

Pattern of Nasal and Paranasal Sinus Tumours in Owerri, Nigeria

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Abstract: A retrospective study to determine the incidence, mode of presentation and histological types of nasal and sino-nasal tumours in Owerri, Nigeria, over 10 years period from January 1995 to December 2004 is presented. The clinical records of all patients with nasal and paranasal sinus tumours biopsied or surgically excised were reviewed for demographic data, clinical history, investigations, histological results and treatment among others. Thirty nine patients with occurrence rate of 0.76/1000 attendance with nasal and sino-nasal tumours were seen over the 10 years period. Male/Female ratio was 1.1:1, age range was 12-69 years with an average of 43.4+ or -5.5 years. Benign tumours (58.97%) were more frequent than malignant tumours (41.03%). The most frequent histological types were haemangioma (30.78%) and squamous cell carcinoma (20.51%). Nasal blockage (94.81%) followed by mass in the nose (87.18%) and epistaxis (71.79%) were the most common symptoms at presentation. Late presentation at T₃ and T₄ stages was the order. The treatment modalities were surgery, radiotherapy and chemotherapy. Sinonasal tumours were uncommon and occurred at younger age group. Presentation and diagnosis were late as poor facilities and inadequate health education affected early presentation.

Key words: Pattern, sinonasal, tumours, patients, Owerri, Nigeria

INTRODUCTION

The nose and paranasal sinuses are very rare sites of origin of head and neck tumours. They form a single functional unit with common pathological processes affecting both of them, most of which are inflammatory. Neoplasms of the sinuses and nasal cavity account for 0.2-0.8% of all carcinomas and only 3% of those in the upper aerodigestive tract (Osguthorpe, 1994). There are both benign and malignant varieties. Most (80%) of the malignant tumours are squamous cell carcinomas (Kraus *et al.*, 1990). Various aetiological factors resulting from industrial exposure have been linked to malignant tumours of the sinonasal tract, including nickel, chromium, wood dust, leather, formaldehyde, mineral oils, isopropyl oils, lacquer paint, soldering/welding, radium paint, irradiation, snuff and cigarette smoking (Hadfield, 1970; Keane *et al.*, 1981; Klintonberg *et al.*, 1984). Hardwood dust exposure has a particular association with adenocarcinoma of the ethmoid sinuses (Kraus *et al.*, 1990; Zheng *et al.*, 1993). Association between certain dietary factors and malignancy of the nasal and paranasal sinuses have also been noted, with alcohol and salted/smoked foods linked to increased risk and fruits and vegetables linked to decreased risk (Zheng *et al.*, 1993). Furthermore, Human Papilloma Virus (HPV) has been linked with inverted papilloma and squamous cell

carcinoma (Kashima *et al.*, 1992). Acceptedly uncommon, but these tumours are there with us in the sub-region. This study was set to define the incidence/prevalence, mode of presentation and the histological types of nasal and paranasal tumours seen in Owerri, Nigeria. The outcome will form a guide for the diagnosis and management of future cases in the sub-region.

MATERIALS AND METHODS

The study consists of a review of the clinical records of all patients who presented with nasal and paranasal sinus tumours seen in the Otorhinolaryngology department of Federal Medical Centre, Owerri, Nigeria over a 10 years period from January 1995 to December 2004. All nasal and paranasal sinus tumours biopsied or surgically excised over the period under study were included. The demographic data, clinical history, investigations, histological results, the treatment modalities as well as the outcome of treatment were among the data extracted from the clinical notes in this retrospective study. The tumours were classified as benign or malignant and the histology correlated with the clinical presentation and investigations. The data obtained were analyzed using SPSS 11 software and the results presented in descriptive forms such as simple frequency and percentages.

RESULTS AND DISCUSSION

A total of 51, 605 patients were seen over the 10 years period studied. Only 39 of these had nasal and paranasal sinus tumours giving an occurrence rate of 0.76/1000 attendances. There were 20 (51.28%) males and 19 (48.72%) females with a male to female ratio of 1.1:1. The age range was 12-69 years with an average of 43.4+ or -5.5 years. Most of the tumours occurred in the 41-50 years age group followed by 31-40 and 21-30 years age-groups (Table 1).

