ORIGINAL RESEARCH PAPER
Volume - 10 | Issue - 01 | January - 2021 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

ROLE OF COMPUTED TOMOGRAPHY IN EVALUATION AND MANAGEMENT OF NASAL MASSES

ENT

Dr Samresh Kashyap Assistant professor, ENT Department, Narayan medical college, Jamuhar, Bihar.

Dr Chandrakant Diwakar* Assistant professor, ENT Department, Narayan medical college, Jamuhar, Bihar. *Corresponding Author

ABSTRACT

Introduction : Nasal cavity contains many kinds of tissues such as the epithelial (squamous, neuroendocrine, olfactory) and the mesenchimal (bone, cartilage, muscle, vascular) ones ,and almost all of them carry the risk for a variety of tumoral differentiation. Despite the wide range of diversity, the incidence of the nasal tumors are as low as 1/100000. **Aim and objective:** 1. To assess the role of CT in the evaluation of nasal masses. **Methodology :** This study included 50 patients of age group below 65 years who presented to the department of Otorhinolaryngology Narayan medical college and hospital Rohtas, South Bihar with complaints of unilateral or bilateral nasal obstruction, nasal discharge and epistaxis, conducted between Feb 2020 to July 2020. Detailed assessment of clinical history and routine general examination done to exclude general disease and/or spread of cancer to other sites. **Result:** comparison of clinical diagnosis and CT diagnosis with final diagnosis. Clinically 64% study subjects had sinusitis, 14% had polyp, 20% had neoplasm, whereas 2% had mucocele. However on CT and final diagnosis 30% had polyp, 52% had neoplasm, 16% had mucocele whereas only 2% had others**. Conclusion:** CT is the modality of choice in imaging the nasal masses for evaluating the chronic diseases and associated complication. CT is an important radiological modality of choice in evaluating the bone erosion or destruction

KEYWORDS

Computed tomography, nasal masses, mucocele, sinusitis

INTRODUCTION

The nasal cavity (NC) can be affected by many diseases. However primary diseases of the Nasal Cavity are relatively rare, secondary involvement from diseases of neighbouring structures are more common due to the complicated regional anatomy. Both indolent and aggressive diseases of the nasal carcinoma often present with different types of non-specific symptoms, such as nasal congestion, discharge, headache, and epistaxis. Hence, diagnostic uncertainty in evaluation of nasal masses may cause delay in recognizing clinically important disorders. Nasal mass may be identified on imaging performed in symptomatic patients and may be incidental finding on reviewing routine imaging of brain, middle ear, skull base, and paranasal sinuses.[1] Although nasal masses in the anterior nasal cavity or involving the nasal ala is more visible at clinical examination, however posterior nasal cavity and nasopharynx are more difficult to visualize at physical examination. In addition, the signs and symptoms of lesions are more nonspecific, mimicking common upper respiratory processes and may result in a delayed diagnosis. Furthermore, these masses sometimes may be found incidentally at imaging. Congenital and developmental masses first manifest clinically, after they have become complicated.[2]

Nasal cavity contains many kinds of tissues such as the epithelial (squamous, neuroendocrine, olfactory) and the mesenchimal (bone, cartilage, muscle, vascular) ones ,and almost all of them carry the risk for a variety of tumoral differentiation. Despite the wide range of diversity, the incidence of the nasal tumors are as low as 1/100.000 . Primary nasal malignancies consist of 0.2% - 0.8% of all the malignant tumors and 3.6% of the malignant upper airway tumors.[3]

Many characteristics help in differentiating benign and malignant diseases from each other, such as clinical presentations, gross appearance, tumor location and extension, and radiological parameters. Generally, benign neoplasms show permeative invasion and lack of bony destruction, and aggressive neoplasm invades adjacent tissues. A careful histopathological examination is needed to decide the nature of any particular lesion. Due to the complex nasopharyngeal region, patients with unilateral mass have a mix of symptoms such as nasal congestion or blockage, rhinorrhea, lacrimation, anterior or posterior nasal drainage, purulent discharge, epistaxis, a foul odor, headaches, and facial or cheek swelling.[4]

High resolution CT scanning gives excellent bone detail and accurate soft tissue mapping. High resolution CT is used generally before endoscopic surgery to evaluate extent of the inflammatory disease and to assess important anatomic landmarks and their variations. CT is accepted as the gold standard for pathological-anatomical evaluation of nasal and paranasal masses. CT is especially considered an necessary part of planning surgical procedures.[5]

