Estimation of (IgA) antigliadin, (IgA) antiendomysium and (IgA) tissue transglutaminase in the serum of psoriatic patients

Thesis
Submitted For fulfillment of M.Sc. Degree
in Dermatology, Anderology and STDs

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2009

ACKNOWLEDGMENT

Thanks to **God** *first and foremost. I feel always indebted to God, the most kind and the most merciful.*

I would like to express my gratefulness and respect to **Prof. Dr. Noha Abd EL Reheem Nagui,** *Assistant professor of Dermatology, Faculty of Medicine, Cairo University, for her moral and scientific support and for giving me the honor of working under her supervision and valuable guidance.*

Special thanks and deepest gratitude to **Dr. Eman Ahmed EL Nabarawy,** *Lecturer of Dermatology, Faculty of Medicine, Cairo University, for her constructive and instructive comments and valuable suggestions. She encouraged me all the time for a better performance. Without her generous help, this work would not have 6een accomplished in its present picture.*

I would like to express my gratitude and appreciation to **Dr. Neiveen Ezzat Saad** *Assistant Professor in Chemical and Clinical Pathology, National Research Center, for her sincere scientific and moral help.*

Special thanks to **Dr.Iman Shaarawy,Dr.Heba M. meshaly,Dr.Doaa Mahgoub Dr marwa fawzy** *Tulba,for their generous help during work.*

My deep thanks are paid to **Dr. Mahmoud Fawzy,Abd El Hamid** *Lecturer of Dermatology and Venereology, National Research Center, for his valuable advice, support and encouragement.*

I am very grateful to all my staff members and my colleagues in the Dermatology Department, Faculty of Medicine, Cairo University and Dermatology and Venereology Research Department, National Research Center, for their help and support throughout the course of the work.

Words can not describe my gratefulness and gratitude to my Husband for his help, Patience and great care and My family as they provided me with every mean of support throughout my life.

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ABSTRACT

Background: Psoriasis is a chronic inflammatory skin disease. Genetic and immunologic mechanisms have been proposed in the aetiology of psoriasis. **Coeliac disease (CD)** can be defined as a chronic immune-mediated gluten-dependent enteropathy, resulting from an inappropriate T-cell-mediated immune response against ingested gluten in genetically predisposed people. Recent studies showed an association between CD and psoriasis and an improvement of skin lesions after 3–6 months GFD. Our study was undertaken to assess whether patients with psoriasis in Egypt have an increased prevalence of AGA and other coeliac disease antibodies or not and their possible role in the pathogenesis of psoriasis.

Materials and Methods: This study comprised 41 patients of psoriasis vulgaris and 41 of healthy controls. All cases were subjected to complete history taking, clinical examination including psoriasis area and severity index (PASI) score. Patients and healthy controls were screened for serum IgA antibodies to gliadin (AGA) , IgA antitransglutaminase (TGA) as measured by ELISA and IgA antibodies to endomysium (EMA), assessed by standard immunofluorescence with cryosection of monkey esophagus.

Results Our results showed significant difference between cases and controls as regards IgA (AGA) where as 34.1% of patients had IgA (AGA) positive as compared with controls (2.4%) with significant correlation between IgA (AGA) and duration and course of psoriasis and no significant difference between cases and controls as regards IgA (tTG) where as 34.1% of patients had IgA (tTG) positive as compared with controls (22%). Also we found no significant difference between cases and controls as regards IgA (EMA) where as (14.6%) of patients had IgA (EMA) positive as compared with controls (4.9%).

Conclusion: Our study demonstrated significant increase in levels of CD antibodies in psoriatic patients in comparison to the controls so the serological evaluation for coeliac disease antibodies should be considered in psoriatic patients and early diagnosis of CD and administration of a gluten-free diet could lead to better management of such patients and might also result in decreased morbidity of such chronic skin disease.

Key words: coeliac disease, AGA antibodies, psoriasis.

