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To assess lesions of maxillary sinus using CT scan

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Abstract

Background: Paranasal sinuses diseases commonly affect the varied range of population. The present study was conducted to assess lesions of maxillary sinus using CT scan.

Materials & methods: The present study was conducted in the department of Radio- diagnosis. It comprised of 84 cases of lesions of maxillary sinus of both genders. All underwent CT scan and mucosal thickening and opacification was assessed. CT images were read by trained radiologist.

Results: Out of 84 patients, males were 32 and females were 52. Maxillary sinusitis was observed in 56, mucocele in 5, cystic lesion in 10 and foreign body in 1, neoplasia in 12. The difference was significant ($P < 0.05$).

Conclusion: CT scan is a useful diagnostic tool in assessment of lesion of maxillary sinus.

Keywords: CT scan, maxillary sinus, Paranasal sinuses

Introduction

Paranasal sinuses (PNSs) diseases commonly affect the varied range of population, which range from inflammatory conditions to neoplasms, both benign and malignant. Their clinical assessment is hampered by the surrounding bony structures, hence for confirmation of their diagnosis, the role of radiology is of paramount importance. Imaging of the sinuses is usually done to approve the clinical findings when history and physical examinations are suggestive of PNS lesions, but the patient is not responding to conventional treatment.

The pathological extension of dental disease into the maxillary sinus is a condition first described by Maloney, in 1968, as maxillary sinusitis of dental origin. The inferior maxillary sinus wall is a curved structure formed by the lower third of the medial wall and the buccalveolar wall. The maxillary sinus floor is consisted by the alveolar process of the maxilla. The adult maxillary sinus is variable in its extension. In about half of the general population, the maxillary sinus floor extends between adjacent teeth or individual roots, creating elevations in the antral surface, commonly referred to as 'hillocks'. The roots of the maxillary premolar, molar and occasionally of the canine teeth may project into the maxillary sinus.

The CT imaging allows 3D observation and clear visualization of the inflammatory changes present in the nasal and paranasal sinus mucosa. Therefore this is the reason for the choice of this method as a valuable tool for assessing the pathologic status of nasal and paranasal sinuses. The present study was conducted to assess lesions of maxillary sinus using CT scan.

Materials & Methods

The present study was conducted in the department of Radio- diagnosis. It comprised of 84 cases of lesions of maxillary sinus of both genders. The study protocol was approved from institutional ethical committee. Written consent was obtained prior to the study.

Data such as name, age, gender etc. was recorded.

All underwent CT scan and mucosal thickening and opacification was assessed. CT images were read by trained radiologist. The results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

Results

Table 1: Distribution of patients

	Total - 84	
Gender	Male	Female
Number	32	52

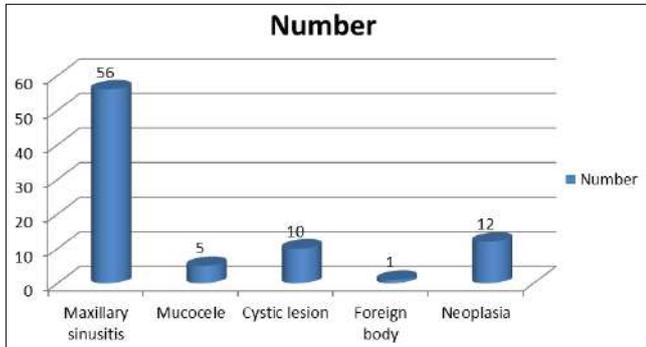
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Table 1 shows that out of 84 patients, males were 32 and females were 52.

Table 2: Lesions of maxillary sinus

Lesions	Number	P value
Maxillary sinusitis	68	0.01
Mucocele	5	
Cystic lesion	10	
Foreign body	1	

Table 2, graph I shows that maxillary sinusitis was observed in 56, mucocele in 5, cystic lesion in 10 and foreign body in 1, neoplasia in 12. The difference was significant ($P < 0.05$).



Graph 1: Lesions of maxillary sinus

Discussion

Plain radiography is the commonly used imaging modality for diagnosis of PNS diseases as it is economical, simple, and widely available. However, it only provides a basic overview of the anatomy and underlying pathology. Plain radiography could not display the three-dimensional structures in a two-dimensional plane. It can provide limited views of the anterior ethmoid cells along with the upper two-thirds of the nasal cavity [5]. The present study was conducted to assess cases of maxillary sinusitis using CT scan.

In present study out of 84 patients, males were 32 and females were 52. Maxillary sinusitis was observed in 56, mucocele in 5, cystic lesion in 10 and foreign body in 1, neoplasia in 12. Computerized tomography (CT) is considered the gold standard for preoperative evaluation of PNS diseases for appropriate patient selection for functional endoscopic sinus surgery (FESS). It is mandatory to evaluate the PNS and nose by CT before planning for FESS. It can provide a “ROAD MAP” to direct the surgical approach to otolaryngologist. CT has some medico-legal importance as well [6].

CT plays an important diagnostic role to determine the distribution and extent of paranasal disease and detect those anatomic variations (such as septal deviation, spur formation, concha bullosa, and paradoxical curve of middle turbinate) that may place the patients at increased risk for intra- and post-operative FESS complications and thereby reduces the morbidity and mortality of patients. Coronal imaging plane offers the best visualization of the drainage pathways of the sinuses, whereas some drainage pathways (such as sphenoid sinus ostia) and sinus walls, oriented close to the coronal plane, are better seen on axial images [7].

Guerra *et al.* [8] conducted a study in which 32.40% of patients presented normal sinus (without any etiological factor associated), 29.00% showed presence of etiological

and imaging findings in the maxillary sinus, 20.60% had only imaging changes in the maxillary sinus and 18.00% of patients presented only etiological factors and no change in the maxillary sinus. Radiological imaging is an important tool for establishing the diagnosis of maxillary sinus pathology. These results indicate that the CT scan should be an excellent tool for complement the odontogenic sinusitis diagnosis.

Mélen *et al.* [9] reported that only 2 of the 99 patients of their sample, that had maxillary sinusitis, were under the age of 30. The fourth decade was the most frequently affected age group. Other etiologic factors reported included: periodontitis (40.38%); odontogenic cysts (6.66%); oroantral fistulas, remaining rooted and iatrogenia after tooth extraction (47.56%); nonspecific foreign bodies (19.72%). Poor dental implants or their migration to the maxillary sinus, 0.92% of all cases, were also included under iatrogenic source.

Conclusion

Authors found CT scan a useful diagnostic tool in assessment of lesion of maxillary sinus.

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