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ROLE OF CT IN EVALUATION OF PNS

Radio-Diagnosis

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ABSTRACT

This study was undertaken with the objective of correlating the computed tomographic findings with functional endoscopic sinus surgery findings in patients with paranasal sinus disease. The CT scan and clinical history of 40 patients with disease of the paranasal sinuses were studied. The CT scans were analysed to detect the site and extent of disease. FESS was performed based on the CT diagnosis. Variations of the uncinate process, middle turbinate were better detected on CT.Assessment of the type of the fovea and other anatomical variations such as Haller cells, Onodi cells, clinoid process pneumatiation, accessory maxillary ostium etc., helped the surgeon to prevent complications during FESS.

KEYWORDS

CT , FESS,sinusitis

INTRODUCTION

CT plays an important diagnostic role in patients with sinonasal disease and determines the treatment. Excellent details are available regarding the anatomy, anatomic variants and pathology of PNS. CT determines the distribution and extent of disease and detect those anatomic variations (like septal deviation, spur formation, concha bullosa, paradoxical curve of middle turbinate etc.) that may place the patients at increased risk for intra operative and post operative FESS complications and there is reduces the morbidity and mortality of patients. It has a role in assessing relationship of the sinuses with the surrounding important structures. At present, CT scanning is the most used imaging technique for assessing chronic sinusitis and defining the anatomical abnormality.

AIMS AND OBJECTIVES OF THE STUDY

1. To accurately diagnose the disease of PNS and its complications.
2. To ennumerate the detailed anatomy, anatomic variations and pathology of PNS which help the otorhinolaryngologist during FESS, thereby reducing the risk of complications. (screening sinus CT).
3. To know the exact location and extent of the disease of PNS that is very important in deciding the management.
4. To compare the accuracy of CT findings and diagnosis with that of FESS.

Study:

Study is conducted in department of radiodiagnosis , GGH Guntur with study sample of 40 patients from march 2020 to march 2022 using GE 16 slice CT machine.

RESULTS:

Sinuses	CT (n=80 sides)		FESS (n=80 sides)	
	No	%	No	%
Maxillary	64	80.0	67	83.7
Frontal	24	30.0	23	28.7
Anterior ethmoids	38	47.5	43	53.7
Posterior ethmoids	31	38.7	33	41.2
Sphenoid	25	31.2	21	26.2

SINUSES INVOLVED IN CT AND FESS.
CT showed 92.4% sensitivity and 92.8% specificity for maxillary sinus disease. Correlation of findings with FESS was good (K – 0.80).

CT showed 96.5% sensitivity and 96.4% specificity for frontal sinus disease. Correlation of findings with FESS was very good(K – 0.90)

CT showed 86% sensitivity and 97.3 % specificity for anterior ethmoidal sinus disease.

CT showed 81.8% sensitivity and 89.3 % specificity for posterior ethmoidal sinus disease. Correlation of findings with FESS was very good for anterior ethmoids (K - 0.82) to good for posterior ethmoids (K – 0.71).

CT showed 80.9 % sensitivity and 86.4% specificity for sphenoid

sinus disease. Correlation of findings with FESS was good (K – 0.63). In the present study of 40 patients, 18 patients had defintite pattern of sinus involvement. Bilateral sinonasal polyposis was the most common pattern of involvement noticed in our study in 7 patients (17.5%) followed by infundibular pattern in 4 patients (10%) and osteomeatal pattern in 4 patients(10%). Antrochonal polyp was seen in 3 patients(7.5%). Sphenoethmoidal pattern was the least common type seen in one patient (2.5%). Babbel and Harsnberger et al [96] found that the infundibular pattern was the most commonly detected pattern followed by the OMU and SER patterns.

Summary

This study was undertaken with the objective of correlating the computed tomographic findings with functional endoscopic sinus surgery findings in patients with paranasal sinus disease.The CT scan and clinical history of 40 patients with disease of the paranasal sinuses were studied. The CT scans were analysed to detect the site and extent of disease. FESS was performed based on the CT diagnosis.

•   Majority of the patients were in the third decade and there was male predominance in our study.
•   The commonest symptom was headache followed by nasal obstruction.
•   The most common disease process was polypoidal mucosal thickening. Maxillary sinuses (83.7%) were the most commonly involved sinus.
•   FESS was found to be superior in paranasal sinus mucosal disease evaluation.
•   Patency of the osteomeatal unit was better depicted by FESS except for the sphenoethmoidal recess.
•   Variations of the uncinate process, middle turbinate were better detected on CT.
•   Assessment of the type of the fovea and other anatomical variations such as Haller cells, Onodi cells, clinoid process pneumatiation, accessory maxillary ostium etc., helped the surgeon to prevent complications during FESS.
•   Correlation coefficient was calculated using Kappa value , there is a good correlation between CT and FESS findings.

CONCLUSION

In the overall assessment, following conclusions can be drawn:
➢   Computed Tomography of the paranasal sinuses has improved the visualization of paranasal sinus anatomy and has allowed greater accuracy in evaluating paranasal sinus disease.
➢   Accurate delineation of the disease, its extent & complications, anatomical variations and vital relations of the paranasal sinuses by CT scan provides a reliable pre-operative road map.
➢   Multidetector CT (MDCT) enables us to obtain thin section scans and subsequent high quality multiplanar reformations.
➢   As the findings of CT correlates very well with the FESS findings CT can be considered mandatory in the diagnostic evaluation of diseases of PNS and planning better management.

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