Power Doppler ultrasonography on tendons to assess subclinical enthesopathy in patients with psoriasis

Thesis

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فحص الأوتار بالموجات الصوتية لتقييم التهاب الإرتكاز في مرضى الصدفية

رسالة

توطئة للحصول علي درجة الماجستير في الأمراض الباطنة

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Contents

List of Abbreviations

APR	: Apremilast
AS	: Ankylosing Spondylitis
BB-UVB	: Broadband Ultraviolet B light
BSA	: Body Surface Area
CRP	: C- Reactive Protien
CS	: Corticosteroid
CsA	: Cyclosporine A
DLQI	: Dermatology Life Quality Index
DMARDs	: Disease-Modifying Antirheumatic Drugs
EMA	: European Medicines Agency
EMG	: Electromyography
ESR	: Erythrocyte Sedementation Rate
FAEs	: Fumaric Acid Esters
FDA	: Food and Drug Administration
GRAPPA	: Group for Research and Assessment of Psoriasis and Psoriatic Arthritis
GUESS	: Glasgow Enthesitis Scoring System
HLA	: Human Leukocyte Antigen
IA	: Intraarticular
IFN	: Interferon
IL	: Interleukin
IL-12/23i	: Interleukin-12/23 inhibitor
IV	: Intravenous
LEF	: Leflunomide
MASES	: Maastricht Ankylosing Spondylitis Enthesitis Score
MHC	: Major Histocompatibility Complex
MICA	: MHC Class I polypeptide-related sequence A
MRI	: Magnetic Resonance Imaging
MSUS	: MuscloSkeletal UltraSound
MTX	: Methotrexate

NAPSI	: Nail Psoriasis Severity Index
NB-UVB	: Narrowband Ultraviolet B
NSAIDs	: Non Steroidal Anti Inflammatory Drugs
OA	: Osteoarthritis
PASI	: Psoriasis Area and Severity Index
PDE-4i	: Phosphodi Esterase 4 Inhibitor (apremilast)
PDUS	: power Doppler ultrasound
PGA	: Physicians Global Assessment
phototx	: phototherapy
PsA	: Psoriatic Arthritis
PUVA	: Psoralen and Ultraviolet A
SpA	: Spondyloarthropathies
SSZ	: Sulfasalazine
TNF	: Tumor Necrosis Factor
vit	: vitamin

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Abstract

Background: Psoriatic arthritis ia a long-term condition that affects some people who have psoriasis. In sever cases, there's a risk of the joints becoming permanently damaged or deformed. Diagnosis of psoriasis-associated enthesopathy helps early detection and treatment of psoriatic arthropathy before joint damage becomes established.

Objective: to detect the presence of asymptomatic entheseal abnormalities in psoriatic patients in an attempt for preclinical detection of psoriatic arthritis before full joint affection becomes established.

Methods: A cross-sectional study included 50 with psoriasis without evidence of arthropathy collected from Ain Shams University hospitals. All the patients were subjected to the following: Full history, clinical examination, routine laboratory investigations and power doppler US on both lower limb entheses.

Results: The present study proved that 48 patients out of 50 with psoriasis showed entheseal abnormalities at least in one site of lower limbs detected by MSUS and this was assessed using glascow ultrasound enthesopathy scoring system (GUESS).

Conclusion: MSUS is useful in the detection of early findings of psoriatic arthropathy especially the presence of enthesitis even in asymptomatic patients.