Computed Tomography also enables the assessment of the Sino nasal passages patency and shows the effect of anatomic variants, inflammatory disease or both on patency. CT permits the reconstruction of sagittal and coronal images from a single imaging data set. Axial and sagittal reconstructions are especially useful in delineating various anatomic abnormalities, which can lead to surgical complications. Diagnostic endoscopy and CT together has become the mainstay in the evaluation of nasal and paranasal masses.[6]

With the above background Present study highlights the significant role of CT in evaluation and management of nasal masses having following aims and objectives

AIMS AND OBJECTIVES

1. To assess the role of CT in the evaluation of nasal masses
2. To characterize various nasal masses with help of CT parameters, to correlate findings of CT with final diagnosis obtained from diagnostic nasal endoscopy

METHODOLOGY

This study included 50 patients of age group below 65 years who presented to the department of Otorhinolaryngology Narayan medical college and hospital Rohtas, South Bihar with complaints of unilateral or bilateral nasal obstruction, nasal discharge and epistaxis, conducted between Feb 2020 to July 2020. The exclusion criteria were patents of nasal trauma, previous history of nasal surgery.

Detailed assessment of clinical history and routine general examination done to exclude general disease and/or spread of cancer to other systems with thorough ENT examination.

We examine the mass that includes the possible site of origin, number, surface, colour, the result of probing as to know its site of origin, vascularity and friability. We decongested the nasal cavity with 4% xylocaine with 1 in 1,00,0000 dilution of adrenaline to see whether mass shrink in size with rigid nasal endoscope. Nasopharyngeal extensions if present were also documented Patients were undergo blood examination for Hb%, T&D, ESR, BT, CT and radiological assessment.

X-ray paranasal sinuses (Water's view) were done in all patients for initial screening. These views were considered positive for nasal polyp/mass, paranasal sinusitis if there was evidence of mucosal thickening, opacification (partial/complete) or thickened polypoid mucosa. Subsequently, the patients were subjected to CT scan PNS coronal section routinely and if needed axial section also and if feasible MRI of paranasal sinuses in few selective case.

CT Scan PNS (coronal section) were carefully analysed for mucosal thickening/polypoid changes/soft tissue Opacification of nose and paranasal sinuses, bone destruction and anatomic variation.

All PNS CT Scans were performed on Siemens Somatom 64 Multi slice CT scanner. This is a fourth generation rotate only scanner with slip-ring technology. The scanner have multi detector 64 slice configuration with gantry rotation time of 0.33 seconds Patients preparation before performing CT scan view included administration of full course of antibiotics, antihistaminic and decongestant followed by vigorous nose blowing so as to have better assessment of various anatomic variation predisposing of blockade of normal drainage channels. CT scan were then analysed for the presence of any abnormal finding as rhinosinusitis , polyp or mass, any bone erosion.

RESULT

In our study 19(38%) study subjects were female whereas 31(62%) subjects were male. The mean age of study subjects were 40.80±16.02 yrs. 42 out of 50 study subjects had nasal obstruction, 36(72%) study subjects had nasal decongestion,34(68%) had headache, 10(20%) had epistaxis, 21(42%) had other complaint such as facial pain, cheek pain.

Mean duration of nasal obstruction were 5.11±1.58 months, Mean duration of nasal decongestion were 4.92±1.69 months, Duration of headache were 3.69±0.998 months, Duration of epistaxis were 5.00±2,98 months.

Table 1: Distribution of study subjects as per the clinical symptoms

Clinical symptoms	No. of cases	Percentage (%)
Nasal obstruction	**42**	**84**
Nasal decongestion	36	72
Headache	34	68
Epistaxis	10	20
Others	21	42

Table 2 shows comparison of clinical diagnosis and CT diagnosis with final diagnosis. Clinically 64% study subjects had sinusitis, 14% had polyp, 20% had neoplasm, whereas 2% had mucocele. However on CT and final diagnosis 30% had polyp, 52% had neoplasm, 16% had mucocele whereas only 2% had others.

