



PROSPECTIVE STUDY OF EVALUATION OF CHRONIC COUGH IN CHILDREN AGED 1 YEAR TO 12 YEARS

Paediatrics

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ABSTRACT

Chronic cough is a common complaint in children which causes distress and affects the quality of life of parents and children. While cough may be seen as a common condition of childhood without serious consequences, ignoring a cough that may be the sole presenting symptom of an underlying illness can lead to delayed diagnosis and progression to a chronic respiratory morbidity. Aims and objectives of the study was to evaluate the specific diagnosis and prognosis of chronic cough in children aged 1 to 12 years. A prospective study was done in 100 children with chronic cough (history of cough >4 weeks). Routine investigations like complete blood count with differential count, Mantoux test, sputum examination, and X ray chest and other investigations like bronchoscopy, HIV, CT scan chest and paranasal sinuses, barium swallow, endoscopy and biopsy whenever needed. Pearson Chi square test carried out to quantify significance difference, p value, etc.

KEYWORDS

Asthma, Chronic cough, Pneumonia, Tuberculosis

INTRODUCTION

Clinical evaluation of cough in children should also include an assessment of environmental factors, particularly tobacco smoke. An acute cough (cough less than 4 weeks duration) is usually due to a viral infection or an upper respiratory infection. But a chronic cough (4 weeks or more) needs to be evaluated for the specific cause, as significant morbidity is associated with it and a serious illness needs to be ruled out. A single cause can be found in up to 82% of all cases of chronic cough. Most coughs of acute onset are self-limiting. Chronic cough gives more anxiety to parents and the physicians. Chronic cough is unlikely to occur in the absence of disease or abnormal physiological functioning. The etiology of prolonged cough in children is well recognized as being different to that of adults, and the management of prolonged cough in children must, therefore, differ from the recommended management for adults. The most common causes of adult cough include asthma, gastroesophageal reflux or upper airway cough syndrome (previously known as postnasal drip); however, current evidence suggests that these causes are not common in children with prolonged cough. Underlying abnormalities, such as airway lesions, have been found to be prevalent in younger (preschool-aged) children; therefore, the identification of potential causes must be considered along with treatment for the cough. Guidelines have been published by American, British and European respiratory groups regarding the management of cough. There is insufficient evidence available to make treatment recommendations, and further high quality research is clearly needed. In some studies that were limited in quality, antibiotic treatment for younger (predominately preschool-aged) children presenting with a prolonged moist cough has been shown to be of benefit in resolving cough and preventing illness progression. Hence current research designed to study the clinical and diagnostic spectrum of chronic cough in children aged 1 to 12 years.

MATERIAL AND METHODS

Children in the age group of 1 to 12 years, presenting with chronic cough (cough for 4 weeks or more), who came to the outpatient department during the study period were included. Inclusion criteria Case definition: All children with chronic cough attending the outpatient department and/or getting admitted with chronic cough during the study period are included in the study. Exclusion criteria Congenital heart diseases Cerebral palsy and neurological abnormalities. Children in the age group of 1 to 12 years presenting with cough of 4 or more weeks in the out-patient department were admitted and a detailed history was elicited. Age, sex distribution, clinical features associated with chronic cough like breathlessness, fever, nasal discharge, postnasal drip, regurgitation of feeds, any other focus of infection like ear discharge, family history of asthma, atopy, smoking, and past history of tuberculosis, wheezing and its relief with bronchodilators, history of overcrowding were recorded. Thorough clinical examination including a general examination and systems examination were done to check for other focus of infection and to rule out congenital heart disease. Chest examination was done to find out crepitations and wheeze. Following investigations were done in all of them. Routine investigations like complete blood count with differential count, Mantoux test, sputum examination, and X ray chest were done. Other investigations done were bronchoscopy, HIV-

ELISA, CT scan chest and paranasal sinuses, barium swallow, endoscopy and biopsy whenever needed. The causes of chronic cough were made out as per the defined diagnostic criteria. Diagnostic criteria Bronchial asthma The most widely accepted classification of asthma is that recommended by the National Heart, Lung, and Blood Institute's (NHLBI) National Asthma Education and Prevention Program (NAEPP) Expert Panel Report 2 and "GINA guidelines" (2019).

