Research Article

Effect of breastfeeding on atopic dermatitis among Saudi infants up to 6 months old in Makkah, Saudi Arabia

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Abstract

Background: Atopic dermatitis (AD) is a common health problem. The increase in the incidence of atopy has been referred to as alarming by some researchers. AD is an itchy skin condition that appears in infants, often involving the flexural areas inside the elbows and knees. It presents with redness, dryness, scaling, and crusts over much of the body.

Objective: To investigate the effect of breastfeeding on AD among infants up to 6 months.

Materials and Methods: Two hundred infants were involved in this cross-sectional study. Their ages ranged from birth up to 6 months. The positive cases of AD were confirmed and diagnosed by pediatricians as the mothers approved. They were chosen randomly by filling the questionnaires through their mothers. Then, the questionnaires were collected, and were separated into two groups: exclusively breastfeeding children (n=100) and formula milk (bottled milk) exclusively feeding infants (n=100). They were compared for any attacks of AD, number of attacks, severity, and areas involved in AD.

Result: Of the 100 exclusively breastfed infants, 43 (43%) developed AD, while of 100 exclusively formula milk-fed infants, 63 (63%) developed AD. The difference was statistically significant (P=0.0003). Three (6.9%) exclusively breastfed children compared with 19 (30.1%) exclusively formula milk-fed infants needed hospitalization to relieve their symptoms (P = 0.00026).

Conclusion: Breastfeeding is a protective factor to decrease the number of attacks of AD and lessen the severity of each attack. Therefore, breastfeeding since birth is recommended as a protective factor or/and immune factor to decrease the number of attacks and the severity of each attack of AD.

KEY WORDS: Atopic dermatitis, breastfeeding, formula feeding, infants

Introduction

Atopic dermatitis (AD) is a common health problem, and the increase in the incidence of atopy has been referred to as alarming by some researchers.[1,2] Both genetic and environmental factors have been found to be responsible for the predisposition to and expression of allergic diseases.[2,3]

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The protective effect of breastfeeding against the onset of atopic eczema was first described in 1936 by Grulee and Sanford][4[in a large population study, wherein dramatic differences were noted in the prevalence of eczema according to feeding habits. Since then, many studies have assessed this association, with some reporting dramatic positive results,[5,6] and others failing to demonstrate any prophylactic benefits of breastfeeding.[7,8] These discrepancies have been attributed, at least in part, to the questionable methodological quality of many of the studies.[9] AD is an itchy skin condition that appears in infants, often involving the flexural areas inside the elbows and knees. It presents with redness, dryness, scaling, and crusts over much of the body. Infants rub or scratch the areas repeatedly, causing increased skin markings in characteristic areas. These infants may appear miserable and awake at night scratching, placing additional stress on the family.[10]

Breastfeeding is as much a part of our nature as reproduction. Significant drifts in the last century have stimulated a change away from breastfeeding, with the arrival of commercial formula as method of modernization, and then returning to it during the natural movement starting in the 1960s in the United States. A major stimulus to the use of breastfeeding is the knowledge that the infant's gut barrier is not mature at birth and does not become fully mature for 3–6 months, or 6–12 months for the more sensitive, in its ability to consume ordinary foods.[9]

The purpose of the current cross-sectional study is to find whether there is an association between breastfeeding and incidence of AD and if it could be severe or not.

Materials And Methods

Two hundred children were involved in this cross sectional study; their ages ranged from birth up to 6 months. The positive cases of AD were confirmed and diagnosed by pediatricians as approved by mothers. The mothers were asked about personal history of allergy, family history of allergy, number of attacks of AD, and their severity by asking about the need of hospital admissions. Hundred children were exclusively breastfed, while another comparison 100 children were exclusively formula milk (bottled milk) fed. They were chosen randomly. The questionnaires were distributed in primary health-care centers at Makkah city and in the malls. Then, they were collected and classified into 2 groups: exclusively Breastfeeding children and exclusively formula milk (bottled milk) feeding children. They were compared for any attacks of AD, number of attacks, severity, and areas involved in AD.

SPSS program, version 22.0 was used for the data analysis, data interpretations, cross tabulations, and graphs. The χ^2-test was adopted to test for the association and/or difference between categorical variables. A p value of ≤0.05 was considered as statistically significant.

Result

Two hundred children were involved in this study; 100 (50%) were breastfed exclusively and 100 (50%) were formula milk (bottled milk)-fed exclusively. Most of breastfeeding mothers (77%) were feeding their children 5–6 times per day, while the remaining 23 (23%) were feeding their children 7–8 times per day. AD was diagnosed in 43 (43%) of exclusively breastfed children, whereas it was diagnosed in 63 (63%) of exclusively formula milk-fed children. The difference between both groups was statistically significant as illustrated in Figure 1.

As seen in Table 1, most of AD attacks in both groups ranged between one and two attacks (60.4% and 55.6% of breastfeeding and formula milk feeding groups, respectively), $p > 0.05$.

