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Original Article

Clinicopathological Evaluation Of Unilateral Opaque Maxillary Sinus

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ABSTRACT

Unilateral maxillary sinus opacification is a relatively common finding on radiographic studies of the paranasal sinuses. A total of 40 patients presented with chronic rhinosinusitis or acute exacerbation who were unresponsive to routine appropriate medical therapy, who on radiological examination revealed unilateral maxillary sinus opacification were selected for this study. Preoperative CT Scan was performed in all patients. On CT Scan there was complete opacification of maxillary sinus on the right side in 40% of cases [16 patients] and on left side in 60% of cases [24 patients]. All patients in the present study underwent endoscopic sinus surgery. At the end of surgery materials collected into 10% formalin-saline solution for histopathological evaluation and in normal saline for fungal culture. Slides were stained with hematoxylin-eosin stain, and with special stains if necessary. Slides were studied under microscope. Histopathological diagnosis was nasal polyp in 55% of cases [22 patients -allergic nasal polyp 45.5% of cases [10 patients], antrochoanal polyp in 54.5% of cases [12 patients]], inverted papilloma in 7.5% of cases [3 patients], fungal sinusitis in 30% of cases [12 patient], small cell tumour in 2.5% of cases [one patient], Juvenile nasopharyngeal angiofibroma [JNA] in 2.5% of cases [one patient] and squamous cell carcinoma in 2.5% of cases [one patient].

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1. Introduction

Paranasal sinuses are air filled spaces present within some bones of skull around nasal cavities. They are four on each side. Out of these paranasal sinuses only maxillary and ethmoid sinus are present at birth, maxillary sinus is the first sinus to develop. Maxillary sinus [antrum of Highmore] lies in the body of the maxilla and it is the largest of all paranasal sinuses.

There are many disease processes that can lead to solitary maxillary sinus opacification. These include infectious causes, such as acute and chronic Rhinosinusitis (CRS), either from a bacterial or fungal origin, allergic fungal sinusitis [AFS] [1], mucocoeles [2]. The most common benign neoplasm of nasal cavity and paranasal sinuses is inverted papilloma [IP] [3]. These tumours, although not arising directly from the maxillary sinus, often originate in the middle meatus and extend through maxillary antrum to cause sinus opacification. Nasal polyps are an additional possible aetiology leading to isolated maxillary sinus disease. The potential for malignancy must remain in the forefront of any diagnostic algorithm as should locally aggressive tumours such as juvenile

nasopharyngeal angiofibroma [JNA]. Several other disease processes responsible for unilateral maxillary sinus opacification have been reported. Retention cyst [4], Cholesterol granuloma [5], extramedullary haematopoiesis [6], retained gauze [7], silent sinus syndrome [8] and periodontal disease [9] have all been found to cause isolated maxillary sinus opacification.

MATERIALS AND METHODS

All patients who attended OPD of the Department of ENT Govt. Medical College, Kozhikode, Kerala, India, from Jan 2013 to Dec 2013 with symptoms of chronic rhinosinusitis or acute exacerbation who were unresponsive to routine appropriate medical therapy, who on CT Scan revealed unilateral maxillary sinus opacification were selected for this study. Patient who underwent surgical treatment for chronic rhinosinusitis previously were excluded from the study.

The chronic rhinosinusitis was defined in the patient population as representing a state of persistent or recurrent disease of paranasal sinus frequently associated with headache, nasal obstruction, nasal congestion, mucopurulent rhinorrhoea, facial pains, hyposmia. The signs and symptoms must persist for at least 12 weeks to qualify as chronic rhinosinusitis (CRS) [10].

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All patients with the identifiable diseases were subjected to detailed ENT examination, complete blood count, x-ray paranasal sinus, diagnostic nasal endoscopy and CT scan PNS coronal section evaluation.

After detailed nasal endoscopy and CT scan evaluation 40 subjects of this study group underwent endoscopic sinus surgery. At the end of surgery materials collected into 10% formalin-saline solution for histopathological evaluation and in normal saline for fungal culture . Slides were stained with heamatoxylin-eosin stain, and with special stains if necessary. Slides were studied under microscope.

RESULTS

Out of 40 patients studied the age ranged from 1 years to 70 years. Maximum number of patients were from age group of 21-30yrs.19 patients were males and 21 patients were females[1:1.10]-Table no 1

Table No.1 Showing Age and sex distribution [n=40]

Age	Total	No of cases		Male:Female
		Male	Female	
0-10	1	-	1	1[F]
11-20	9	6	3	2:1
21-30	10	2	8	1:4
31-40	7	4	3	1.3:1
41-50	5	3	2	1.5:1
51-60	6	3	3	1:1
61-70	2	1	1	1:1
Total	40	19	21	1:1.10

preoperative clinical evaluation [symptoms]
The main symptoms of this study group given in the Table 2 .

