Tripolitana Medical Journal; 2020, Vol. 9, No. 2, pp. 27 - 29

tmj

Short Communication

ISSN 2077-5628

Asthma Bronchiolitis Relationship

Hisham Alrabty[@1], Mabroka Azzletni, Ibrahem Albaruni and Mohamed Dekna

1Department of Pediatrics, Tripoli Children Hospital, Faculty of Medicine, University of Tripoli, Libya

Received 12 March 2020/Accepted 20 April 2020

ABSTRACT

Asthma has been considered the most common chronic respiratory disease affecting children and is involved in .different diagnoses of acute bronchiolitis in first year of life

Therefore, this research has been conducted to explore the relationship between asthma and bronchiolitis on known asthmatics aging from 6months old to 16 years old frequenting the asthma clinic Tripoli Children Hospital for .(regular follow ups for 3 months (January, February, and march of 2004

The aim of this study: To ascertain the percent (prevalence)of bronchiolitis patients who will develop]e asthma .symptoms later on

Conclusively there has been a strong relationship between asthma and bronchiolitis in a way that bronchiolitis pre-.disposes to asthma in 53.5% of patients especially in whom had a family history of allergy

Key words-*Asthma; Bronchiolitis; RSV infection.*

INTRODUCTION

Asthma is a chronic inflammatory disorder of the airways characterized by an obstruction of airflow which may be completely or partially reversed with or without specific therapy.[1,2]

Airway inflammation is a result of interactions between various cells, cellular elements, and cytokines. In susceptible individuals, airway inflammation may cause recurrent or persistent bronchospasm which may cause symptoms including wheezing, panting chest tightness, and cough particularly at night or after exercise.[1,2]

Airway inflammation is associated with airway hyperactivity or bronchial hyperresponsiveness which is defined as the inherent tendency of the airway to narrow in response to a variety of stimuli (e.g, infectious-RCV, environmental, allergens, and irritants).[1]

RSV evokes IgE elaboration. Multiple studies suggest that children who have been hospitalized with RSV bronchiolitis have a higher incidence of reactive airway disease and more abnormalities in their pulmonary function tests than children who have never never been hospitalized for RSV.[1]

The aim of this study: ascertain the percent (prevalence) of bronchiolitis patients who will subsequently, develop asthma symptoms.

New insights in the pathogenesis of asthma suggest the role of lymphocytes. Airway inflammation in asthma may represent a loss of normal balance between two "opposing" populations of T-helper lymphocytes. Two types of T-helper lymphocytes have been characterized: Th1 and Th2. Th1 cells produce IL-2 and IFN-a, which are critical in cellular defense mechanisms in response to infection. Th2, in contrast, generates a family of cytokines (IL-4, -5, -6, -9, and -13) that can mediate allergic inflammation. The current "hygiene hypothesis" of asthma illustrates how cytokine imbalance may explain some of the dramatic increases in asthma prevalence in Westernized countries. This hypothesis is based on the assumption that the immune system of the newborn is skewed toward Th2 cytokine generation. after birth, environmental stimuli such as infections (RSV) will activate Th1 responses and bring the Th1/Th2 relationship to an appropriate balance.[1]

MATERIALS AND METHODS

This research has been done on a sample (cohort) of 101 patients (65 females and 36 males) chosen from known asthmatics on regular follow up in asthma clinic at Tripoli children hospital(their age ranges from 6 months to 16 years) retrospectively throughout 3months (January, February and March 2004) by meeting and asking personally the parents, both or one of them who was mostly the mother using a previously prepared questionnaire that included direct questions in the form of (yes or no) answers regarding if their children had wheeze in the first year of their life preceded by upper respiratory infection (cough, runny nose) and fever then diagnosed to have bronchiolitis on a clinical basis.

@ Author to whom correspondence should be addressed Dr. Hisham Alrabty: *; E-mail* arrabiti@hotmail.com.