RESULTS

Total number of children who presented with chronic cough recruited into the study was 100. Majority cases 38 (38%) presented with chronic cough belonged to 4-6 years age. The mean age of presentation was 5.5±2.5 years. 62 (62%) cases were boys and 38 (38%) were girls. The proportion of boys was more than girls in children who presented with chronic cough. The duration varied from 1 month to 5 months. The mean duration and standard deviation of cough was 56.27±28.45 days. Cough was not of any specific type in any of the cases. There was sputum production were 10 (10%) out of 100 cases. Hemoptysis was present in 2 (2%) case with chronic cough. The cough occurred most frequently during the day than at night. Day time cough frequency was documented in 72 (72%) and nighttime cough in 28 (28%). Seasonal variation of cough was noted in 10 (10%). There was no postural variation of cough or expectoration in any of the cases. There were 62 (62%) of cases with chronic cough presented with breathlessness and fever was associated in 79 (79%) cases. History of triggers for symptoms like cough, wheeze and breathlessness was noted in 26 (26%) of cases. Regurgitation was noted in 5 (5%) cases of chronic cough. Out of whom, 1 case had hematemesis. Tuberculosis Contact history of TB was present in 13 (13%) cases. Past history of treatment with anti-tuberculosis drug was present in 5 (5%) cases. Previous history of wheeze and relief with bronchodilators was documented in 25 (25%) of the cases with chronic cough. Past history of pneumonia was noted in 4 (4%) cases. Family history Family history of asthma was observed in 14 (14%) cases, atopy in 14 (14%) cases. Family history of passive smoking was present in 12 (12%) cases. Overcrowding was noted in 10 (10%) cases as per the criteria defined above. Immunization 79% were fully immunized as per National Immunization Schedule, 12% were partially immunized and 8% was not given any of the vaccines. Of the Mantoux positive cases, 13 were in tuberculosis group, 12 in pneumonia group and 8% in asthma group. Mantoux positivity was found to be more among the TB cases when compared to other conditions. Barium swallow Barium swallow was done in 6 chronic cough cases with suspected gastro-esophageal reflux. Gastro esophageal reflux disease was diagnosed in 4 cases and barium swallow was normal in other 2, a case of pneumonia and a case of laryngomalacia. Barium swallow was found to be positive in GERD cases than in other condition. This difference observed was found to be statistically significant (p=0.000) HIV ELISA was done in 12 cases with suspected immunodeficiency, all were non-reactive. Broncho-alveolar lavage Broncho-alveolar lavage was done for 4 cases of the chronic cough with suspected endobronchial tuberculosis and for a case of eosinophilic pneumonia. Three were negative for acid fast bacilli. In case of eosinophilic pneumonia, eosinophil count was found

to be 45%, neutrophils 10%, lymphocytes 5%, monocytes 40% in bronchoalveolar lavage. Computed tomography scan CT chest in 18 cases for the confirmation of 12 bronchiectasis, 1 interstitial lung disease, 1 paraganglioma, 1 bronchiolitis obliterans was confirmed by CT scan.

DISCUSSION

Majority cases (38%) presented with chronic cough belonged to 4-6 years age. The mean age of presentation was 5.5 ± 2.5 years. 62 (62%) cases were boys and 38(38%) were girls. The proportion of boys was more than girls in children who presented with chronic cough. Duration of cough in study population varied from 1-5 months. The mean duration and standard deviation of cough was 56.27 ± 28.45 days. All the cases of chronic cough with sputum production had the final diagnosis as bronchiectasis. There was no significant correlation noted between the timing of cough and the diagnosis. This is comparable to the study of Dani, in which the cough has occurred frequently during daytime in 61 (57.4%) cases as opposed to nighttime cough in 33 (39.3%) cases. In this study, seasonal variation of cough was noted in 10%. Percentage of non- seasonal cough in the study of Dani was 62.7%. All the cases with seasonal variation had the final diagnosis as asthma in this study. In this study, breathlessness was observed in 79% cases, whereas 62.7% in a study by Dani. The 90% cases were associated with fever, whereas a study of Dani, where fever was an associated symptom in 44 (45.7%) cases. Family history of asthma was present in 12 cases compared to 16% cases in the study of Dani. Family history of atopy was noted in 14 chronic cough cases, compared to 11 (11.7%) cases in the study of Dani (p value 0.001). In this study, history of passive smoking was observed in 12% chronic cough cases, comparable to the case control study of Daljit which had a family history of smoking as 16.7% of cases in contrast to 6.4% in controls (p=0.05).

CONCLUSION

Chronic cough is more common in children less than 6 years of age in this study. The major causes of chronic cough in children in this study were asthma, tuberculosis, pneumonia and bronchiectasis. Rare causes of chronic cough (hypoplasia lung, interstitial lung disease, paraganglioma and laryngeal papilloma) identified in this study. A child presenting with chronic cough cannot be left undiagnosed as the rare underlying cause may prove to be fatal if not investigated in proper time. Funding: No funding sources Conflict of interest: None declared Ethical approval: The study was approved by the Institutional Ethics Committee

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