورام الطبلانية للأنف والجيوب الأنفية غير شائعة. الأورام الحليمية ذات طبيعة حادة ولها نوايا عادية للإرتفاع وربما تحوى خلايا سرطانية ولذلك يجب فحص كل العينة المرضية وتساوي نتائج التدخل الجراحي بالانظر مع التدخل الجراحي بالفتح الخارجي. الأورام الخبيثة تظهر أعراضها متاخرة. التدخل والتدخين الصناعي ربما تكون مسببة لها. التقدم الجراحي ساعد على السيطرة الموقتة للمرض لكن نظل النتائج سيئة.

MANSOURA MEDICAL JOURNAL