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List of Abbrevations

AA	Arachidonic Acid
AGA	Antigliadin Antibodies
AHL	Acquired Hypertrichosis Lanuginosa
AIDS	Acquired Immune Deficiency Syndrome
APCS	Antigen Presenting Cells
ARA	Antireticulin Antibodies
B.C	Before Christ
BD	Behcets Disease
BMI	Body Mass Index
BSA	Body Surface Area
C3	Complement 3
C5	Complement 5
cAMP	cyclic Adenosine Monophosphate
cGMP	cyclic Guanthine Monophosphate
CD	Coeliac Disease
CL	Cutis Laxa
CLA	Cutaneous Lymphocyte Antigen
CsA	Cyclosporine
DCs	Dendritic cells
DH	Dermatitis Herpetiformis
DIP	Distal Interphalangeal
ECP	Eosinophil Cation Protein
EED	Erythema Elevatium Diminutum
EG2	Eosinophil Granules
EGF	Epidermal Growth Factor
ELISA	Enzyme Linked Immunosorbent Assay
EMA	Endomysial Antibodies
EN	Erythema Nodosum
ESPGAN	European Society For Pediatric Gastroentrology And Nutrition.
ESR	Erythrocyte Sedmintation Rate
FDA	Food and Drug Administration,

G	Group
GACL	Generalized Acquired Cuits Latxa
GERD	Gastero-Esophageal Reflux
GFD	Gluten Free Diet
GI	Gasterointestinal
GSE	Gluten Sensitive Enteropathy
HANE	Hereditary Angioneurotic Oedema
HEVS	High Endothelial Venules
HIV	Human Immunodeficiency Virus
HLA	Human leukocyte Antigen
HSV	Herpes Simplex Virus
IBD	Inflammatory Bowel Disease
IELS	Intraepithelial lymphocytes
IFN-γ	Interferon gamma
IgA	Immunglobulin A
IgG	Immunglobulin G
IgM	Immunglobulin M
IL2	Interleukin 2
IL-2Rα	Interleukin-2 receptor alpha
ILF	Interleukin-enhancer binding Factor
IM	Intramuscular
IV	Intravenous
JDM	Juvenile Dermatomyositis
LABA	Linear IgA Bullous Dermatosis
LC	Langerhans Cell
LT	Leukotrienes
LFA	Lymphocyte Functional Antigen
MHC	Major Histocomptability Complex
NGF	Nerve Growth Factor
NK	Natural Killer
NME	Necrolytic Migratory Erythema
NPF	National Psoriasis Foundation
NSAIDS	Non Steroidal Anti-Inflammatory Drugs
PASI	Psoriasis Area and Severity Index
PG	Prostaglandin

PM	Pyoderma gangernosum
PMNs	Polymorph Nuclear Leukocytesl
PPP	Palmoplantar Pustulosis
PsA	Psoriatic Arthropathy
PSORS	Psoriasis Susceptibility locus
PsV	Psoriasis Vulgaris
PT	Prothrombin Time
PUFA	Polyunsaturated Fatty Acid
PUVA	Psoralen and Ultraviolet A
QOL	Quality Of Life
RA	Rheumatoid Arthritis
RF	Rheumatoid Factor
SP	Substance P
Tc	Cytotoxic T cell
TCGF	T-Cell Growth Factor
TCR	T Cell Receptor
TgA	Tissue Transglutaminase
TGF	Transforming Growth Factor
Th	Helper T cell
TNF-α	Tumor Necrosis Factor alpha
VCAM	Vascular Cell Adhesion Molecule
VDR	Vitamin D Receptor
VEG-F	Vascular Endothelial Growth Factor
VLA	Very Late Appearing Antigen
VP	Variegate Porphyria

INTRODUCTION & AIM OF THE WORK

Coeliac disease (CD) is an immunomediated enteropathy caused by permanent intolerance to dietary wheat gliadin in predisposed individuals. It is characterized clinically by malabsorption and histologically by villous atrophy and crypt hyperplasia. The true prevalence of CD is difficult to ascertain, and the diagnosis might be delayed because its clinical presentation is often oligosymptomatic. Epidemiological studies in which serological tests have been used show the disease to be much more common than previously realized. Many autoimmune disorders, such as dermatitis herpetiformis, thyroiditis, and diabetes mellitus, are associated with CD ***(Ojetti et al., 2003).***

Psoriasis is considered to be a genetically programmed disease of dysregulated inflammation, which is driven and maintained by multiple components of the immune system. The pathologic collaboration between innate immunity (mediated by antigen presenting cells and natural killer T-lymphocytes) and acquired immunity (mediated by T-lymphocytes) results in the production of cytokines, chemokines and growth factors that contribute to the inflammatory infiltrate seen in psoriatic plaques ***(Gaspari, 2006).***

