

A Radiological Study of Prevalence of Sinusitis in Children

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Abstract

Introduction: Respiratory tract infections are very common in children in India. However, in the setting of prolonged symptoms suggesting a bacterial infection, radiographic images can lend credence to the diagnosis. Very few reports of the prevalence of sinusitis in children with recurrent respiratory tract symptoms (RRTS) have been reported in India, and, hence, this study was carried out.

Methodology : This descriptive study was done at JNMC AMU, a tertiary-care hospital Aligarh, U.P. over a period of 1 year. All children in the age group of 3–15 years who showed RRTS (>3 episodes in 6 months or 6 episodes in 1 year) were included in the study. A total number of 60 children were included in the study. Radiological diagnosis of sinusitis by X-ray PNS and CT- scan was done to appreciate the presence of complete opacification, mucosal thickening (at least 4 mm), and air fluid levels.

Results and conclusion : Out of 60 children with RRTS 36 cases (60%) were diagnosed as cases of sinusitis radiologically, 24 cases were not diagnosed radiologically.

Keywords: sinusitis, X-ray PNS

I. Introduction

The paranasal sinuses are air-filled spaces located within the bones of the skull and face. They are centered on the nasal cavity and have various functions, including lightening the weight of the head, humidifying and heating inhaled air, increasing the resonance of speech, and serving as a crumple zone to protect vital structures in the event of facial trauma.^[1, 2]

The paranasal sinuses are joined to the nasal cavity via small orifices called ostia. These become blocked easily by allergic inflammation, or by swelling in the nasal lining that occurs with a cold. If this happens, normal drainage of mucus within the sinuses is disrupted, and sinusitis may occur. Because the maxillary posterior teeth are close to the maxillary sinus, this can also cause clinical problems if any disease processes are present, such as an infection in any of these teeth. These clinical problems can include secondary sinusitis, the inflammation of the sinuses from another source such as an infection of the adjacent teeth.^[3]

The health of children can affect badly due to pediatric sinusitis. Although sinusitis has been found to exist for more than last two decades, there are still arguments that persist in relation to its pathogenesis, presentation, diagnosis, and treatment. An accurate diagnosis of sinusitis would help the clinician to find children who really benefit from the treatment and prevent morbidity from recurrent respiratory tract symptoms (RRTS).

Recurrent respiratory infections affect the daily activities of children. So it is important to see that they may not be suffering from sinusitis. Diagnosis of sinusitis and subsequent care can be very helpful.

Recurrent upper respiratory tract symptoms are defined as symptoms such as cough, cold, and sneezing in a child presenting for more than 3–4 episodes in 6 months or 8–10 episodes in a year, with the interval period being normal (symptom free). RRTS may be owing to allergy, asthma, inflammation, or infection (viral/bacterial).

Respiratory tract infections are very common in children in India. An average child will have 6–8 upper respiratory infections per year (1,2) and it is reported that these infections get complicated by acute bacterial sinusitis. Bozdoğan et al.,^[3] in their study to evaluate the main causes underlying RRTS during childhood, concluded that asthma and allergic diseases were the most common causes (45%) of recurrent complaints of respiratory tract. The abnormal radiographic images reflect inflammation and do not discern between viral,^[4] bacterial,^[5] allergic,^[6] or other causes. However, in the setting of prolonged symptoms suggesting a bacterial infection, radiographic images can lend credence to the diagnosis. Very few reports of the prevalence of sinusitis in children with recurrent respiratory tract symptoms (RRTS) have been reported in India, and, hence, this study was carried out.

In present study we will try to evaluate the prevalence of sinusitis in children aged 3 to 15 years by clinical and radiological (paranasal sinuses (X-ray PNS) and CT SCAN) methods in children with RRTS, at JNMC AMU ALIGARH.