Table No.2 Presenting complaints [n=40]

Symptoms	No.of cases	%
Nasal obstruction	40	100%
Nasal discharge	40	100%
Disorders of olfaction	8	20%
Headache	25	62.5%
Sneezing	13	32.5%
Epistaxis	4	10%
Postnasal drip	20	50%
Eyes-Proptosis	4	10%
Ear	6	15%

preoperative clinical evaluation (clinical examination) anterior rhinoscopic findings and examination of paranasal sinus. Apart from deviated nasal septum [DNS] which was present in 87.5% of cases, the other most obvious abnormalities detected at examination of nose and paranasal sinuses were mucoid and mucopurulent discharge[MPD] in nasal cavity seen in 80% of patients of whom 27.5% had unilateral and 52.5% had bilateral discharge. Other clinical findings are given in table no 3.

Table No.3 Anterior Rhinoscopic Findings and Examination of Paranasal Sinuses [n==40]

Finding	Total no. of case	%	Unilateral case	%	Bilateral case	%
DNS	35	87.5%	35	87.5%	0	0
Inferior turbinate hyper trophy	34	85%	7	17.5%	27	67.5%
Middle turbinate hypertrophy	30	75%	11	27.5%	19	47.5%
MPD in nasal cavity	32	80%	11	27.5%	21	52.5%
Polyp or mass in nasal cavity	23	57.5%	18	45%	5	12.5%
Sinus tenderness	9	22.5%	4	10%	5	12.5%

Pathological Diagnosis.

Histopathological diagnosis, male to female ratio of each and side of unilateral maxillary sinus opacity of this study group are given in table no 4.

Table No 4: Showing incidence,sex distribution,male to female ratio in the present study [n=40]

Pathological Diagnosis	No.of cases[%]	Male : Female ratio[M:F]	Side of complete U/L Opacification	
			Right	Left
Nasal polyp	22[55%]	1:1.13	10	12
Fungal sinusitis	12 [30%]	1:1	4	8
Inverted papilloma	3 [7.5%]	2:1	0	3
JNA	1 [2.5%]	1[M]	1	0
Squamous cell carcinoma	1 [2.5%]	1[F]	0	1
Small cell tumour	1 [2.5%]	1[F]	1	0

Result**Table no 5. Table showing types of nasal polyp [n=22]**

Pathological Diagnosis	No.of cases	%
Allergic nasal polyp	10	45.5%
Antrochoanal polyp	12	54.5%

DISCUSSION

Various pathologies can cause unilateral maxillary sinus disease. A few studies evaluated pathologies causing unilateral maxillary sinus disease.[1,11,12,13].

Kaplan BA et al [1] in their study of 64 patients with unilateral maxillary sinus opacification found that 16 cases were mucocoeles, 12 cases were nasal polyposis, 27 cases were acute or chronic sinusitis, 7 cases were inverting papilloma and 2 cases were mycetoma. Chen HJ et al [13] found following results in their study of 116 patients-CRS [52.6%], fungal ball [29.3%], antrochoanal poly [2.6%], benign tumor [10.4%] and malignancy [5.1%]. Various pathologies identified in our study was nasal polyp in 55% of cases {22 patients-allergic nasal polyp 45.5% of cases [10 patients], antrochoanal polyp in 54.5% of cases [12 patients]}, inverted papilloma in 7.5% of cases [3 patients], fungal sinusitis in 30% of cases [12 patient], small cell tumour in 2.5% of cases [one patient], JNA in 2.5% of cases [one patient] and squamous cell carcinoma in 2.5% of cases [one patient].

Out of 40 patients 19 [47.5%] of patients were males and 21 [52.5%] of patients were females. Maximum number of patients were in the 21-30 yrs age group [10 patients- 25%].

The most frequent symptoms in cases of chronic sinonasal pathology in his series of 250 patients, LEVIAE HL (1990) noted nasal obstruction (31.6%), rhinorrhoea (51.2%). The main presenting complaints of patients in this study was nasal obstruction 40 patients [100%], nasal discharge 40 patients [100%] and headache in 25 patients [62.5%]. Other complaints were postnasal drip in 20 patients [50%], disorder of olfaction in 8 patients [20%], sneezing in 13 patients [32.5%], epistaxis in 4 patients [10%], eyes-, proptosis in 4 patients [10%] and ear complaints in 6 patients [15%].

Preoperative CT Scan was performed in all patients. On CT Scan there was complete opacification of maxillary sinus on the right side in 40% of cases [16 patients] and on left side in 60% of cases [24 patients].

CONCLUSION

In those patients presenting with isolated maxillary sinus pathology, possibility of fungal infection and benign and malignant neoplasms of nose and paranasal sinuses must be strongly considered, apart from sinonasal polyposis. A careful histopathological evaluation is obligatory for confirmation of such cases apart from history, clinical examination, endoscopic evaluation and radiological evaluation.

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