Benign tumours (58.97%) were seen more frequently than malignant tumours (41.03%), while haemangioma (30.78%) was the more frequent histological type of tumour encountered overall (Table 2). Right nasal cavity (58.97%) was involved more frequently than the left (35.90%), while both nasal cavities were sparingly (5.13%) involved simultaneously (Table 3).

The most frequent symptom at presentation was nasal blockage (94.81%) followed by mass in the nose (87.18%) and epistaxis (71.79%) (Table 4).

Tumours of the nose and paranasal sinuses constituted a negligible number (0.076%) of the cases seen over the period under study. The rare nature of the tumours is almost a universal finding (Okafor, 1983; Harrison, 1971; Lilly-Tariah da, 1999; Goldenberg *et al.*, 2005; Panchal *et al.*, 2005; Christensen and Hoover, 1994; Haraguchi *et al.*, 1995). Of interest is the striking variety of the histological types of heterogenous origin and many others such as leiomyoma (Barr *et al.*, 1990) cartilagenous tumours (Murthy *et al.*, 1991) and pleomorphic adenoma (Gana and Masterson, 2008) have been reported. Squamous cell carcinoma predominated the malignant variety as reported by others (Osguthorpe, 1994; Lilly-Tariah da, 1999; Panchal *et al.*, 2005; Christensen and Hoover, 1994; Haraguchi *et al.*, 1995). The sex distribution of the tumours was almost equal with a male to female ratio of 1.1:1 against 2:1 in other studies (Lilly-Tariah da, 1999; Tab and Barranco, 1971; Mundy *et al.*, 1985; Lewis and Castro, 1972). This is largely due to the fact that both benign and malignant varieties were considered together in the study. The younger age group of the patients affected compared with that of Lilly-Tariah da (1999) (40.8 years) but differed from other series (Tab and Barranco, 1971; Mundy *et al.*, 1985). The reason for this could be more of constitutional make up rather than environmental. The most common presenting symptom was nasal blockage (Lilly-Tariah da, 1999; Tab and Barranco, 1971), which ranked closely with mass in the nasal cavity and epistaxis, but epistaxis more than any other symptom brought patients early to hospital largely due to fright at sight of blood. Incidentally, most of

Table 1: Age and sex distribution of patients

Years	Number	Male	Female	Total N (%)
	N	N (%)	N (%)	
0-10	0	0 (0)	0 (0)	0 (0)
11-20	5	4 (10.256)	1 (2.564)	5 (12.820)
21-30	7	3 (7.692)	4 (10.256)	7 (17.948)
31-40	8	4 (10.256)	4 (10.256)	8 (20.512)
41-50	10	6 (15.385)	4 (10.256)	10 (25.641)
51-60	6	1 (2.564)	5 (12.820)	6 (15.387)
61-70	3	2 (5.128)	1 (2.564)	3 (7.692)
Total	39	20 (51.282)	19 (48.718)	39 (100)

Table 2: Histological types of tumours

Types	Frequency	Percentage
Haemangioma	12	30.78
Squamous cell carcinoma	8	20.51
Inverted papilloma	6	15.38
Angiofibroma	3	7.69
Adenocarcinoma	3	7.69
Epithelial papilloma	2	5.13
Lymphoma (NHL)	2	5.13
Rhabdomyosarcoma	2	5.13
Basal cell carcinoma	1	2.56
Total	39	100.00

Table 3: Laterality of tumours

Sides	Frequency	Percentage
Right	23	58.97
Left	14	25.90
Both	2	5.13
Total	39	100.00

Table 4: Symptoms at presentation

Symptoms	Frequency	Percentage
Nasal blockage	37	94.81
Mass in the nose	34	87.18
Epistaxis	28	71.79
Facial swelling	18	46.15
Proptosis	11	28.21
Ulceration of palate	7	17.95
Neck mass	5	2.560

the epistaxes encountered in the study were of benign aetiology. Characteristically the patients presented late (Okafor, 1983; Harrison, 1971; Lilly-Tariah da, 1999).