II. Materials And Methods

This descriptive study was done at JNMC AMU, a tertiary-care hospital Aligarh,U.P. over a period of 1 year. All children in the age group of 3–15 years who showed RRTS (>3 episodes in 6 months or 6 episodes in 1 year) were included in the study. A total number of 60 children were included in the study. Consent of patients and their guardians was taken to utilize their clinical and radiological findings for this study.

Radiological diagnosis of sinusitis by X-ray PNS and CT- scan was done to appreciate the presence of complete opacification, mucosal thickening (at least 4 mm), and air fluid levels.

III. Results

Out of 60 children with RRTS 36 cases (60%) were diagnosed as cases of sinusitis radiologically , 24 cases were not diagnosed radiologically .

Age Group	Number Of Patients With Rrts	Number Ofpatients Radiologically Diagnosed As Sinusitis	%
3-6 Years	31	16	51.6
7-15 Years	29	20	68.9
Total Patients	60	36	60



Figure 1: X-Ray PNS showing left side opacifications in maxillary sinus

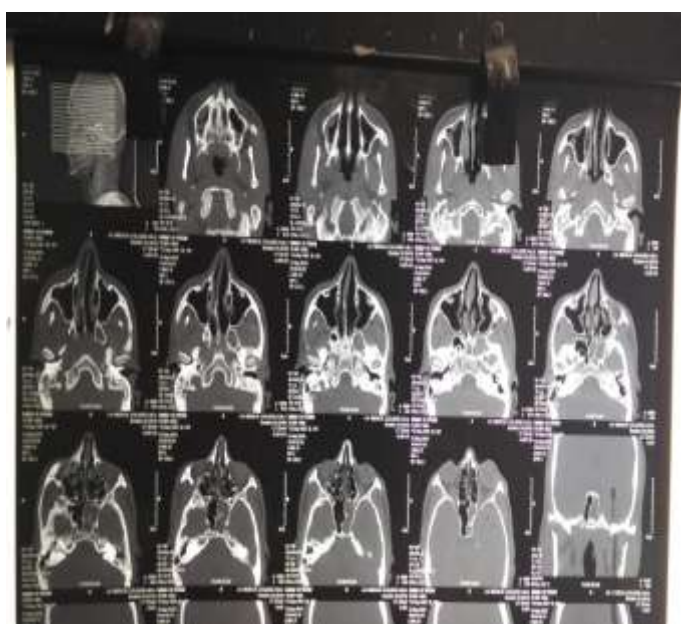


Figure 2: Ct Scan Pns

IV. Discussion

In our study, X-ray diagnosis of sinusitis was present in 60% of children who were clinically suspected to show sinusitis, which is similar to the study done by Arruda et al.[5] Positive significant correlation between the symptoms of cough and purulent discharge with an opaque sinus on radiography in 27 children with clinically suspected sinusitis were found, which is similar to the study done by Conrad and Jenson.[8] Of the 57 recruited children with RRTS, X-ray abnormality was shown in 42 (73.68%) cases. In children with RRTS less than 6 years of age 51.6 show radiological features whereas in 1-15 years old radiologically active sinusitis is appreciated in 68.9% cases. We can say that incidence of sinusitis increases with age . It may be attributed to more exposure to atmospheric pollution. There is an association between clinical and X-ray diagnoses of sinusitis. Hence, clinical diagnosis of sinusitis is as good as X-ray diagnosis of sinusitis in patients with RRTS.

V. Conclusion

The positive predictive value of clinical diagnosis of sinusitis by accepted criteria is 60%, when compared with radiological diagnosis of sinusitis in children with RRTS. Therefore, we conclude that it obviates the need of diagnosing sinusitis radiologically in children with RRTS and is worth treating the children with above-mentioned symptoms based on clinically diagnosed sinusitis by accepted criteria .

Limitations of the Study

Limitations are that this is a descriptive study with limited number of study population conducted in a limited period, and the study was not blinded. In future this study can be extended to larger population. Moreover we can further appreciate the types of sinusitis in children.

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