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Original Article

Somatic Cough Syndrome in Children with Chronic Cough Coming to CMH Kohat

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ABSTRACT

Objective: To identify and to know the features of somatic cough syndrome in children with chronic cough coming to CMH Kohat.
Study Design: Prospective longitudinal study.
Place and Duration of Study: Combined Military Hospital, Kohat Pakistan, from Jul to Dec 2023.
Methodology: All the children aged 4 to 12 years coming to CMH Kohat child out patient department with chronic cough were initially assessed by pediatricians and suspected cases with somatic cough were referred to psychiatry department. Their detailed assessment was done as per DSM-5 criteria and management was started.
Results: Out of 1451 children with chronic cough 30(2.04%) cases were diagnosed to have somatic cough. Among them 12(40%) were male and 18(60%) were female. Psychiatric comorbidity was seen in all cases of somatic cough syndrome (100%). Seven (23%) patients had anxiety, 5(16%) had conversion reaction, 11(36%) had depression and 7(23%) had psychosocial issues. 26(87%) responded only to behavioral therapy and 4(13.7%) needed both behavioral therapy and pharmacological intervention.
Conclusion: Somatic cough is a very important cause of cough not responding to general treatment measures and index of suspicion should be kept in mind because the parents keep on visiting the clinicians and it's the responsibility of clinicians to pick them and send them for detailed psychiatric assessment. In areas like Kohat where families live together and houses are congested, this important etiology should be kept in mind.

Keywords: Anxiety, Cognitive Behavioral Therapy, Children, Chronic Cough, Depression, Somatic Cough Syndrome.

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INTRODUCTION

Respiratory symptoms such as cough are routine presentations to child Out Patient Department and mostly it is due to some organic etiology and mostly is acute (lasting less than one month). There are patients in whom the cough becomes chronic and is then very worrisome for the caretakers. Cough lasting for longer than four weeks is termed as chronic cough.[1] There is a subset of children with chronic cough who have normal physical examination and investigations. Psychogenic cough has been used to describe cough without an underlying identifiable organic or physiologic cause.[2] Its often associated with other psychiatrics conditions like conversion disorder, anxiety and depression disorders[3,4] and may have a psychological basis.[5] Limited research data is available how to define and diagnose this condition and how to differentiate it from other causes of chronic cough. Previously it was termed as operant cough[6] honking or habit cough[7] nervous cough[8] barking cough of puberty.[9] In 2015 DSM-5 criteria was devised and this cough was named as somatic cough.[10] The patient and the parents are not easily convinced that any psychological factor is involved in this chronic cough of their child. The prevalence remains unclear but in one study it was reported to be in between 3% to 10%.[5] One study in China reported detection rate of 3.02%.[15] Very few studies in developing countries have been done on it though such patients are encountered in OPD setups .Our study would therefore add to the existing knowledge and awareness among physicians, pediatricians, GPs and mental health professionals about this condition leading to early detection and management. Early detection is vital because this chronic condition affects the education of the child and it's a financial burden on the already poor families visiting different doctors and getting variety of treatment. It will also prevent it from becoming a permanent disability. Keeping all this in mind this study was planned and liaison was done between pediatric and psychiatry department at CMH Kohat to know its prevalence in this area where mostly Pathan families are populated and there is trend to live in large families and they face lots of social stresses and poverty. CMH Kohat is the main hospital in District

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Kohat and patients report here from far-flung places like Karak, Hangu, Tal, and Dera Ismail Khan. The recommended treatment for somatic cough is non pharmacological such as behavioral therapy, suggestive therapy, counseling, reassurance, but some children may need a short course of medications as also evident from our study.

METHODOLOGY

This study was conducted in Pediatric Department of CMH Kohat from Jul to Dec 2023, after approval by the Ethics Committee of the institute (E-2005/A/10) and informed consent was taken from all the parents bringing their children with chronic cough.