Asthma bronchiolitis relationship questionnaire

Name: Age: Sex:

Nationality: Address: File no:

---

1. Is there a history of wheeze in 1st year of life? yes □ no □
2. At what age was the patient diagnosed asthmatic?
3. Is there a family history of allergy or asthma? yes □ no □
4. Is the patient on regular follow-up? yes □ no □
5. What medicines is the patient on?

   Prophylactive: 1-..... 2-……. 3-…….

   Reliever: 1-…….2-…….3-……
6. How many times was the patient admitted to the hospital before?
7. Was the patient admitted to ICU before? yes □ no□
8. How often does the patient have attacks per year?
9. Is there any pet in the house? yes □ no□
10. What was the type of feeding in the 1st 2 years?

    Breast milk: Bottle milk: Mixed: .
11. What›s the patient›s rank in the family?
12. Does the patient have other types of atopy? yes □ no □

If yes mention the type of another atopy …….. .

13. Is the wheeze induced by exercise? yes □ no □

RESULTS

Of 101 asthmatic 65 (64.35%) were males and 36 (35.6%) were females 54 had a history of wheeze (bronchiolitis) before the age of 1-year-old (prevalence of 53.5%).

Among them 33 females (62%) and 21 males (38%) of male to female ratio =1:1.6 in whom had a history of bronchiolitis.

Asthmatics who had bronchiolitis before age of one year and family history of allergy were 41 (40.6%), 22 (21.7%) were males and 19 (18.8 %) were females.

Total asthmatics who had a family history of allergy were 79 (78.2%) and the ratio of male to female asthmatics was 1: 1.8.

Most of the asthmatic patients were below the age of 10 years (77 patients = 76%).

P value of 95% confidence interval for this study is 0.0000112< 0.05 (significant).

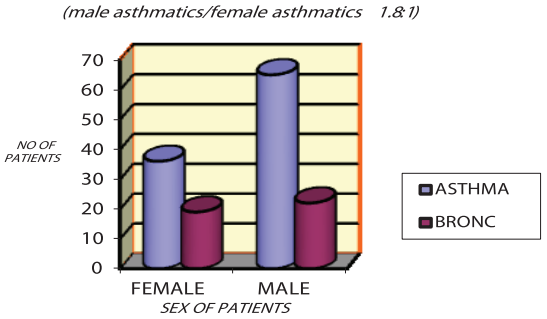

Figure 1: Asthmatics who had bronchiolitis sex ratio.

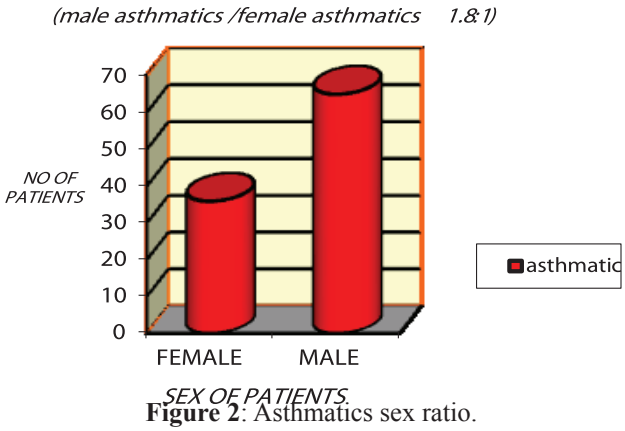

Figure 2: Asthmatics sex ratio.

DISCUSSION

Bronchiolitis has been identified as a risk factor for asthma, but this does not necessarily imply causation.[1-3]

Children already predisposed to asthma may be more likely to wheeze when they have RSV or other respiratory infections or allergic stimuli.[1,2]

Viral bronchiolitis in infancy has been known for decades to be an antecedent for subsequent wheezing and asthma during childhood. However, recent reports suggest that the risk for asthma following bronchiolitis may be higher than was previously estimated and that this association may persist into early adulthood.[9]

On the other hand, it is postulated that RSV infection may predispose an individual to later bronchospasm by selective promotion of specific subsets of helper t-cells.[1]