Keywords: subcinical enthesopathy, psoriatic arthritis, muscloskeletal ultrasound

INTRODUCTION

Psoriasis is an inflammatory skin disease characterized by itchy, erythematous, scaly lesions, papules and sometimes pustules ***(Boehncke and Schön, 2015).***

About 11% of those diagnosed with psoriasis have also been diagnosed with psoriatic arthropathy (PsA). However, about 30% of people with psoriasis will eventually develop PsA. While joint affection is the main distinguishing feature between PsA and psoriasis, a well known extra-articular feature of PsA is tendinopathy and enthesopathy ***(Ritchlin et al., 2017).***

PsA shows significant clinical variability with potential involvement of both the peripheral and the axial skeleton. In addition to arthritis, inflammatory changes include other tissues resulting in enthesitis and dactylitis which are the hallmarks of PsA ***(Coates et al., 2012).***

MSUS is a rapidly evolving technique that helps determining the joint structure involved in the inflammatory process and is one of the radiological methods recommended to reveal synovitis at any joint and has the potential to be used not only to detect joint synovitis, but also to examine the surrounding soft tissues in order to determine the presence of tenosynovitis, dactylitis and/or enthesitis ***(Ruta and Alva, 2016).***

MSUS has been known to be a reliable tool in detecting enthesitis and is more accurate than clinical examination, conventional radiography, and even MRI,

especially during the early stages of inflammatory process in enthesitis ***(Ozçakar et al., 2005*)**.

Furthermore, occult enthesitis detected using MSUS, especially with a power Doppler signal, has a predictive value for the occurance of joint changes in patients with psoriasis ***(El Miedany et al., 2015).***

Psoriatic patients without joint involvement of young and middle aged groups are more susceptible for synovitis, enthisitis and tenosynovitis which may detect occult joint involvement predicting the clinical onset of PsA in these age groups therefore regular US examination is of benefit to patients with PsA, and more attention should be paid to young and middle aged non-PsA psoriatic patients ***(Tang et al., 2018)***.

Aim of the work

In the present study we tried to detect the presence of asymptomatic entheseal abnormalities in psoriatic patients in an attempt for preclinical detection of psoriatic arthritis before full joint affection becomes established.

PSORIASIS

Definition:

Psoriasis is a phenotypically heterogenous immune mediated skin disease that often follows a relapsing and remitting course. It is characterized by well-demarcated, scaly, erythematous lesions that often detected at sites of trauma (extensor surfaces of elbows and knees), however it may invove any part of the body. It is common, complex trait that is associated with many associations including arthritis, diabetes mellitus, hypertension, obesity, cardiovascular disease, reduced quality of life and depression ***(Mahil et al., 2015)***.

Epidemiology:

Psoriasis is documented to affect 1-3 % of the world's population. This estimate, however, is built up on population based studies based on geographic/ethnic groups. The prevalence of psoriasis is actually variable and has been documented to range from 0.05 to 3.7 % depending on ethnicity and geographic location with most research suggesting a higher rate of psoriasis in white compared to other ethnic groups ***(Kaufman and Alexis 2018).***

Risk Factors:

Environmental factors induce inflammatory activity in people having genetic susceptibility. Many alterations could be triggered by environmental risk factors such as diet, microbial infections (from bacteria, fungus and virus), chemical irritants or UV radiation exposure and bad habits (such as smoking and drinking alcohol) ***(Zeng et al., 2017).***

Pathophysiology:

A total of 36 genes are found to account for 22% of psoriasis heritability, and more than 16 genetic loci have confirmed association with psoriasis susceptibility. HLA-Cw6 on chromosome 6 is considered to be the risk variant in the PSOR1 (MIM 177900) susceptibility locus that carries the greatest risk of early onset of psoriasis. The known susceptibility genes which are involved in this immune mediated process are IL-23/Th17 axis of psoriasis immunopathogenesis ***(Coates et al., 2016) (A).***

Abundant expression of chemerin in psoriatic skin induces the infiltration of plasmacytoid dendritic cells to the dermis and epidermis; these release IFN-α, leading to the activation and maturation of myeloid dendritic cells. These cells migrate to lymph nodes where they act as antigen presenting cells and release co-stimulatory signals and cytokines [IL-6, IL-12, II545666555L, qqqwq4qqqqqqqq16-23, and IFN-γ], thus inducing differentiation of naïve T cells into effector subsets and