

Original Research Article


Role of CT imaging to evaluate osteomeatal complex in inflammatory lesions of PNS

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Abstract

Background: The Paranasal sinuses are hollow, air-filled spaces located within the bones of the Face and surrounding the nasal cavity, a system of air channels connecting the nose with the back of the throat.

Aim and objectives: To study the appearances of osteomeatal complex in different inflammatory conditions of PNS using CT scanning and help to decide the line of management in different appearances.

Materials and methods: 50 cases of either strong suspicion or diagnosed of inflammatory conditions of PNS were evaluated who came to Dhiraj Hospital.

Results: 50 patients of inflammatory conditions of PNS were evaluated; out of these patients were diagnosed and evaluated for inflammatory conditions OMC, Blocked OMC, sinusitis, polyp, mucocele.

Conclusion: CT Imaging remains the ideal scanning modality to evaluate osteomeatal complex in different inflammatory conditions of PNS and help to change the line of management in different appearances.

Key words

OMC, Inflammatory Lesions of PNS, CT-Scan.

Introduction

The Paranasal sinuses are hollow, air-filled spaces located within the bones of the Face and

surrounding the nasal cavity, a system of air channels connecting the nose with the back of the throat [1-3].

The osteomeatal complex or unit is the region where the frontal, anterior and middle ethmoid and maxillary sinuses drain. This includes the frontoethmoidal recess, uncinat process, hiatus semilunaris, ethmoid bulla, the maxillary infundibulum and ostium along with the ethmoid infundibulum [1].

It may be normal, blocked or widened in different inflammatory conditions of PNS. Out of all modalities of diagnosis CT has proved to be very helpful in evaluation of osteomeatal complex [2].

Common pathologies associated with blocked/widened OMC are Sinusitis (Acute/Chronic), Polyp, Mucocele, Retention cyst, Granulomatous Diseases (Tuberculosis, syphilis, rhinoscleroma, actinomycosis), Wegener's granulomatosis, Foreign body granuloma, Mycotic infections [4].

Materials and methods

This study aimed at following up cases of paranasal sinus lesions presenting at Radiology Department of Dhiraj General Hospital, by using CT scan.

Setting: Department of Radiodiagnosis, Dhiraj General Hospital, SBKS Medical College and research centre.

Population: All the patients presented to Dhiraj General Hospital for the purpose of diagnosis and treatment.

Selection of patients

Inclusion criteria

- Only those patients who are willing to participate in study will be included.
- Patients referred to the radiology department for CT scan PNS investigations, and found to have paranasal sinus lesion, will be included in this study.
- Already diagnosed cases of paranasal sinus lesions which need follow up radiological investigations and are

referred to our radiology department will be included in study.

- Patients coming for CT scan for diseases other than paranasal sinus lesions, and are accidentally found to have paranasal sinus lesion, will be included in this study.

Exclusion criteria

- Patients presenting to radiology department having paranasal sinus lesion in past and are cured completely will be excluded from the study.

Description of Tools

- **CT scan Machine:** Emotion semiens 16
- **Contrast agent used:** Urograffin

Results

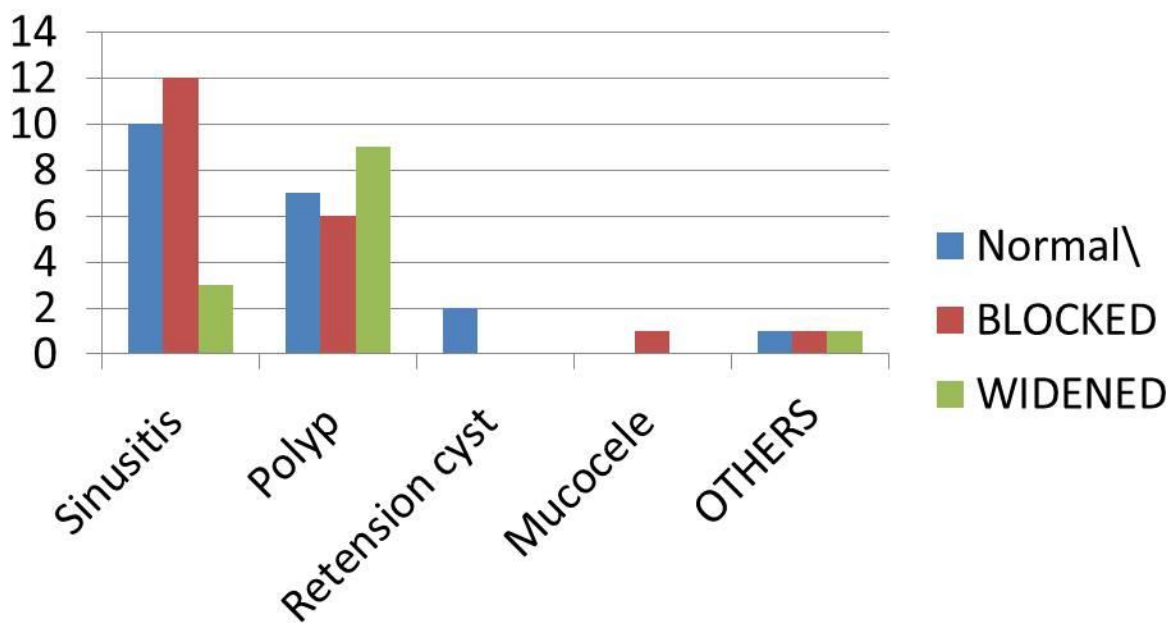
100 patients of inflammatory conditions of PNS were evaluated; out of these osteomeatal complex evaluation was done in 53 cases (**Table – 1, Graph - 1**). 20 patients had normal osteomeatal complex, despite being affected by inflammatory conditions. 20 patients had Blocked OMC, out of these 12 had sinusitis, 6 had polyp, 1 had mucocele, and another 1 had other inflammatory conditions of PNS. Widening of osteomeatal complex was seen in 13 cases. Out of these 3 suffered from sinusitis, 9 had polyp and another one patient had other inflammatory condition of PNS.