There is speculation that all infants are born with highly responsive airways. Increased immunoglobulin E (IgE) levels have been found in those younger than 2 years. A decrease in airway responsiveness may be associated with environmental allergens, viral respiratory diseases, and hereditary factors.[1]

Multiple small studies suggest that children who have been hospitalized with RSV bronchiolitis have a higher incidence of reactive airway disease and more abnormalities in their pulmonary function tests than children never hospitalized for RSV. These abnormalities may persist for as long as 5 years, though eventually normalizing.[1]

Others found that asthma will develop in less than 20% of those who were infected by RSV in infancy.[4-6]

The relationship between RSV infection and later development of asthma is still not understood, but children who had bronchiolitis seem to be more likely to develop asthma than those who have not.[7,8]

Koponen and colleagues 13 surveyed166 children hospitalized for viral bronchiolitis before the age of 6 months for 6 years. The overall asthma prevalence was 13% in this cohort, but it was significantly higher in non-RSV patients (24%) than in RSV patients (8%). 14% of former RV patients were diagnosed with asthma. Atopic

dermatitis, non-RSV bronchiolitis, and maternal asthma were independent significant early-life predictors for asthma in this cohort.[9]

Michelson and colleagues14 followed children for 11 years after hospitalization for viral bronchiolitis in the first year of life. This study identified RSV as the causative virus in 74% of the children but did not examine for evidence of other viruses.[9]

Within the first year after hospital admission for bronchiolitis, a higher percentage of infants with bronchiolitis had episodes of recurrent wheezing than controls (52.7% versus 10.3%; $P<0.001$).10

As comparison among this study results with others studies which are not so far recognizing that viral bronchiolitis plays a role in predisposing kids to be asthmatic later on.

CONCLUSION

There is a strong link between asthma and bronchiolitis from a clinical point of view, whereas patients who are asthmatics among them 53.5% had a history of bronchiolitis.

RECOMMENDATIONS

Patients who had wheeze (bronchiolitis) in the first year of their life and family history of allergy need follow-up in an asthma clinic as a result of developing asthma symptoms in the future.

REFERENCES

1. Lucian Kenneth DE Nicola, Eric Chin and Girish Sharma (2003) Infant bronchiolitis online article on Medscape website/ pediatrics, march 2020 .

2. Andrew H.Liu, Joseph D. Spahn and Donald Y.M.Leung (2004) Childhood asthma, Nelson's textbook of pediatrics, p.761.

3. Mike Silverman (1998) Asthma, Forfar's textbook of pediatrics, p.536.

4. Eija Piippo, Kajkoorhnen and Sami Remes (2003) Long term outcome after infantile bronchiolitis, *European Respiratory Journal*, p1434/211.

5. Anne KotAniemi, AinoLaatikainen and TiinaReijonen (2003) Respiratory syncytial infection in childhood follow up of children hospitalized for wheezing in infancy, *European Respiratory Journal*, .930/141s.

6. Angelia Mantzouranis and SosipatrosBoikos (2003) Respiratory infections and development of asthma in preschool children in day care, *European Respiratory Journal*, .895/135s.

7. Adam Rarter (2003) Bronchiolitis review provided by verimed healthcare network, Children's Hospital of Philadelphia, online article.

8. EijaPiipo-Savolainen, SamiRemes, SenjaKannisto and MattiKorppi (2004) Asthma and lung function 20 years after wheezing in infancy, *JAMMA*, .158(11).

9. Avraham Beigelman, MD, MSCIa and Leonard B. Bacharier and MDa (2013) The role of early life viral bronchiolitis in the inception of asthma, *CurrOpin Allergy ClinImmunol.*

10. F. Midulla, A. Pierangeli, G. Cangiano, E. Bonci, S. Salvadei, C. Scagnolari, C. Moretti, G. Antonelli, V. Ferro and P. Papoff (2012) Rhinovirus bronchiolitis and recurrent wheezing: 1-year follow-up, *European Respiratory Journal* **39**, 396-402.