Among 43 (43%) cases of AD exclusively breastfed children, 39 (90.7%) children did not need hospitalization,

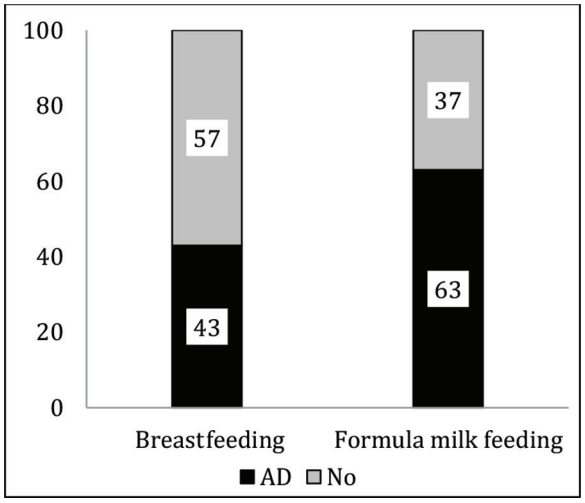

Figure 1: Prevalence of atopic dermatitis among children according to their feeding pattern.

Table 1: Number of AD attacks among children according to their feeding pattern

Number of AD attacks	Breastfeeding, *N* = 43, *N* (%)	Formula feeding, *N* = 63, *N* (%)
1–2	26 (60.4)	35 (55.6)
3–4	11 (25.6)	17 (27.0)
5–6	4 (9.3)	7 (11.1)
>6	2 (4.7)	4 (6.3)

$\chi^2 = 0.34$; $p = 0.953$.

Table 2: Association between pattern of infant feeding, history of AD and needed hospitalization

Breastfeeding infants with AD, (*n* = 43)		Formula milk feeding infants with AD (*n* = 63)	
Hospitalization	No hospitalization	Hospitalization	No hospitalization
4 (9.3)	39 (90.7)	19 (30.2)	44 (69.8)

$\chi^2 = 6.54$; $p = 0.011$.

whereas 4 (9.3%) needed at least one episode of hospitalization, while among 63 (63%) cases of AD exclusively formula milk-fed children, 44 (69.8%) children did not need hospitalization, whereas 19 (30.2%) needed at least one episode of hospitalization. The difference between the two groups was statistically significant, p=0.011 (Table 2).

In Table 3, in exclusively formula milk (bottled milk)-fed children, all mothers had iron and folic acid supplementation during pregnancy. Of them, 63 (63%) of their children had developed AD at least once in their lives. In breastfeeding group, 88 (88%) mothers had taken iron and folic acid during

Table 3: Association between pattern of infant feeding, history of at least one attack of AD, and maternal iron and folic acid intake during pregnancy

Iron and folic acid during pregnancy	Breastfeeding group (atleast one attack of AD)			Formula milk feeding group (atleast one attack of AD)		
	Yes	No	Total	Yes	No	Total
Yes	43	45	88	63	37	100
No	0	12	12	0	0	0
χ^2 (p)	3.80 (0.051)					

pregnancy. Of them, 43 (48.9%) had AD at least once in their lives. The difference between the two groups was borderline significant, $p = 0.051$.

Among the 100 mothers who breastfed their children exclusively, 32 (32%) showed a positive family history of allergic diseases. Among the 100 mothers who fed their children with formula milk exclusively, 84 (84%) showed a positive family history of allergic diseases.

Among AD children of breastfeeding group, cheeks were involved in 40 (93.0%) of them, while in the other 3 (6.9%), the whole face was involved. Among AD children of formula milk feeding group, cheeks were involved in 59 (93.6%) of them, while in the other 4 (6.4%), the whole face was involved.

Discussion

The 1930s report of a dramatic sevenfold reduction of AD in infants breastfed compared with those given cow's milk set the stage for further studies.[11] A study in England on preterm infants showed that exposure to cow's milk in formula increased the risk of allergic reactions, including eczema, in the subgroup of infants with a family history of AD. Pooled human milk rather than cow's milk formula made no difference in the incidence of development of allergy or AD in the overall group.[12] A meta-analysis published in 2001 of 17 previous studies showed a protective effect for development of AD during childhood from breastfeeding on the group that was exclusively breastfed during the first 3 months of life.]13[This association was stronger in the subgroup with a family history of AD. There was no protective effect in those children without a family history of AD in the first-degree relatives.[14] Finally, a review published on 2008 stated that, although the research fails to support the benefits of breastfeeding in ADs and that breastfed infants showed a higher incidence of atopy and asthma, prolonged breastfeeding would eventually reduce this.[15] This review concluded that breastfeeding for 4 months may be helpful in atopy, but that maternal dietary restriction is not helpful.

Of the many studies of this association between breastfeeding and AD, some have shown a protective effect,[2,16–22] whereas others show a lack of association.[23–27] Others even show a positive association.[28,29] The protective effect was higher in the subgroup with a positive family history of atopy. This protective effect of breast milk in the prevention of atopy may be attributable to several possible mechanisms.[30,31] Mother's milk has been described as a potential source of immunomodulatory factors that promote the development of the infant's own immune system. The antigen avoidance theory suggests the more obvious protective pathway of a lesser exposure to foreign antigens in breast-fed infants, which reduces their risk of sensitization.

In accordance with aforementioned studies, this study confirmed a protective effect of breastfeeding regarding infants AD. In addition, the severity of attacks as evidenced by needed hospitalization was more among those artificial feeding than breastfeeding children.

Conclusion

Conclusively, our results confirmed what has been previously reported that breastfeeding is a good factor for decreasing the incidence of AD among exclusively breastfed children, and increasing the times of breastfeeding could be a positive factor for that. In addition, severity of the AD attacks are less in exclusively breastfed children compared with exclusively formula milk (bottled milk)-fed children. Therefore, we recommend breastfeeding since birth as a protective factor or/and immune factor to decrease the number of attacks and the severity of each attack of AD.

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