Table 2: Findings of Clinical, CT and Final diagnosis and their comparison (n=50)

Findings	Clinical		CT		Final diagnosis	
	No	%	No	%	No	%
Sinusitis	32	64	0	-	0	-
Polyp	7	14	15	30	15	30
Mucoceles	1	2	8	16	8	16
Neoplasms	10	20	26	52	26	52
Others	0	0	1	2	1	2

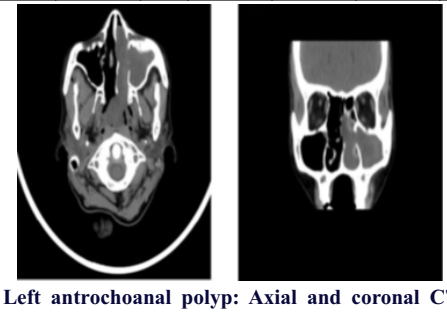

Fig 1: Left antrochoanal polyp: Axial and coronal CT image showing homogeneous soft tissue attenuating mass extending from antrum to choana with widening of maxillary ostium.

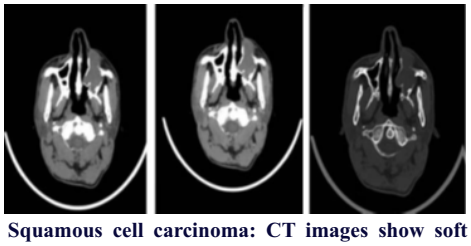

Fig 2: Squamous cell carcinoma: CT images show soft tissue enhancing mass in left maxillary sinus with bony destruction of surrounding walls and extra sinus extension.

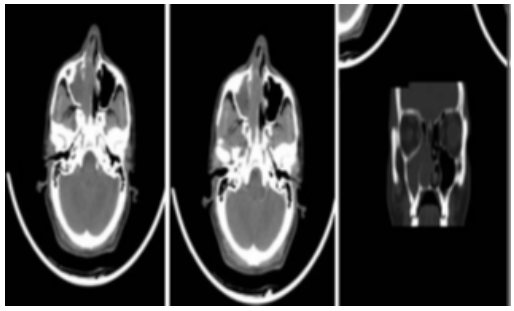

Fig 3: Right inverted papilloma: Axial and Coronal CT shows lobulated soft tissue attenuating mass in right nasal cavity extending into maxillary sinus with adjacent bony remodeling.

Fig 4 : Correlation of duration of nasal obstruction with age

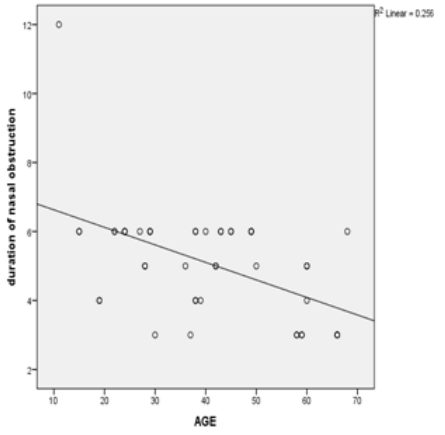

Fig 4 shows the correlation of duration of nasal obstruction with age. On applying correlation we found mild correlation with R square 0.256. On multivariate analysis with age, sex, we found mild correlation with R square 0.263.

DISCUSSION

From the many available Radiological modality Computed Tomography is one of the important modality in the evaluation of lesions of the paranasal sinuses. While plain radiography is most common study ordered to evaluate the sinonasal cavity, CT has now replace plain radiography. This is because of its ability to optimally display bone, soft tissue, and air facilitates accurate definition of regional anatomy.

In the present study we try to study the importance of the CT scan in evaluation of nasal masses. This includes studying the usefulness of CT scan not only in identifying the lesion but also in delineating the extensions of the lesion. In our study the computed tomographic scans of 50 patients who were found to have nasal masses were analysed.

In our study The mean age of study subjects were 40.80±16.02 yrs, which was almost similar with study done by Surapaneni H et al.[7], and Nepal A et al.[8]. In our study 19(38%) study subjects were female whereas 31(62%) subjects were male. Other studies such as Kandukuri R et al[6] shows most patients were in the 2nd and 3rd decades of their life with male: female ratio of 1.6:1which is comparable to our study. Study by Bist S et al.[9]. Yildirim D et al[3] had in their study male: 35, female: 31, mean age: 43 years is also comparable to our study.

