

## Study of Abo Secretor in Relation to Childhood Asthma in Gauhati Medical College & Hospital



### Medical Science

**KEYWORDS:** Secretor, Non Secretor, Childhood Asthma, Blood Group

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### ABSTRACT

*Background : The aim of the study is to evaluate the relationship of childhood asthma with ABO secretor.*

*Objectives: To assess risk factors associated with childhood asthma with special reference to ABO secretor*

*Methods: 150 Cases and 150 Controls were studied. Simple agglutination method was used to find out the secretor status of the subjects.*

*Results: The odds of being a non secretor is almost 4 times higher among child asthmatic patients than normal children. Odds ratio being 3.838 (which is greater than 2.0) proves that being a non secretor may be considered as potential risk factor of childhood asthma.*

*Conclusions: Being a Non Secretor may be considered as a potential risk factor of Childhood Asthma.*

#### Introduction:

Asthma is defined by the Global Initiative for asthma as “a chronic inflammatory disorder of the airways in which many cells and cellular elements play a role. The chronic inflammation is associated with airway hyper responsiveness that leads to recurrent episodes of wheezing, breathlessness, chest tightness and coughing particularly at night or in the early morning. These episodes are usually associated with widespread, but variable airflow obstruction within the lung that is often reversible either spontaneously or with treatment”<sup>1</sup>.

The aim of the study is to evaluate the relationship of childhood asthma with ABO secretor. Childhood asthma, apart from being the leading cause of hospitalization for children, it is one of the most important chronic conditions causing elementary school absenteeism<sup>2,3</sup>. Childhood bronchial asthma has multifactor causation. Geographical location, environmental, racial, as well as factors related to behaviors and life-styles are associated with the disease.<sup>4,5</sup> A positive association has recently been reported in adult subjects between O/ non secretor phenotype and asthma<sup>6</sup>.

There was a constant and variable increase in asthma prevalence worldwide in the last two decades and the same is being observed in India.<sup>7-20</sup> Multiple logistic regression analysis showed that male sex, positive factors influencing the development of asthma. Significant risk factors for its development were male sex, a positive family history of atopic disorders, and the presence of smokers in the family.<sup>21-26</sup>

In an evaluation of the quality of life in Indian children with bronchial asthma, using a disease-specific, locally appropriate questionnaire, the disease-specific QOL score correlated inversely with the symptom score in children with bronchial asthma.<sup>27</sup> In a recent landmark Indian study, the researchers found consistent association between being exposed to, and having experienced domestic violence, and childhood asthma prevalence in Indian. Stress-induced mechanisms, partially captured through violence and social circumstances, may be a missing link in furthering our understanding of the social disparities in asthma.<sup>28</sup> Other studies have also reported higher incidence of psychosocial adaptation problems in children with asthma, particularly severe asthma, than children in the general population. This has been ascribed to adverse development impact of having a

chronic health problem, increased demand on the family, and dysfunctional familial interactional patterns.<sup>29</sup> In addition to all these risk factor we can evaluate a simple factor of ABO secretor. We could not change this factor but take precaution can help in prevention.

#### Material & Methods:

**Study design:** A case control study was done in both outdoor and indoor patients. 150 cases and 150 control were selected by the following criteria after taking ethical clearance.

#### Sample Population:

1. Cases: Children of 1-14 of age diagnosed as asthma by the following criteria attending pediatrics OPD.

The following are the criteria for diagnosing childhood asthma, can be taken as an inclusion criteria.

The child must have a history of $\geq 4$ wheezing episodes during the previous 12 months, with $\geq 1$ episode confirmed by a physician. In addition, the child must meet $\geq 1$ of the following major criteria of $\geq 2$ of the minor criteria	
mAPI: Major Criteria	Original API: Major Criteria
Parental history of asthma Physician-diagnosed atopic dermatitis Allergic sensitization to $\geq 1$ aeroallergen	Parental history of asthma Physician-diagnosed atopic dermatitis
mAPI: Minor Criteria	Original API: Minor Criteria
Allergic sensitization to milk, egg or peanuts Wheezing unrelated to colds Blood eosinophil $\geq 4\%$	Physician-diagnosed allergic rhinitis Wheezing unrelated to colds Blood eosinophil $\geq 4\%$

#### Inclusion Criteria:

The child must have a history of  $\geq 4$  wheezing episodes during the previous 12 months, with  $\geq 1$  episode confirmed by a physician.

#### Exclusion Criteria:

1. Family history of allergies, Eczema, Asthma.
2. Exposure to tobacco smoke during pregnancy & throughout childhood
3. Increased exposure to indoor and outdoor pollution.
4. Other respiratory problem.

**2. Controls: Selected randomly from non cases in the same**

**population that produced the cases**

Analysis: Data was entered in MS Excel and descriptive analysis was done.

