



Original Article: CT Scan Evaluation of 50 Cases of PNS Lesions

KEYWORDS

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INTRODUCTION

Inflammatory and neoplastic diseases are a common and serious health problem. Because physical examination of these patients can be nonspecific, for many years, radiological evaluation has been relied on to aid in confirming the diagnosis of paranasal sinus pathology.

The availability of high resolution coronal CT images provides an accurate display of the regional anatomy, especially osteomeatal complex[1].

Although MRI provides better visualization of soft tissue than CT, its disadvantage is its inability to optimally display the cortical bone – air interface, Because both cortical bone and air have signal voids (no MR signal), at times, MR cannot be reliably used as an operative “roadmap” to guide the surgeon during Functional Endoscopic Sinus Surgery.

CT is currently the modality of choice in the evaluation of the paranasal sinuses and the adjacent structures. Its ability to optimally display bone, soft tissue and air facilitates accurate depiction of anatomy and extent of disease in and around the PNS [2]. CT clearly depicts the fine bony anatomy of the osteomeatal channels.

This study also defines the indications of CT in various PNS lesions and additional information obtained with the help of CT such as orbital and intracranial extension of lesions.

AIMS AND OBJECTIVES

- 1) To study the normal anatomy of the paranasal sinuses on CT scanning in axial and coronal planes.
- 2) CT evaluation of lesions of PNS
- 3) To correlate CT results with histopathological diagnosis and operative findings, wherever possible.
- 4) To establish the efficacy of CT in detection and treatment of various PNS lesions.

MATERIALS AND METHODS

This study was conducted in department of Radiodiagnosis and imaging, Bharati Vidyapeeth University, Medical College, Pune during January 2012– April 2015. Total of 50 patients were selected on the basis of Clinical history suggestive of PNS lesions.

Equipment: - Philips Brilliance 16 CT Scan

Technique:

Patients were positioned head first & supine. Axial CT sections were taken at 1mm intervals with angulation parallel to the IOML (Inferior orbito – meatal line). Coronal sections

were taken with the patient in prone position with extension of the neck.

OBSERVATIONS AND RESULTS:

TABLE 1: DISTRIBUTION OF INFLAMMATORY AND NON INFECTIVE PNS LESIONS:

CT FEATURE	NO. OF PATIENTS
SINUSITIS	24
MUCOCELE	2
POLYPS	19
FUNGAL INFECTIONS	5
TOTAL	50

TABLE 2: ANATOMIC VARIANTS CONDITIONS OF PNS:

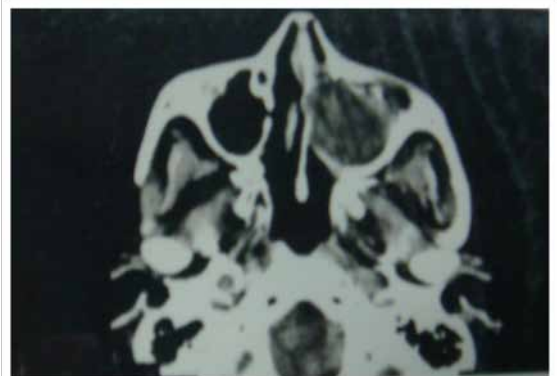
VARIANT	NO. OF PATIENTS
DNS	14
CONCHA BULLOSA	18
PARADOXICAL TURBINATE	4
ONODI CELLS	12
HALLER CELLS	13
AERATED ANTERIOR CLINOIDS	10

COMMENTS: The anatomic variations were common in patients with inflammatory sinus pathologies.