In our study 42 out of 50 study subjects had nasal obstruction, 36(72%) study subjects had nasal decongestion,34(68%) had headache, 10(20%) had epistaxis, 21(42%) had other complaint such as facial pain, cheek pain. Other similar studies such as Rodriguez DP et al[2] shows that the signs and symptoms of a nasal mass include nasal obstruction, epistaxis, a foul odor from the nasal region, and halitosis. Yildirim D et al[3] in their study concluded that all cases had varying degrees of nasal obstruction. Kandukuri R et al[6] in their study found that the most common symptom with which the patients presented were nasal obstruction and nasal discharge. Hakami K et al[4] in their study found nasal obstruction (N: 12; 60%), predominantly unilateral was a predominant presenting symptom. In study by Verma J et al[5] The

most common symptoms were nasal obstruction (82%), followed by nasal discharge (66%), nasal mass was found in 56% cases, headache and allergic symptoms were found in 52% cases. Other symptoms were hyposmia, epistaxis, mouth breathing etc. All these studies are in accordance with our present study.

In our present study Mean duration of nasal obstruction were 5.11±1.58 months, Mean duration of nasal decongestion were 4.92±1.69 months, Duration of headache were 3.69±0.998 months, Duration of epistaxis were 5.00±2,98 months.

Clinically 64% study subjects had sinusitis, 14% had polyp, 20% had neoplasm, whereas 2% had mucocele. However on CT and final diagnosis 30% had polyp, 52% had neoplasm, 16% had mucocele whereas only 2% had others. In study by Verma J et al[5] found there were 22 (44%) cases of chronic rhinosinusitis, 19(38%) cases of nasal polyps, 4(8%) cases of inverted papilloma and 1(2%) case each of rhinosporidiosis, rhinoscleroma, angioma of nasal septum, sinonasal adenocarcinoma, squamous cell carcinoma. Study by Ramen T et al in their study found Out of the 29 benign lesions, most of the lesions were papilloma (38%) and angiofibroma (31%) whereas of the 21 malignant lesions, most of the lesions were squamous cell carcinoma (38%) followed by malignant lymphoma (24%).

CONCLUSION

CT is the modality of choice in imaging the nasal masses for evaluating the chronic diseases and associated complication. CT is an important radiological modality of choice in evaluating the bone erosion or destruction.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Szewczyk-Bieda MJ, White RD, Budak MJ. A whiff of trouble: Tumours of the nasal cavity and their mimics. Clinical Radiology.2014; 69 :519-528.
2. Rodriguez DP, Orscheln ES, Koch BL. Masses of the Nose, Nasal Cavity, and Nasopharynx in Children. RadioGraphics 2017; 37:1704–1730
3. Yildirim D, Saglam O, Gurpinar B. Nasal Cavity Masses: Clinico-Radiologic Collaborations, Differential Diagnosis by Special Clues. Open Journal of Medical Imaging, 2012;2:10-18
4. Hakami K, Basurrah M, Alshehri AM, Althagafi KA, Alotaibi AO, Alharthi MF. Clinical, histopathological, and radiological features of unilateral nasal mass in Saudi Arabia: A retrospective study. Saudi J Health Sci 2020;9:45-9.
5. Verma J, Rathaur SK, Mishra S, Mishra AK. The role of diagnostic imaging in evaluation of nasal and paranasal sinus pathologies. Int J Otorhinolaryngol Head Neck Surg 2016;2:140-6
6. Rashmi K, Phatak S. Computed tomographic evaluation of inflammatory sinonasal diseases. Int J Res Med Sci 2017;5:537-42.
7. Surapaneni H, Sisodia SS. Aaetiology, diagnosis and treatment of chronic rhinosinusitis: a study in a teaching hospital in Telangana. Int J Otorhinolaryngol Head Neck Surg. 2016;2:14-17.
8. Nepal A, Chettri ST, Joshi RR, Karki S. Benign sinonasal masses: A clinicopathological and radiological profile. Kathmandu Univ Med J. 2013;41(1):4-8.
9. Bist S, Kusum A, Varshney S. Clinico-pathological profile of sinonasal masses: An experience in tertiary care hospital of Uttarakhand. National Journal of Maxillofacial Surgery Natl J Maxillofac Surg. 2012;3(2):180.
10. Talukdar R, Duara BK, Sarma K, CT and MRI Evaluation of Sino Nasal Mass. IJHRMLP.2017;3(1):88-91.