Nasal obstruction is a symptom that leads most people to seek medical advice with little delay but because this and other symptoms of nasal and paranasal sinus tumours are similar to those of chronic sinusitis, there is always a big delay between the onset of symptoms and final diagnosis.

As a result most patients usually present at late stages. Otherwise, the link between chronic sinusitis and neoplasms of the nose and paranasal sinuses appears weak or may represent a prior misdiagnosis (Lareo *et al.*, 1992) or is probably unimportant (Okafor, 1983). Furthermore, clinical presentation of sinus malignancies is non-specific and often mimics benign diseases (Resto and Deschler, 2004) 9-12% of patients with sinonasal malignancies are asymptomatic (Goldenberg *et al.*, 2001). Despite all these, diagnostic delay in the patients was apt to occur due to paucity of

high resolution imaging technologies such as Magnetic Resonance Imaging (MRI) scan, Computerized Tomography (CT) scan and Positron Emission Tomography (PET) scan as well as other essential technology to evaluate nasal and paranasal sinus tumours. The importance of these in the patient management cannot be overemphasized. Apart from laboratory investigations, imaging techniques used in the patients' evaluation leaned heavily on plain films. Opacification of the involved nasal cavity and paranasal sinus (>90%), which may be difficult to distinguish from that due to inflammatory disease and bone erosion (=69% of cases), which also occurs in non-malignant diseases such as Wegener's granulomatosis are the most common plain film findings with sinus neoplasm (Lewis and Castro, 1972).

Occasionally, plain films are reported as normal or interpreted as inflammatory disease hence the need to replace plain radiograph with high-resolution CT and MRI scan in the initial evaluation of patients with suspected neoplastic disease. Accuracy rates of 78-85% have been reported for CT prediction of the extent of the neoplasm when compared with surgical findings (Chow *et al.*, 1993), MRI can provide a distinction among inspissated mucus, or retained secretions, soft tissue oedema and neoplasm, which CT scan cannot. But it is poor in assessment of bony erosion or destruction, evaluation of osteogenic and chondrogenic neoplasms, as well as non-neoplastic conditions, such as fibrous dysplasia that can involve the paranasal sinuses. CT scan is essential to refine the differential diagnosis in such cases. In comparison with surgical findings, accuracy rates of 94% for MRI and 98% for MRI with gadolinium have been reported (Lund *et al.*, 1989). CT and MRI scans did not differ significantly in staging neoplasms of the nasal cavity and paranasal sinuses (Humink *et al.*, 1990). They are thus complimentary in evaluating neoplasms of these areas and often together offer an extremely detailed study of the amount and extent of the neoplasm.

All the malignant variety of the tumours were T₃ and T₄ at presentation (Lilly-Tariah da, 1999; Mundy *et al.*, 1985), at which time it was difficult to define whether the site of origin was nasal cavity or paranasal sinus. A multidisciplinary approach of treatment was employed in treating the patients. Benign tumours were treated with surgery. The malignant tumours were treated largely with combination of surgery and radiotherapy plus chemotherapy when deemed necessary.

Chemotherapy when offered was basically for palliation in very advanced stages. It is important to mention that endonasal approach (Kuhn *et al.*, 2001) for tumour removal in patients with benign and malignant

tumours of the nose and paranasal sinuses have been employed with obvious advantages. Patient selection in this approach was based on tumour location (centrally) rather than histology. The locations of tumours so approached were nasal cavity, the ethmoid sinus, the sphenoid sinus and the medial wall of the maxillary sinus. This presupposes that early and accurate diagnosis was made using high-resolution imaging technologies as earlier emphasized. Different disease-free survival rates at 5 years have been reported (Goldenberg *et al.*, 2005), we cannot make a valid statement in this regard about the patients as they were referred out for radiotherapy and most of them were lost to follow-up.

CONCLUSION

Tumours of the sinonasal tract are not common in the subregion. Benign tumours outnumber the malignant types with haemangioma and squamous cell carcinoma as the most frequent histological types, respectively. Late presentation and delay in early diagnosis occasioned by poor facilities were major constraints to favourable outcome of treatment. The key in the diagnosis and treatment of sinonasal tumours remains a high index of suspicion and early diagnosis.

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