The Association of Childhood Asthma and Breastfeeding and Other Independent Risk Factory

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Abstract

The aim of the study is to investigate the association of breastfeeding duration and incidence of childhood asthma in misurata central hospital. To assess the effect of positive family history (first degree), L.B.W, indoor smoking, socioeconomic states (maternal education, family income) and the race in developing bronchial asthma. This study is carried out in pediatric department and follow up clinics at misurata central hospital. Study population was children who came to the hospital with different complain. Study carried out during period of 6 months and special questionnaire was done as mentioned later on. Study population divided to the 2 main groups; first group (children who have asthma) that studied with different risk factor second group (children who have no asthma). Among the studied groups, the incidence of childhood asthma is as a high as 23% of non breastfeed babies compared to as a low as 7% of babies who were breastfeed for one year or longer. Effect of other Risk factors on incidence of asthma were as follows: 1) 32% of the asthma cases were attribute to the low birth weight; 2) children with environmental tobacco smoke (ETS) exposure (39%) had higher incidence of asthma than did those from smoke free homes; 3) there is no consistent correlation between family income and incidence of asthma, asthma was equal in both girls & boys, the incidence was higher among Hispanic children than whites & blacks and it was highest in the age group between 1-5 years; 4) 27% of patients had positive family history and 36% of patients had other atopic disorders. The results of this study shows that breast feeding and in particular longer duration is protective against childhood asthma, So New mothers should be encouraged to breast feed as long as possible, since never breast feeding, breastfeeding for less them 3 moths (1-90 days) may be an independent risk factor for childhood asthma. Low birth weight children and exposure to environmental tobacco smoke (ETS) are considered to be important independent risk factors for development of later childhood asthma, so restrictive measures should be taken to avoid any factor which leads to LBW infants and any steps to stop smoke. There is no consistent relationship between childhood asthma and socioeconomic state.

Keywords: Childhood asthma; Breastfeeding duration; LBW; Socioeconomic state; Risk factors; Family history of asthma.

1. Introduction

Asthma is the most common chronic disorder of childhood throughout the world. The prevalence of asthma varies from 5 – 20%. 30 % of children

also have a form of asthma at some age. ISAAC found that the United Kingdom, Australia, New Zealand had among the highest prevalence's with 15 % children affected. Boys 14% vs girls 10%, poor families 16% vs not poor families 10% are more likely to have asthma. The most common patterns of childhood wheezing illnesses are: episodic viral wheeze 60%; asthma 40% (atopic asthma 85% and non atopic asthma 15%); third type childhood asthma emerges in females who develop obesity and early onset of puberty (by 11 years of age). Breastfeeding is good and healthy for infants and moms. It has disease fighting cells and antibodies that help to protect infants from germs, illness and even SIDS [1].

Breastfeeding lowers risk of following health problem:

1) In infants
   Respiratory and ear infection - GIT viruses (AGE), diarrhea.
   Asthma and a topic dermatitis - Obesity and type 1 and 2 DM.
   Childhood leukemia and SIDS - Necrotizing enterocolitis.
   Enhancement of cognitive development.
2) In Moms
   Type (Dm_2)
   Breast cancer and ovarian cancer
   Postpartum depression.

Breastfeeding is widely advocated to reduce risk of asthma and atopy but the evidence for protective effect of breastfeeding on asthma and other allergic disease in childhood is inconclusive, some studies have reported greater degrees of protection with exclusive and prolonged breastfeeding [2-5] and several studies have noted a larger protection effect in children prone to atopy [6,7], other studies however have reported no reduction in risk or even an increase in risk with breastfeeding [8-14]. Australia has one of the highest asthma rate in the world, some factors that maight have contributed to the rise in childhood asthma over the past decade include: less women breastfeeding especially after 3 months of age, increase exposure to the viral infection while young especially early in life (changes in the life style, not enough oil-fish in Australian diet). The risk factors that contribute to both the expression and persistence of asthma include: 1) family history of atopy and co-existence of atopic disease; 2) birth weight and prematurity; 3) parental smoking; 4) breastfeeding; 5) effect of sex; 6) bronchiolitis in infancy; 7) younger age at presentation.

