

Rhinosinusitis in north-eastern Nigeria: computerised tomographic scan findings

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Abstract

Background: Computed tomographic scan (CT) is a useful imaging modality for infection of the paranasal sinuses.

Method: Retrospective study of 52 patients seen with evidence of rhinosinusitis on CT scan of the paranasal sinuses.

Results: There was a male preponderance with a M: F ratio of 1:7:1 and age range 9-63 years. Mucosal thickening (80.2%) and engorged turbinates (65.4%) were the most common findings on CT; while the maxillary sinuses was the most affected sinus and the sphenoid, the least. There was no intracranial complication noted. However, 9.6% of the patients had orbital complications.

Conclusion: CT Scan has confirmed the absence of life threatening intracranial complications and clearly defined the extent of the disease.

Key words: CT Scan, Rhinosinusitis, North-Eastern Nigerians,

Introduction

All the paranasal sinuses are present at birth except the frontal sinus, which appears at the sixth year, while the maxillary antrum achieves its greatest dimension at the seventh year.^{1,2} Since these sinuses drain into the nasal cavity most nasal conditions may affect the sinuses as well. In rhinosinusitis, patients may complain of headache, anosmia, foul smelling breathe, nasal obstruction and an intranasal predisposing factor.^{3,4}

A full series of plain views of the sinuses are now rarely performed since

the advent computed tomography scan (CT) and magnetic resonance imaging (MRI).⁵ Sinus abnormalities are better appreciated when the coronal sections of the CT scan are taken,^{6,7} except for cases of malignancy, sphenoidal pathology or diseases involving the orbit.⁶ The superiority of MRI to CT scan in sinusitis has been mentioned.⁸ Previous study on rhinosinusitis from the region utilized plain film in evaluation of patients.⁹ This present study discusses CT scan findings in patients with rhinosinusitis seen in the centre.

Materials and Method

This is a retrospective study involving patients who presented with symptoms and signs of rhinosinusitis at the University of Maiduguri Teaching Hospital between January 1997 to December 2001, who also had CT of the paranasal sinuses. Five patients attended the ENT clinic with CT scan obtained from other hospitals; their films were re-evaluated and included in this study. Those patients whose histology reports of biopsies from nasal clearance and anrostomies were malignant were excluded from the study.

A total of 52 patients were considered in this study and other relevant information was extracted from patients' case notes. All CT scan films were re-evaluated by the radiologist for the purpose of this study. Results are presented in tables and figure.

Results

A total of 52 patients were evaluated, 33 males and 19 females with a male: female ratio of 1.7:1. Their ages ranged from 9 to 63 years. Most of the nasal findings at presentations were nasal discharge in 46 patients (88.5%), engorged inferior turbinate in 33 patients (63.5%) and 16 patients (30.8%) had nasal polyps. The most common findings on CT scan were mucosal thickening in 42 patients (80.2%) and engorged turbinate in 34 patients (65.4%).

Sinus opacities involving the maxillary, ethmoidal, frontal and sphenoid were seen in 27 patients (51.9%). The fluid levels were only seen affecting the maxillary and frontal sinuses seen in 23 patients (44.2%) this is shown in table 1.

The most commonly affected sinuses were maxillary 38(73.1%) patients and ethmoids in 23 (44.2%) patients. The least affected sinus was the sphenoid (3.8%) patients (table 2). Orbital complications in

the form of cellulitis and proptosis were seen in five patients referred from the eye hospital with one having a left ethmoidal mucocele causing ipsilateral proptosis. However, no intracranial complications were seen.

Table 1: CT findings in 52 patients with rhinosinusitis

CT finding	No. (%)
Mucosal thickening	42 (80.2)
Engorged turbinates	34 (65.4)
Sinus opacity	27 (51.9)
Fluid levels	23 (44.2)
Polyps	18 (34.6)
Clear sinus	9 (17.3)

More than one finding may be present in a patient's film

Table 2: Sinuses involved in 52 patients with rhinosinusitis

Involved sinus	No. (%)
Maxillary	38 (73.1)
Ethmoid	23 (44.2)
Frontal	9 (17.3)
Sphenoid	2 (3.8)

Discussion

In this study a male preponderance was noted. The study population was rather small, but high cost of this investigation in a predominantly peasant population could be a factor. The three cardinal symptoms of sinusitis are (a) nasal obstruction (b) facial pain and discomfort, and (c) catarrh or post-nasal drip⁷. The most common findings on examination in this study were nasal discharge, engorged turbinates and nasal polyps. This agrees with previous study in this environment, which also showed that nasal discharge, engorged turbinates and nasal polyps as the most common nasal examination findings.⁹

Mucosal thickening accounted for 80.2% of the CT scan findings in our report. Previous reports on plain X-ray showed lower figure of 31.4%⁹ and 50%.¹⁰ In a CT scan study of incidental findings in paranasal sinuses 27% of the patients with no symptoms had sinus opacity.⁷ This high value in our study could be due to sample size and all our patients were symptomatic. Engorged turbinates and sinus opacity appeared to be the next common findings in our study. Previous report of plain X-ray showed a different pattern.⁹ engorged turbinates appeared to be the commonest finding (34.3%) whereas sinus opacity accounted for 21.1% of the findings. The high value in this study could be as a result of high image resolution of CT scan. Fluid levels and polyps were seen in 44.2% and 34.6% of the CT film respectively. Clear sinuses occurred in 17.3% of the patients. Clear sinuses were seen in 36% of patients in previous plan X-ray studies.⁹ Therefore, this study has markedly improved the diagnosis of sinus affectations.

The maxillary antrum is the most commonly involved sinus (73.1%) in this study. In another study of the CT scan of the para-nasal sinus, the ethmoid was the most affected (21%)⁷. The sphenoid appears the least affected sinus. Previous study in this environment using plain X-ray showed absence of sphenoid sinus involvement.⁹

Orbital complications were seen in 5 patients (9.6%) who were referred from the eye hospital. A higher value of orbital complications (44%) was shown in another study of sinusitis in children in the U. K.¹¹. These complications occur due to anatomic contiguity of the orbit and the sinuses as well as interference with venous drainage from phlebitis during sinusitis.¹² The frontal and ethmoidal sinus mucocoles were seen in two patients. One of the patients showed expansion and thinning of the left posterior ethmoidal sinus wall. Fronto-ethmoidal mucocoele form about 81% of paranasal sinus mucocoeles¹³ and is a

common cause of unilateral proptosis in our environment.¹⁴ The absence of life threatening intracranial complications in our series could be due to the habitual self-medication by most patients with sinusitis and partly due to the small sample size.

Anatomical variant, which may predispose to sinusitis include concha bullosa, paradoxical curvatures of the middle turbinates and large Haller's cell.¹⁵ Jones et al¹⁶ showed that bony anatomical variation appears not to influence the prevalence of sinusitis. However such variation were not found in our report.

The role of CT scan in the diagnosis of rhinosinusitis as well as ruling out possible life threatening complications has been demonstrated. The most discouraging factor is the high cost of CT Scan. Functional endoscopic sinus surgery (FESS) is employed in the surgical treatment of rhinosinusitis where CT scan is imperative. In a developing country, like Nigeria, where such facilities are not readily available the role of CT scan is to clearly delineate the extent of sinus disease before other forms of surgery. This will help to reduce unwanted surgeries that may not be indicated.

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