LEVELS OF INTERFERON-GAMMA (INF-γ) AND INTERLEUKIN-4 (IL-4) IN NEONATES OF ASTHMATIC MOTHERS

Thesis

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CONTENTS

LIST OF ABBREVIATIONS

AD	Atopic dermatitis.
AD	Autosomal dominant.
APC	Antigen presenting cells.
API	Allergy Predictive Index
BAL	Broncho-alveolar Savage.
BHR	Bronchial hyper-responsiveness.
CAMP	Cyclic adenosine monophosphate
CB25	Cluster of differentiation 25 positive.
CBMC	Cord blood mononuclear cells.
CD23	Cluster of differentiation 23 positive.
CD28	Cluster of differentiation 28 positive.
CD4+	Cluster of differentiation 4 positive.
CD8+	Cluster of differentiation 8 positive.
CTLC	Cytotoxic lymphocyte cell.
DBPCFC	Double blind placebo controlled food challenge.
DNA	Desoxyribonucleic acid.
E.T.I	Endothelln-l
ECP	Eosinophil cationic protein.
FCeRlJ	High affinity receptor for Ig E.
FCsRIB	High affinity receptor for Ig E.
FEV1	Forced expiratory volume in one second.
GALT	Gut associated lymph tissue.
GINA	Global Initiative for Asthma
GM-C3F	Granulocyte macrophage colony stimulating factor.
HDM	House dust mite.
HIV	Human immunodeficiency virus.

HLA	Human lymphocyte antigen.
ICAM-1	Intercellular adhesion molecule - 1.
IFN-γ	Intreferon gamma
IgA	Immunoglobulin A.
IgG	Immunoglobulin G.
IgM	Immunoglobulin E.
IL	Interleukin
LAR	Late asthmatic reaction.
LFA-1	Leucocytes expressing the integren-1.
LPR	Late phase reaction.
LPS	Lipopolysaccharide.
LTC4	Leukotrein C4
LTD4	Leukotrein D4
LTE4	Leukotrein E4
M-CSF	Monocyte colony stimulating factor.
MCT	Mast cell tryptase.
MCTC	Mast cell tryptase chymase.
MHC	Major histocompatibility complex.
m-RNA	Messenger RNA.
NIH	National Institute of Health
NK	Natural killer cells.
OVA	Ovalbumm
PAF	Platelet activating factor.
PBMC	Peripheral blood mononuclear cell.
PEAK	Prevention of Early Asthma in Kids
PGD2	Prostaglandin D2
PGE2	Prostaglandin E2
PGF2a	Prostaglandin F2 alpha.

PHA	Phytohaemagglutinin.
PIV	Para influenza Virus
PST	Prick skin test
RANTES	Regulated on activation normal T-cell expressed and secreted.
RAST	Radioallergo- Sorbant test.
RSV	Respiratory syncytial virus.
S. IgA	Secretory immunoglobulin A.
SCF	Stem cell factor.
SEE	Staphylococcal Enterotoxin E.
TCR	T cell receptor.
TGFB	Transforming growth factor B.
Th1	T helper 1.
Th2	T. helper 2.
TNF α	Tumor necrosis factor alpha
VCAM-1	Vascular cell adhesion molecule one
VLA-4	Very late antigen 4.
VLA4 - VCAM	Very late antigen 4 vascular cell adhesion molecule.

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INTRODUCTION

In the last decade, cytokines, which are low molecular weight glycoproteins produced by immune as well as nonimmune cells, have captured the attention of the scientific and clinical communities.

In young children at risk for asthma or allergy, decreased allergen-induced IFN-gamma secretion is associated with atopic disease and, in some cases, with increased IgE levels. Increased allergen-induced IL-13 secretion is most strongly associated with early life increase of IgE ***(Contreras JP et al, 2003).***

IFN-γ supports differentiation of "allergy protective" Th1 cells and antagonizes the development of Th2 cells ***(Gajewski et al, 1988; Maggi et al 1992; Demeure et al, 1997).***

Cytokine disturbances, especially increased interleukin-4 (IL-4) and/or decreased interferon-gamma (IFN-γ), are considered to be a major factor responsible for allergy development. IL-4, a major pro-allergic cytokine, promotes the differentiation and activation of Th2 lymphocytes. IL-4 has also been found to suppress the Th1 population and IFN-γ production, thus emphasizing the great role of the IL-4 receptor (IL-4R) on Th cells in the development of allergy ***(Romagnani S, 2004)***.

IL-4R-dependent over-signaling in newborns' monocytes and Th lymphocytes could contribute to Th_1/Th_2 imbalance. IL-4R over expression on newborns' monocytes and lymphocytes could be an early risk marker of allergy development ***(Grzela K et al, 2007).***

AIM OF THE WORK

In the past 20-30 years, there has been a progressive increase in the prevalence of allergic diseases, in particular atopic asthma, with an associated increase in management costs.

Primary Prevention aims to identify at risk individuals at an early stage and to begin prophylactic therapy to prevent development of chronic disorders.

For this purpose we aim in this work to measure the level of Interferon gamma (IFN-γ) and its producing Th1 cell and Interleukin-4 (IL-4) and its producing cell in neonates at high and low genetic risk of atopy. This is done in an attempt to find an accurate test that early predict atopy for early prevention and better prognosis.