Inclusion Criteria: Newly referred children of either gender, aged 4 to 12 years coming to child Out Patient Department with chronic cough as their presenting complaint were included in the study irrespective of their gender, ethnicity, and residence.

Exclusion Criteria: Children with mental disability, cerebral palsy, old diagnosed cases of cystic fibrosis, asthma, tuberculosis and those with congenital heart disease were excluded from the study.

In the 6-month duration a total of 1451 cases of chronic cough reported to children Out Patient Department CMH Kohat. These children were examined and evaluated at children out patient department for their underlying organic etiology by the pediatricians. Chronic cough was defined as cough lasting for more than one month. Those children in whom the physical examination was normal and laboratory investigations didn't reveal any abnormality were asked to make a video recording of their child cough and were asked for follow up visit at 1-week interval. After seeing the videos and further history and making a suspicion of somatic cough, these children were then referred to psychiatric out patient department at CMH Kohat. In psychiatry out patient department a Proforma was placed for recording their demographic features. They were interviewed by team of psychiatrist and psychologist and their detailed assessment was done to know the comorbid and any underlying reason for somatic cough. DSM 5 criteria was used as diagnostic tool for somatic cough syndrome.[10] They were then subjected to regular treatment sessions including cognitive behavioral therapy, counselling and relaxation techniques. These patients were asked for follow up visit every month and were assessed for response to therapy. In few need of medications was also decided depending on the comorbid and response to behavioral therapy.

Statistical Package for Social Sciences (SPSS) version 23.0 was used for the data analysis. Quantitative variables were expressed as Mean±SD and qualitative variables were expressed as frequency and percentages.

RESULTS

A total of 1451 children with chronic cough reported to child Outpatient Department during the study period. Out of them 30(2.04%) were identified as having somatic cough syndrome. The rest 1421(98%)were diagnosed as having asthma, post infectious cough, gastroesophageal reflux disease, sinusitis/allergic rhinitis and other diagnosis. Among children with somatic cough 12(40%) were male and 18(60%) were female (Table-I). The age of children ranged from 4 to 12 years with a mean of 8±1.7 years. The mean duration of cough was 4.6±1.5 months. The cough was croupy in 13(43.3%) children, explosive in 14(46.6%) and honking in 3(10%) (Table-II). In all these children it was reported that the cough disappeared during sleep. Common cold (60.9%) was the most common initial trigger of cough and feeling of breathlessness (70%) was the most common accompanying symptom in patients with somatic cough syndrome.

Table-I: Gender Distribution (n=30)

Gender	n(%)
Female	18(60%)
Male	12(40%)

Table-II: Character of Cough in Children with Somatic Cough Syndrome (n=30)

Character of cough	n(%)
Croupy	13(43.3%)
Explosive	14(46.7%)
Honking	3(10%)

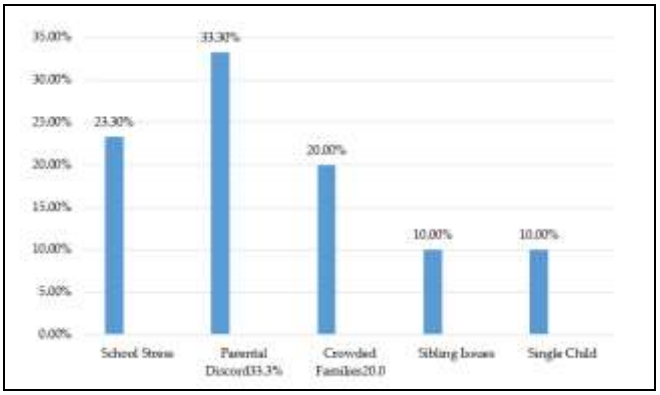

Figure-1: Underlying Reasons for Somatic Cough

Parental discoordination seen in 10(33.3%) children was the main underlying reason for somatic cough. It was followed by school stress seen in 7(23.3%) of children. Children living in crowded families were more prone to somatic cough 6(20%). While sibling issues and being a single child showed same proportion 3(10%) in children with somatic cough. (Figure-1).