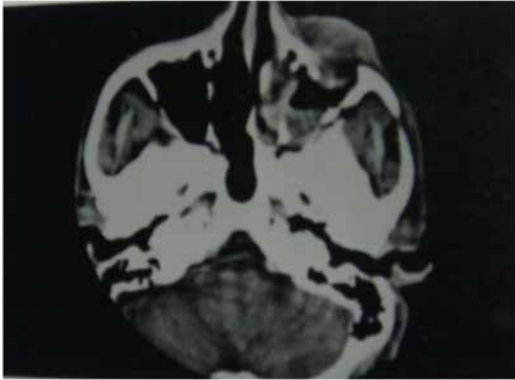
TABLE 3: INCIDENCE OF VARIOUS NEOPLASTIC LESIONS:

	MALIGNANT	BENIGN
PRIMARY SINUS NEOPLASM	5	2
CONTIGUOUS SPREAD FROM RELATED STRUCTURES	5	1
TOTAL -12	10	03

Images:



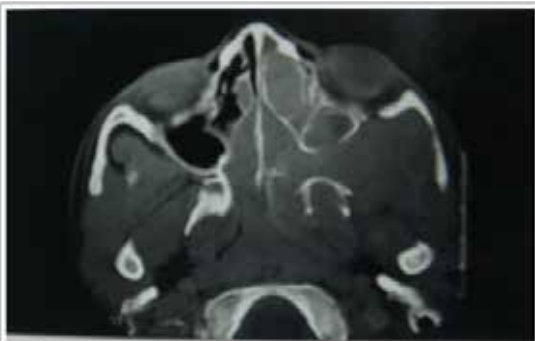
MAXILLARY MUCOCELE : Axial CECT shows an expansile nonenhancing mass in the left maxillary antrum with pressure dehiscence of the anterior wall.



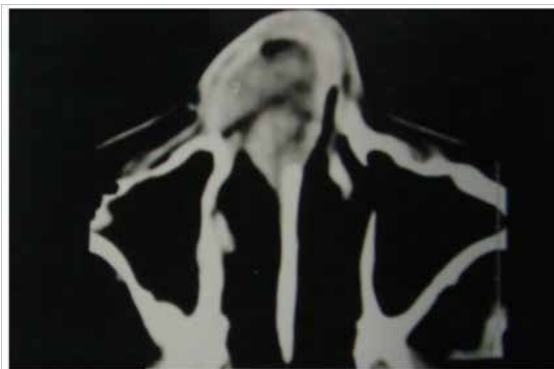
FUNGAL INFECTION WITH INFRAORBITAL CELLULITIS : Axial CECT shows inflammatory lesion with destruction of the sinus wall and infraorbital cellulitis.



FIBROUS DYSPLASIA :Coronal HRCT shows exp



NASOPHARYNGEAL ANGIOFIBROMA : Axial CECT reveals widened left pterygopalatine fossa with destruction of pterygoid plates.



CAPILLARY HEMANGIOMA : Axial CECT shows an enhancing mass in the vestibule and the region of anterior septum.

Discussion:

A total of 50 patients referred for PNS lesions were studied using CT scan, out of which 30 patients were males while 20 were females.

Axial & coronal as well as sagittal sections were taken. We used 40ml of omnipaque (iohexol) a nonionic water soluble contrast medium for opacification of the mass lesions of PNS to assess then vascularity and exact extent in adult patients [3]. The contrast administration was very useful to differentiate fluid from soft tissue due to tumor invasion. This correlated with the findings discussed by Bilanink L.T. and Zimmerman R A[4]. The scan plan was modified whenever necessary. HRCT coronal sections were obtained in patients who were subject to FESS.

In our study, 1 patients developed minor reactions to ionic contrast like nausea, itching etc, which was treated by injection metoclopramide, ranitidine and hydrocortisone[5,6]. None of our patients experienced a major reaction and there was no morbidity or mortality from contrast reaction.

SUMMARY AND CONCLUSIONS

CT scan proved to be the modality of choice in imaging all types of lesions of the paranasal sinuses. The use of intravenous contrast helped to differentiate the lesion from retained secretions, thus delineating the exact extent of the tumors. CT scanning of the PNS was very helpful in cases of trauma by detecting the exact site and types of fractures. Excellent depiction of the anatomy of the osteomeatal units, the bony architecture as well as anatomic variations using high resolution coronal sections of the PNS were extremely useful to the surgeons for planning of FESS.

Due to its unique property of visualization of bones as well as air and advanced post processing techniques, CT scanning will have an important role to play in the diagnosis and management of paranasal sinus lesions for years to come.

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