Although the exact aetiopathogenesis is unknown, there is growing evidence that activated T cells are the primary modulators in the pathogenesis of psoriasis causing keratinocyte hyperproliferation in the epidermis. This is further supported by the fact that increased levels of activated T lymphocytes are present in psoriatic skin plaques and blood of patients ***(Ellis and Krueger, 2001).***

The systemic aspects of psoriasis have been underscored, and among the various factors thought to be involved in the aetiology and pathogenesis, bowel pathology has assumed a noteworthy position in the literature ***(Mcmillan et al., 2000).*** Previous studies, in fact, showed a high prevalence of IgA antibodies to gliadin (AGA) in patients affected by psoriasis **(*Lindquist et al., 2002)*** and showed that a gluten-free diet significantly improved the psoriatic lesions ***(Michaëlsson et al., 2000).***

It is not easy to explain the possible links between psoriasis and gluten sensitive enteropathy, especially coeliac disease. Keratinocyte hyperproliferation in psoriasis produces a broad spectrum of cytokines, in particular interleukin IL-1 and IL-18 ***(Gangemi et al., 2003)***. These two potent inductors of interferon γ, tumor necrosis factor (TNF), and other mediators play an important role in inducing a Thl response. The mucosal inflammation of the small bowel in CD is also caused by Thl activation, in response to dietary gluten. Previous studies showed that IL-18 is capable of promoting T cell interferon γ production and facilitating Thl cell polarization ***(Salvati et al., 2002).*** These results are suggestive of interplay between skin, intestinal cells, and lymphocyte activation in unknown way.

AIM OF THE WORK

The aim of this study is to evaluate the prevalence of gluten sensitive enteropathy or coeliac disease in patients affected by psoriasis, by screening the antibodies of coeliac disease.

Patients and healthy controls will be screened for serum IgA antibodies to gliadin (AGA), IgA antitransglutaminase (TgA) as measured by ELISA and IgA antibodies to endomysium (EmA), assessed by standard immunofluorescence with cryosection of monkey esophagus.

PSORIASIS

Psoriasis is a chronic and debilitating inflammatory disease associated with serious co-morbidities and causes a significant impact on the patient's quality of life ***(Gottlieb et al., 2008)*.**

1- Epidemiology:

a) Incidence:

Varieties of studies showed that psoriasis affects approximately 2-3% of the population worldwide ***(Nickoloff and Nestle, 2004).***Other studies have estimated the prevalence of psoriasis to be 0.6% to 4.8% of the population. These estimations of the prevalence of psoriasis are variable based on Country studied, definition of prevalence used, method of psoriasis determination and sampling method used ***(Stern et al., 2004; Gelfand et al., 2005).***

b) Age:

Psoriasis can begin at any age, although epidemiological studies showed that it mostly appears for the first time in between the age of 15 and 25 years. A study of the age of onset of psoriasis showed two peaks of onset, the first one from 16-22 years of age (early onset psoriasis) and the second from 57-60 years of age (late onset psoriasis). Males and females are equally affected with peak incidence of 22 years of age in males and 16 years of age in females, in case of early onset psoriasis ***(Bowcock and Baker, 2003)***.

c) Sex:

Psoriasis is not phenotypically different between both sexes ***(Griffiths et al., 2004)*** inspite of significant female preponderance in the palmoplantar pustular type and it is not social class linked ***(Griffiths et al., 2000).***

d) Climate:

Climate appears to affect psoriasis prevalence, with higher rates recorded in single countries at greater latitudes from the equator ***(Griffiths et al., 2004)***. The symptoms of psoriasis improve in the summer and worsen in the winter for many patients ***(Schón and Boehncke, 2005).*** Climatotherapy, the simplest form which utilizes sunrays, has been used extensively at the Dead Sea ***(Abels and Harari, 2000)*** and at the red sea in Safaga ***(El-Arabi, 2005)***. Climatotherapy is a remittive therapy leading to a reversal of the immunopathologic abnormalities of psoriasis in involved epidermis and dermis ***(Hodak et al., 2003; David et al., 2005).***

Definition of psoriasis severity:

Psoriasis is a chronic inflammatory skin condition that varies in severity. The Medical Advisory Board of the National Psoriasis Foundation published definitions of mild, moderate and severe psoriasis. These definitions are based largely on quality-of-life (QOL) measures, with consideration also given to proportion of body surface area affected as shown in ***table 1 (Krueger and Ellis, 2005).***