2. Materials and Methods

A Descriptive Retrospective study was carried out in pediatric department and fallow up clinics at misurata central hospital. Study population who underwent investigation and assessment were (2518) children aged between (6 months – 14 years) came to the department to seek medical help from different complains. This study carried out during period (1. 9. 2009 to the 28. 2. 2010). Many doctors shared in this study by filling out the data which present in special questionnaire prepared especially for this study. The questionnaire include the following data as: duration of breastfeeding, asthma yes/no, positive family history of asthma, LBW, indoor parent smoking, socioeconomic state (income, maternal education), race, sex. These large number of children divided to the two main groups, one group, children who had asthma and second group, children who had no asthma with prolonged intervals of breastfeeding (> 6 months and > 12 months).

3. Results and Discussion

Out of (2518) children, (209) children had asthma, incidence 8.3%. Duration of breastfeeding to the incidence of asthma shows inverse association with increase duration of breastfeeding the incidence of asthma decrease, for example, breast feeding up to 90 days, asthmatic cases were 56 cases out of 209 cases (27%) in comparison to the children who had breastfeeding up to 356 days. The asthmatic cases were 20 out of 209 (9.5%) Table (1). Highest incidence of asthma were in children aged from 6 months to the 5 years were 126 out of 209 cases (60%) and lowest incidence were in children between 9 – 14 years, about 38 cases (18.2%) Table (2) Incidence of asthma was highest among Hispanic children, 103 cases out of 209 cases (49.3%) and among white children was 74 cases, (35.4%) and lowest among blackest, 32 cases (15.3%) Table (3). 56 cases (27%) had positive family history of asthma either first or second degree and 153 cases (73%) had negative family history Table (4).

Birth weight less than 2.5 kg (LBW) was associated with increased risk of asthma 67 cases out of 209 cases were BW less than 2.5 kg (32%) Table (5). In this study, number of asthmatic children who had history of exposure to the tobacco smoke (ETS) were 82 cases (39%) Table (6). Table 7 showed no consistent association between family income and the incidence of asthma, in low income family number of asthmatic children were 37 cases (35%) and in families with moderate income number of children who had asthma were 104 cases (49%) and with good income families percent of asthmatic children were (32 cases) 16%. Most common symptoms present in these asthmatic children was shortness of breathing

(151 cases) 72%, and less common symptom was cough (70 cases) 33%, worsening of symptoms at night present in (148 cases) (68%) Table (9). Association of asthma with other atopic disorders were positive in 74 cases (36%), as:

- Allergic rhinitis (32 cases) 15.5 %.
- Eczema of skin (28 cases) 13.5 %.
- Allergic conjunctivitis (14 cases) 7%.

The incidence of asthma were higher in boys, 118 cases (56.5%) than girls 91 cases (43.5%) Table (2).

Table (1)

Breastfeeding	Case of asthma	%
Nil	48	23%
1 – 90 days	56	27%
91 – 180 days	41	20 %
181– 270 days	28	13.5%
271 – 356 days	20	9.5 %
256 days	16	7%

Table (2)

Age	Male	%	Female	%	Total	%
6 mo-2y	38	18	35	16.5	73	34.5
3 – 5y	29	14	24	11.5	53	25.5
6 – 8 y	28	13.5	17	7.5	45	21
9 – 11 y	16	7.5	9	4.5	25	12
12 – 14 y	7	4	6	3	13	7

Table (3)

Race	Male	%	Female	%	Total	%
White	46	22	28	13	74	35.4
Black	14	1.6.5	18	8.5	37	15.3
Hispanic	46	22	57	28	103	49

Table (4)

Family History	Total number of asthma	%
- Ve family history	153	37
+ Ve family history	56	27
First degree	34	16.5
Second degree	22	10.5

Table (5)

Birth weight	Male	%	Female	%	Total	%
> 2.5 kg	21	10	46	22	67	32
2.5 -3.5 kg	64	31	39	18	103	49
< 3.5 kg	18	9	21	10	39	19

Table (6)

Environmental tobacco smoke (ETS)	Number case of asthma	%
Parent smoke + Ve	82	39
Parent smoke - Ve	127	61

Table (7)

Family income	Number case of asthma	%
> 500 D.L Low income	73	35
500 – 1000 D.L Moderate income	104	49
< 1000 good income	32	16

Table (8)

Symptoms	Percent	Present	Not present
Coughing	33%	70	139
Wheezing	41%	86	123
Short breathing	72%	151	58
Worsening of symptoms at Night	68 %	148	61