Depression 11(36.7%) was seen as the most common psychiatric comorbidity among these 30 patients. Other comorbid identified were anxiety 7(23.3%), conversion reaction 5(16.7%) and psychosocial issues 7(23.3%). (Table-III).

Table-III: Comorbid of Psychogenic Cough (n=30)

Comorbid of psychogenic cough	n(%)
Depression	11(36.7%)
Anxiety	7(23.3%)
Psychosocial Issues	7(23.3%)
Conversion Reaction	5(16.7%)

CBT was found to be most effective treatment modality and resolution of symptoms was noted in 17(56%) cases. Suggestion therapy resolved the symptoms in 4(13.3%) while in 7(23.3%) counselling sessions resulted in relief of their somatic cough. (Figure-2).

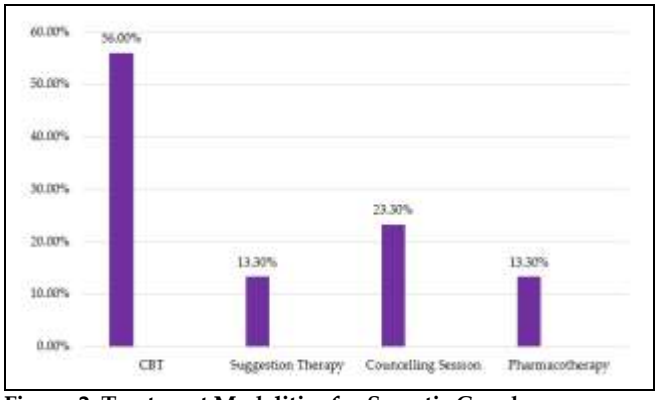

Figure-2: Treatment Modalities for Somatic Cough

4(13.3%) of children didn't respond to non-pharmacological measures and needed pharmacotherapy too in addition to these measures for resolution of their symptoms.

DISCUSSION

In Pediatric Out patient department chronic cough is one of the main presenting complaint. Parents are much concerned for the management and diagnosis of their child cough when it becomes chronic. Somatic cough is the type of cough which is very worrisome for the parents and it is important to pick and diagnose such cases to help out the families since they visit a lot of doctors and keep on using variety of medications for their children with no improvement in their child condition. In our study, we did came across children having somatic cough. Thirty (2.04%) out of fourteen hundred fifty one children with chronic cough were diagnosed with somatic cough over a period of six months. Though there is very little research on the exact incidence ,causes and the diagnosis of somatic cough disorder but thorough literature search revealed a study which was done in 2006 by Irwin *et al.,* where 3%–10% of children presenting with chronic cough were found to be suffering from psychogenic cough.[5] The high percentage in this study as compared to our study may be because of lack of well-defined diagnostic criteria leading to over diagnosis of cases since character of the cough was the only criteria for diagnosis in this study. Although diagnostic criteria is still controversial but common features of somatic cough are loud repetitive cough sounds like honking of a Canadian goose or of barking quality[11] which subsides during sleep or on distraction[12] aggravating in the presence of people or when patient is being observed and not aggravating by environmental changes, laughter, crying or exertion[2] usually persists for longer than 6 months but may last for years.[13] Most cases present between age 4 to 14 and usually symptoms triggered by an upper respiratory tract infection or social stress.[13-15]

In our study, the emphasis was too on to rule out organic illnesses as the cause of chronic cough via detailed history, physical examination and necessary investigations. The main idea was not to label any child having an organic etiology for their cough as having somatic cough.[14] In our study 97.42 percent children with chronic cough were found to have organic etiology.