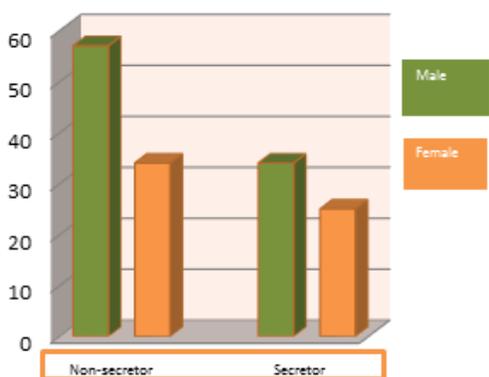
For Etiological analyses, secretor status was considered singly by its odds ratio (OR) estimate (95% confidence interval [CI]).

**Results:**

**Descriptive Analysis**

	CASE		TOTAL
	MALE	FEMALE	
NON SECRETOR	57	34	91
SECRETOR	34	25	59

**Table 1 : Showing descriptive analysis of secretor status in cases.**

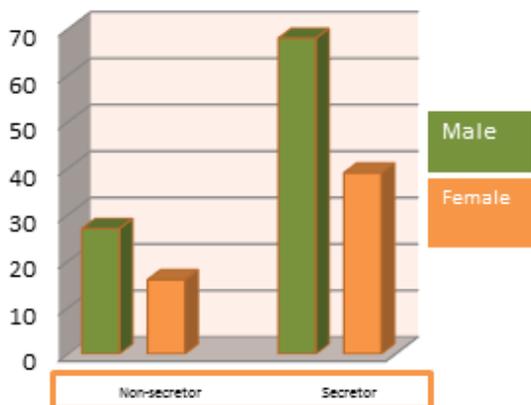


**Figure 1 : Showing descriptive analysis of secretor status in cases.**

The descriptive analysis of secretor status in cases shows 91 Non secretor cases and 59 secretor cases.

	CONTROL		TOTAL
	MALE	FEMALE	
NON SECRETOR	27	16	43
SECRETOR	68	39	107

**Table 2 : Showing descriptive analysis of secretor status in controls.**



**Figure 2 : Showing descriptive analysis of secretor status in controls.**

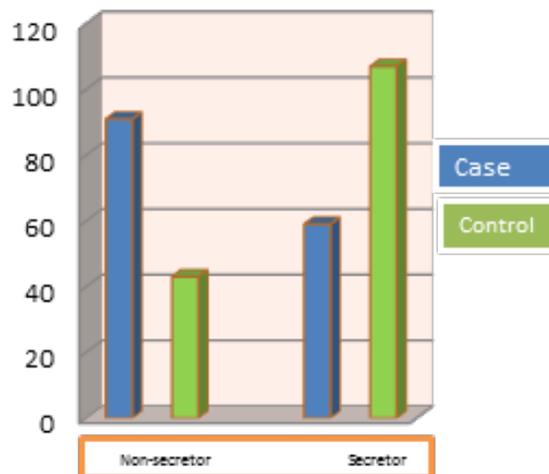
The descriptive analysis of secretor status in controls shows 43 Non secretors and 107 secretors

**Odds ratio:**

The case control study of secretor status shows 91 Non secretor cases and 59 secretor cases. It also shows 43 Non secretor controls and 107 secretor controls. Inserting these numbers into the 2x2 table:

Parameter	Case	Control	Total
Non-secretor	91 (30%)	43 (14%)	134 (45%)
Secretor	59 (20%)	107 (36%)	166 (55%)
Total	150 (50%)	150 (50%)	300 (100%)

**Table 3 : 2x2 table showing non-secretor and secretor cases and controls.**



**Figure 3 : Showing non-secretor and secretor cases and controls.**

Odds of Exposure (Cases): 1.54

Odds of Exposure (Control): 0.40

Odds Ratio: 3.838

Interpretation: The odds of being a non secretor is almost 3 times higher than normal children.

Odds ratio being 3.838 (which is greater than 2.0) proves that being a non secretor may be considered as potential risk factor of childhood asthma.

**Discussion:**

With respect to the ABO blood types, it is very difficult to state that one type is more advantageous than another.

Among coal miners, asthma was significantly related to Non-secretor phenotype. Secretors also appear to receive a degree of protection against some of the deleterious effects of cigarette smoking. Evidence suggests that the ability to secrete ABO blood type antigens might decrease the risk of Chronic Obstructive Pulmonary Disease (COPD).<sup>30</sup>

Blood group O/non Secretor subjects had lower lung function values and higher prevalence of asthma and wheezing. The present data confirm this cooperative interaction concerning susceptibility to asthma in childhood. The association, however, is much more marked in males than in females

The association with bronchial asthma could simply be a special aspect of a more general phenomenon.

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