

Cat-Specific IgA Antibodies in Breast Milk from Atopic and Non-Atopic Mothers: Detection of Fel d 1-IgG Immune Complexes in Cord Blood and Sera

R. Casas B. Björkstén

Department of Pediatrics, University Hospital, Linköping, Sweden

Key Words

Breast milk · IgA · Cat · IgG · Immune complexes

Introduction

The presence of IgA to food allergens in breast milk has been investigated, but less is known regarding the presence of IgA against inhalant allergens. Immune response to inhalant allergens has been demonstrated in cord blood. Food antigens have been detected in sera in complexes with immunoglobulins but little is known regarding the occurrence of immune complexes (IC) with inhalant allergens.

The aim of this study was to investigate the presence of IgA antibodies against cat allergen in colostrum and mature milk from atopic and nonatopic mothers and the presence of the major cat allergen Fel d 1 in complexes with IgG in cord blood and sera from atopic and nonatopic mothers.

Materials and Methods

Cat-Specific IgA Detection

Patients. Colostrum and breast milk samples from 26 atopic and 34 nonatopic mothers were studied.

Method. An enzyme-amplified ELISA was developed. The AMPAK kit was used to develop the reaction. Plates were coated with 10 µg/ml cat allergen extract (ALK, Denmark) and blocked with hu-

man serum albumin. Human milk samples were added and incubated with monoclonal antihuman IgA and subsequently alkaline phosphatase-conjugated rabbit antimouse IgG. AMPAK kits were used to develop the reactions. A reference curve using a sample with a low background at the different dilutions was prepared and the values were expressed as arbitrary units.

Fel d 1-IgG IC

Patients. Cord blood and serum samples from 40 atopic and 39 nonatopic mothers were studied.

Method. Plates were coated with anti Fel d 1 MAb (ALK, Denmark). Alkaline phosphatase-conjugated rabbit antihuman IgG was employed. The AMPAK kit was used to increase the sensitivity of the assay. The results were expressed in arbitrary units according to a reference curve prepared with one serum previously tested as positive Fel d 1-IgG IC.

Statistical Analysis. The results were analyzed by nonparametric tests (Wilcoxon signed rank and paired sign test) with StatView (Abacus, USA) on a Macintosh LC 475.

Results and Conclusion

The presence of IgA antibodies to cat allergen was detected in colostrum and mature milk from mothers with atopic and nonatopic symptoms. There was no difference between the levels of IgA for both groups either in the number of positives for IgA detection. Fel d 1-IgG complexes were detected in most of the cat-allergic asthmatic children. There was no detection in the nonatopic control group. When cord blood and sera from mothers with atopic and

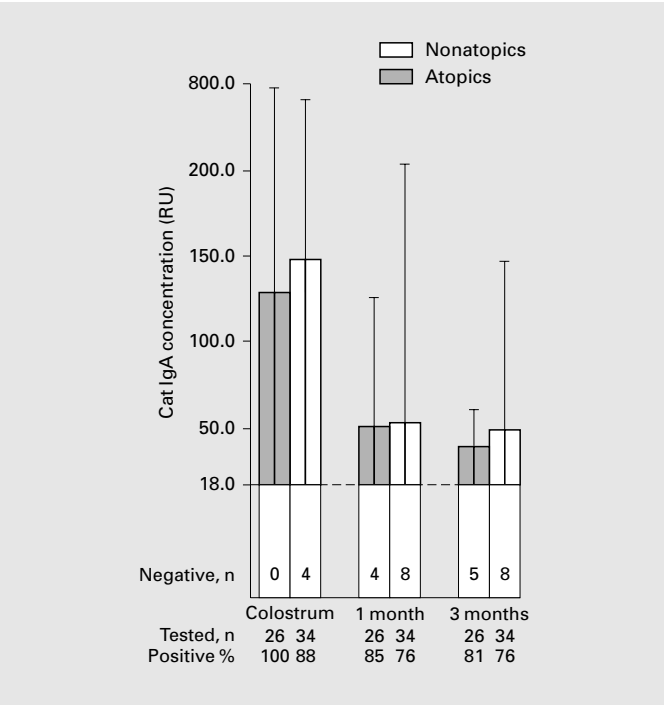


Fig. 1. Cat-specific IgA antibodies in colostrum and breast milk from atopic and nonatopic mothers.