This helps the surgeon to decide the line of management, since a surgical approach is required if there is blockage of osteomeatal complex. In the rest 47 cases, osteomeatal complex was not evaluated and the patients were treated. Of these, 22 patients suffered from complications like mucocele (12), pyocele (2), osteomyelitis (3), intracerebral abscess (1) and orbital cellulites (2) and chronic sinusitis (2) as per **Graph - 2**. Retrospective studies of these patient shows that there was blockage of osteomeatal complex on initial studies.

Table – 1: Evaluation of osteomeatal complex.

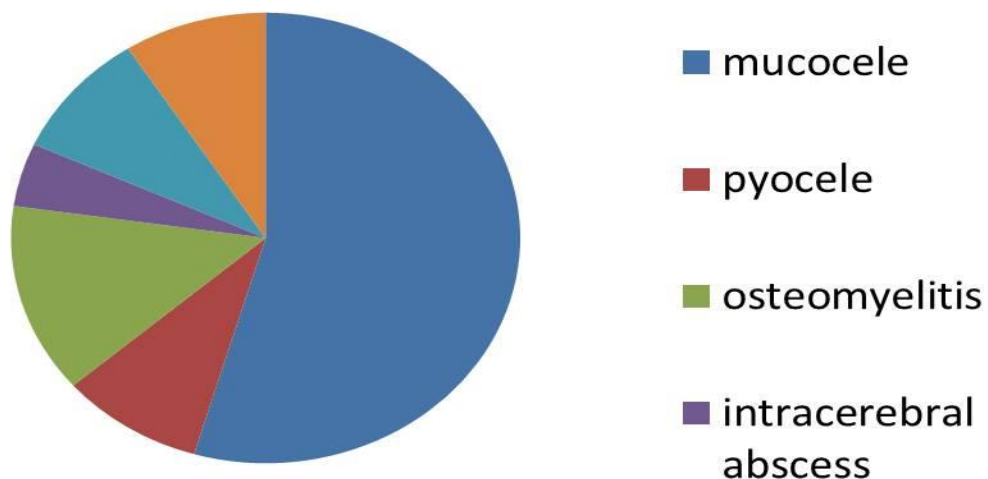
Osteomeatal complex	Normal	Blocked	Widened
Condition			
Inflammatory			
Sinusitis	10 (50%)	12 (60%)	03 (15%)
Polyp	07 (35%)	06 (30%)	09 (45%)
Retention cyst	02 (10%)	-	-
Mucocele	-	01 (5%)	-
Others	01 (5%)	01 (5%)	01 (5%)
TOTAL (%)	20	20	13

Graph – 1: Evaluation of osteomeatal complex.



Graph – 2: Complications.

COMPLICATION



Discussion

100 patients with paranasal sinus lesions were evaluated for location, characterization and extent of lesion with demographic and clinical profile in different pathological conditions. CT scan of paranasal sinuses with axial and coronal reconstruction is pre-requisite for detailed evaluation of paranasal sinus lesions.

Maximum numbers of patients (50%) were between 21 – 40 years age group, whereas patients of paediatric (00-20 ears) and geriatric (>60 years) age group constituted only 19.2% patients, suggesting middle aged people being most frequently affected by lesions of paranasal sinus. The overall Male:Female sex ratio was 2:1, thus, presenting male predominance. Maximum number of patients was of inflammatory conditions (65.4%) and most commonly sinusitis and polyposis. Epithelial pathologies were the second most common. Maxillary sinus is the most commonly affected sinus in all conditions in our study, except osseus lesions. Patients with inflammatory conditions are usually middle aged, who present with chief complaints of sinus discharge and headache. Involvement of maxillary and ethmoid sinus is most common in patients of sinusitis who are treated either conservatively or operatively. Most of the patients show either normal or more commonly blocked OMC with few cases of widening of OMC.

Conclusion

CT Imaging remains the ideal scanning modality to evaluate osteomeatal complex in different

inflammatory conditions of PNS and help to change the line of management in different appearances. 20 patients had Blocked OMC, out of these 12 had sinusitis, 6 had polyp, 1 had mucocele, and another 1 had other inflammatory conditions of PNS. Widening of osteomeatal complex was seen in 13 cases. Out of these 3 suffered from sinusitis, 9 had polyp and another one patient had other inflammatory condition of PNS. 92% of patients with block OMC did not respond satisfactorily for conservative treatment, as against 75% patients with normal OMC who responded for conservative treatment. Thus, supporting the role of CT scan in patients with sinusitis preoperatively.

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