There is a review of literature conducted by Haydour *et al.,* in 2014 on the diagnosis and management of psychogenic cough.[13] They identified 233 patients with psychogenic cough from eighteen studies but there were certain limitations since diagnostic criteria for psychogenic cough was not well defined by then. It was a retrospective study and prospective analysis was not done in this study. In our study a diagnostic criteria as defined by DSM 5 was the basis of final diagnosis of suspected children with somatic cough.[10] Prospective aspect was very much

included in our study since children were being followed every 2 monthly in psychiatry out patient department for their counselling sessions and monitoring of their symptoms..

In a Chinese systematic review and meta-analysis in 2016 by Wei *et al.,* in 2016, an overall prevalence of 3.02% of psychogenic cough was seen.[15] The result of this study is comparable to our where we found a prevalence of 2.04%. In their met analysis all indoor cough patients were included and in our study only out door patients were included.

In a study by Orengul *et al.,* in 2020 they found out that the comorbid like anxiety disorder depression, and psychosocial issues should be looked for in children with somatic cough and they concluded that management of these comorbid results in improvement of the cough.[16]

In our study comorbid were identified in all these children with somatic cough. Depression (n=11) was seen as the most common psychiatric comorbidity in our patients. Other comorbid identified were anxiety (n=7), conversion reaction (n=5) and psychosocial issues (n=7). In a study by Bhatia *et al*. 62% rate of psychiatric comorbidity was reported. The most common diagnoses were conversion disorder (22%), mixed anxiety and depressive disorder (12%), and generalized anxiety disorder (10%).[17]

Suggestion therapy is a non-pharmacological modality that is reported to be most successful; a resolution of symptoms was noted in 96% of cases (n=52) who received this intervention in the studies reviewed by Haydour *et al*. The other non-pharmacological treatments include hypnosis, which had a response rate (resolution or improvement combined) of 83% in patients included in the review by Haydour *et al.,* as well as counseling and reassurance which resulted in symptomatic improvement in 93% of patients.[13] However, limited inferences can be made from these percentages as they were extracted from heterogeneous, retrospective, and nonrandomized studies and case series In our study CBT was found to be most effective, a resolution of symptoms was noted in 17(56%) of cases. Suggestion therapy resolved the symptoms in 4(13.3%) while in 23.3% counselling sessions resulted in relief of their somatic cough. A case series of four children with somatic cough syndrome by Shahzadi and Shweta showed a significant improvement in their symptoms with CBT.[18]

In another study by Weinberger *et al.,* it was seen that there was little effect of pharmacological interventions in managing children with somatic cough.[14] Fourteen (13.3%) of children didn't respond to non-pharmacological measures and needed pharmacotherapy too in addition to these measures for resolution of their symptoms. Additionally, there is little role of medications to treat somatic cough syndrome.[19,20] But those that have been given are usually the ones who also have other psychiatric comorbidities.

Haydour *et al.,* conducted a systematic review on 147 patients (including adults and children) and found that only 5% of the patients experienced coughing during sleep.[13] In our study no cough was noted during sleep in all patients with somatic cough.

LIMITATION OF STUDY

The patients coming to child out patient department in military hospitals are usually up to age limit of 12 years, however studies show that somatic cough can prevail up to 16 years. The study was carried out in the time span of 06 months. Longer duration study of two to three years can provide more sample data.

CONCLUSION

Somatic cough syndrome should be kept in mind when seeing children with chronic cough where the physical examination and laboratory investigations are all normal. These children should be referred to psychiatrist for their detailed assessment regarding the comorbid and to rule out Tic disorders. Furthermore, in children with somatic cough behavioral therapy and counselling does magic and saves the families from visiting different doctors and carrying out unnecessary investigations and prevents children from overtreatment with a variety of medications. So differential diagnosis between psychogenic and organic etiology of cough is very important in order to provide psychiatric help and avoid unnecessary medical procedures.

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Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

US & MA: Data acquisition, data analysis, critical review, approval of the final version to be published.

TA: Study design, data interpretation, drafting the manuscript, critical review, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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