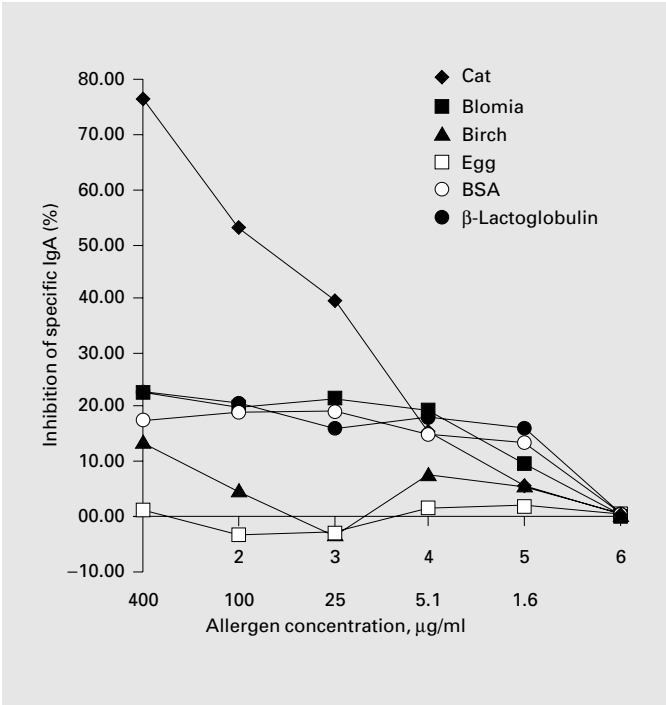


Fig. 2. Inhibition of IgA antibodies to cat by cat, *Blomia tropicalis*, birch, egg, bovin albumin (BSA) and β -lactoglobulin.

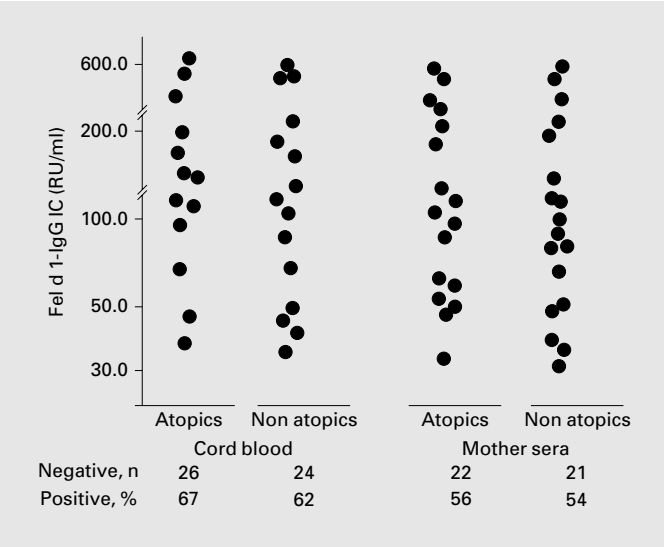


Fig. 3. Fel d 1-IgG IC in cord blood and sera from atopic and non-atopic mothers.

nonatopic symptoms were tested, the presence of such IC was detected in both groups. The presence of IC was strongly associated with the direct exposure of the mothers in both groups. Those with a cat at home or directly exposed showed the highest levels (fig. 1–3). The presence of IgA to inhalant allergens in colostrum and breast milk can contribute to the transfer of immunological information from the mother to the baby. The detection of IC in cord blood and sera from atopic and nonatopic mothers supports the findings of allergen exposure early in life.

Acknowledgements

This study was supported by the Department of Pediatrics, Linköping University Hospital and Vårdal Foundation, Sweden. Anti Fel d 1 MAb were kindly supplied by C. Schou, ALK, Denmark.

Copyright: S. Karger AG, Basel 1999. Reproduced with the permission of S. Karger AG, Basel. Further reproduction or distribution (electronic or otherwise) is prohibited without permission from the copyright holder.