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# Frequency of Computed Tomography Paranasal Sinuses in the Evaluation of Sinusitis

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## Abstract

**Background:** Recent advances in the understanding the pathophysiology of paranasal sinuses has revolutionized the surgical management of chronic and recurrent sinusitis. Coronal plane computerized tomographic (CT) scanning has dramatically improved the imaging of paranasal sinus anatomy as compared to sinus radiographs. Increasingly, subtle bony anatomic variations and mucosal abnormalities of this region are being detected. Data regarding the background prevalence of these findings are needed to determine their clinical relevance. **Objective(s):** To determine the frequency of computed tomography paranasal sinuses in the evaluation of sinusitis. **Methodology:** A cross-sectional study was conducted at Al-Razi Health Care, Lahore. From May 2018 to September 2019, data of 177 patients were collected through convenient sampling. Adults and children with acute maxillary sinusitis/ rhino sinusitis were included in the study. Data of patients with recent cold associated with irritating runny nose and headache along with congestion was collected from the patients. Statistical software for social sciences (SPSS version 22.0) is used for the analysis of data. **Results:** Out of 177 patients collected, 82 were females and 95 were males. History of running nose was collected. 51 out of 185 had running nose. 120 patients were presented with headache. 115 had the history of cough. 102 had shortness of breath and 107 had congestion. 59 patients were suffering from cold. The final result came out to be 106 sinusitis patients. **Conclusion(s):** Pathologies in the maxillary sinus are frequently found in CBCT imaging and have to be treated or followed-up accordingly. CBCT is applicable for diagnosis and treatment planning of clinically present sinusitis.

**Keywords:** Sinusitis, Computerized Tomography

## Introduction

Sinusitis is an inflammation of nasal sinus, it is also known as rhinosinusitis, and is a common medical problem in Ear, Nose, and Throat (ENT) department. Maxillary sinus is one of the four paranasal sinuses held in cheekbones. It shapes like a pyramid and each contains three cavities. They are basically mucus lined cavities that reduce the skull weight, produce mucus, affect the tone quality of a person's voice and they also aids in trapping dust and dirt particles (Lund and Lloyd, 1984). Maxillary sinus drains into nose by an opening called ostia. When these ostia get clogged, sinusitis occurs, making the drainage difficult. Sinusitis may be acute or chronic depending upon the duration of inflammation (Maru and Gupta, 2001). Acute Sinusitis is a short-term

inflammation of membranes of nose and surrounding sinus and is mostly due to cold-causing viral infection, or it may be non-infectious. According to American Academy of Otolaryngology, it affects 1 in 8 adult's per year (Laine et al., 1998). CT has been revolutionised by utilizing differential contrast enhancement characteristics of lesion, a clear distinction between tumor mass and inflammatory tissue can be made out, which is of utmost importance for the treatment of patients (Silberstein, 2004). CT also plays a role in diagnosing the complications and intracranial extension of sinonasal diseases. The CT scan proved to be an excellent imaging tool as it can accurately diagnose and differentiate benign and malignant lesions, can describe the masses in terms of their origin, nature, extension, and involvement (Carmeli et al., 2011) (Carmeli et al., 2011). Now with the unique ability of CT to image the bones and soft tissues, direct coronal scanning, and sagittal reconstruction imaging the space occupying lesions (Gupta et al., 2004). By acting as a roadmap, preoperative CT scan PNS has proved to reduce the post-operative complications of FESS and other surgeries. The multifaceted benefits of CT in PNS over other imaging and diagnostic procedures are countless. The present study was conducted to establish the role of CT in the evaluation of pathologies and their proper early diagnosis (Sabharwal et al., 2006).

## Results

Out of 177 patients collected, 82 were females, and 95 were males. History of running nose was collected. 51 out of 185 had running nose. 120 patients were presented with headache. 115 had the history of cough. 102 had shortness of breath and 107 had congestion. 59 patients were suffering from cold. The final result came out to be 106 sinusitis patients.