Table (9)

Allergic disease	No	%
- Ve Allergic disease	135	64
+ Ve Allergic disease	74	36
Allergic Rhinitis	32	15.5
Eczema of skin	28	13.5
Allergic conjunction	14	7

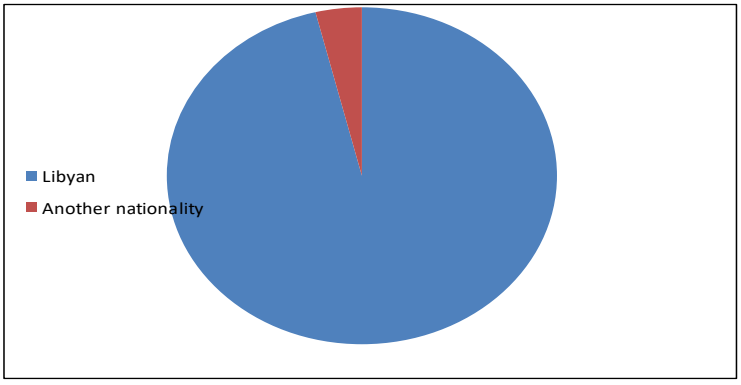


Figure (1): Number of Libyan and other nationalities.

Present study mainly investigated the relationship of breastfeed duration and the incidence of childhood asthma, the results of this study support the researches that show breastfeeding is protective against childhood asthma. Our study shows significant reduction in incidence of childhood asthma with prolonged breastfeeding, infants who were breastfeed for < 90 days had high risk of asthma compared to those who had been breastfeed for a year or longer (who had low risk).

Several studies have reported that a significant reduction of childhood asthma has been associated for at least 4–6 months of exclusive breastfeeding [15,16], many other investigators claimed that breastfeeding is highly protective against asthma [17,18]. Few reports shown that, the effect of breastfeeding was more evident in boys than girls [19], and was seen only among children with no family history of asthma [20]. We also found that environmental tobacco smoking (ETS) exposure was associated with high incidence of childhood asthma. In our study, 39% of children who had asthma had history of ETS exposure, this finding is in accordance with previously reported study [21]. The study reported that child with ETS exposure (37.9%) had higher incidence of asthma than did those from smoke free homes.

There is also strong evidence that exposure to ETS in childhood causes chronic respiratory symptom as cough and wheeze and a cute and chronic otitis media and it has a causal role in childhood asthma [22]. After considering factors that contribute to development of asthma, the strongest independent risk factor for asthma was low birth weight (<2.5kg), recent study (2006) published in the American Journal of public health reported that LBW children are at high risk to develop asthma (36%) [23]. In our study, 32% of asthmatic children were LBW compared to study conducted previously [24]. Statistical analysis suggested that 31% of asthmatic cases were attributable to low birth weight.

There is conflicting information about the relationship between the asthma and socioeconomic state, different studies reported no significant impact on the incidence of asthma [25]. In our study there is no relationship between development of asthma and family income or maternal education (no consistent association). In early life the incidence of asthma is higher in boys, at puberty however the sex ratio shifts and asthma appears predominantly in females. In present study, the incidence of asthma in boys

was 56.5% and in girls was 43.5% (up to 14 years of age) correlates well with previous studies.

4. Conclusion

The results of our study shows that breastfeeding and in particular longer duration is protective against childhood asthma. Low birth weight infants and exposure to the environmental tobacco smoke (ETS) are considered to be important independent risk factors for development of childhood asthma. There is no consistent association between socioeconomic stat and childhood asthma. The incident of childhood asthma is higher among boys than girls, higher among children aged 1 – 5 years than others and higher among Hispanic than whites and blacks. Breastfeed more than 4 months is highly recommended since never breastfeeding or breastfeeding less than 3 months, (90 days) may be an independent risk factor for childhood asthma.

Recommendation

New mothers should be encouraged to breastfeed for as long as possible (minimum more than 4 – 6 months), long duration breastfeeding reduces child risk to develop asthma, more public health efforts should be directed toward increasing the initiation and duration of breastfeeding, if exclusive breastfeeding is not possible, supplementation with cow's milk formula is recommended .Parents should be advised not to smoke and to avoid children being exposed to other people's smoke. All risk factors which attributed to low birth weight and prematurity should be avoided if possible by improve the antenatal care for pregnant women.

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