Table 1: Shortness of breath

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid no	75	42.4	42.4	42.4
yes	102	57.6	57.6	100.0
Total	177	100.0	100.0	

Table 2: Cold

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid no	118	66.7	66.7	66.7
yes	59	33.3	33.3	100.0
Total	177	100.0	100.0	

Table 3: Sinusitis

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid negative	71	40.1	40.1	40.1
positive	106	59.9	59.9	100.0
Total	177	100.0	100.0	

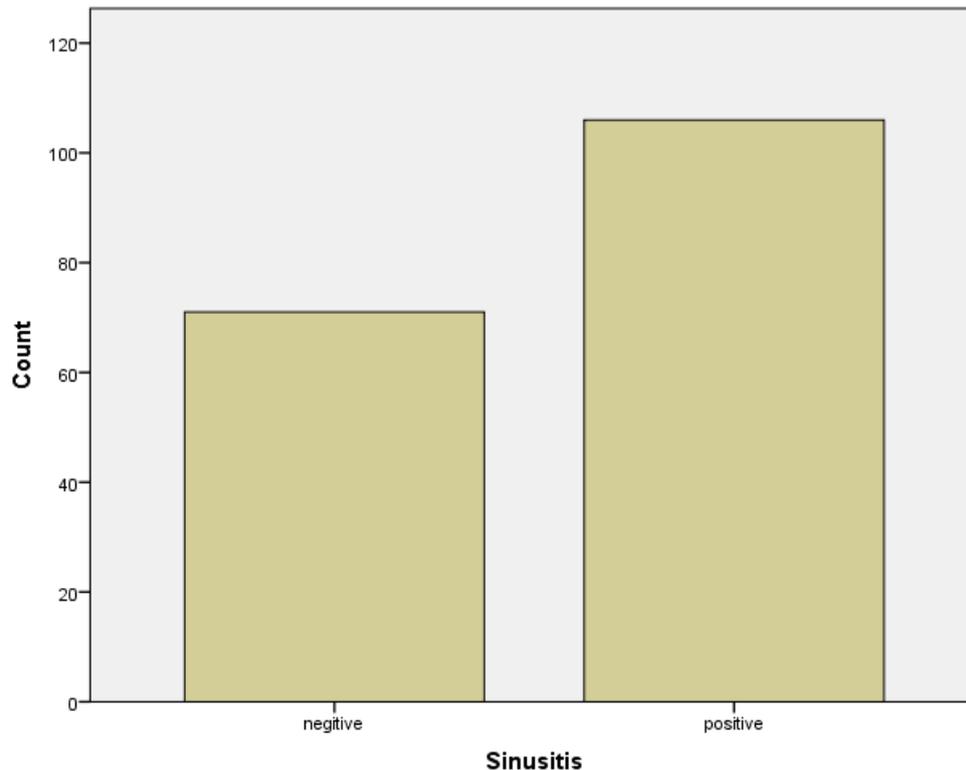


Figure 1: Graph showing the frequency of sinusitis

## Discussion

The study here was conducted to conclude the diagnosis of paranasal sinusitis through CT. A history of 177 patients was collected and compared. Among these patients, 106 patients had sinusitis. These patients were presented with a history of cold, cough, shortness of breath. According to the study conducted by James in 2002, it is important to validate that if the definition of chronic rhinosinusitis is based on subjective information, this correlates with objective findings obtained with CT. The diagnosis of chronic rhinosinusitis is based principally on major and minor symptoms, with treatment administered on the basis of this diagnosis. This paradigm was established to avoid the cost and inconvenience of CT scanning to all physicians who see these patients. Patients meeting the definition of chronic rhinosinusitis, a symptom-based definition, are recommended to received several weeks of antibiotics. The otolaryngologist is better suited to the use of objective testing, especially endoscopy, than are other physicians. Nasal endoscopy or CT is not viewed as being necessary to corroborate the diagnosis. This project was undertaken to determine whether the standard definition of chronic rhinosinusitis, alone, was sufficient to make the diagnosis relative to endoscopy and/or CT. The role of endoscopy in the diagnosis of chronic, nonpolyp, unoperated rhinosinusitis was evaluated. The conclusion of my study is that pathologies in the maxillary sinus are frequently found in CBCT imaging and have to be treated or followed-up accordingly. CBCT is applicable for diagnosis and treatment planning of clinically present sinusitis.

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