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Role Of Gene Polymorphism in Epidemiology and Disease Trajectory of Psoriatic Patient

Sara E.Abdelazeem[1], Nancy W.Mikhael[2], Doaa M.Aly[1] and Shuzan AMohammed[2]
[1]Dermatology, Venereology and Andrology, [2]Medical Biochemistry and Molecular Biology Dept.,
Faculty of Medicine- Benha University
E-Mail: saraabdelazeem454@gmail.com

Abstract
Background The skin and joints may be affected by the chronic inflammatory illness known as psoriasis. It may show up as different phenotypes. A systemic inflammatory disorder, it damages many organs and tissues over time because to the persistent activation of the immune system and the increased production of pro-inflammatory cytokines by immune-related cells. Rheumatological, cardiovascular, and mental problems are among the many comorbidities linked to it. The role of genes in the development of psoriasis should be carefully considered.

Keywords: Candida, Psoriasis, Cytokines, Inflammatory, and Genetic Comorbidities

1.Introduction

As a polygenic immune-mediated skin illness, psoriasis may be triggered in susceptible people by a number of environmental variables, such as infections, trauma, or certain drugs [1]. Sharply delineated dull red scaly plaques mostly impact the extensor prominences, scalp, and trauma sites; the illness is characterized clinically by a lifetime of remissions and exacerbations. Chronic plaque psoriasis, which affects around 90% of individuals [2], is the most frequent of the disease's several overlapping phenotypes.

Histopathological hallmarks include consistent rete ridge elongation, dilated blood vessels, suprapapillary plate thinning, intermittent parakeratosis, epidermal neutrophil aggregation, and lymphocyte perivascular infiltration [3[.

One large peak in the development of psoriasis occurs between the ages of 20 and 30, and a second, lesser increase occurs between the ages of 50 and 60.It strikes both sexes equally, albeit it tends to manifest in women and those with a genetic predisposition more quickly [4].

Reports indicate that psoriasis tends to run in families. According to twin research, the risk of psoriasis is two to three times greater in monozygotic twins compared to double zygotic twins. If psoriasis is present in one parent, the child has a 20% risk of having the condition, and if it is present in both parents, the child has a 65% chance [5].

Psoriasis risk has been linked to over 16 genetic loci, and 36 genes are believed to be responsible for 22% of the disease's heritability. The PSOR1 Review of literature 5 susceptibility locus is thought to have the risk mutation that imparts the highest risk of early onset psoriasis, which is located on chromosome 6, specifically HLA-Cw6 [6].

2.Aim of the Work

The aims of this work are to:

Learn how psoriasis-related gene polymorphisms impact the course of the illness.

3.Subjects and Methods

Type of study

A "control" group is used in case studies.

Subjects

Forty people were chosen at random from the dermatology, venereology, and andrology outpatient clinic at Benha University. Ten healthy-looking individuals served as the "control group" and thirty persons with psoriatic arthritis served as the "patient group" in this research.

Thoughts about ethics

The local ethics committee at the Benha Faculty of Medicine gave its permission to the experiment. Prior to participating in the study, all individuals were asked to provide their informed consent.

Exclusion criteria:

No one was allowed to take part in the study if they had any of the following:

Coexisting serious medical conditions, such cancer or heart problems.

A cutaneous or systemic disease caused by an infection or a suppression of the immune system.

Methods

This is relevant for every patient:

An exhaustive examination of the whole past:

Identifying information: name, age, sex, place of residence, profession, marital status, and any unusual habits (such as smoking or drinking).

Documentation of psoriasis symptoms, including when they first appeared, how they progressed, how long they lasted, and any treatments that were used in the past.

Medical history, including systemic disorders, other skin conditions, and substance abuse.
Past psoriasis in one's family.

Health Examination:
A complete physical will rule out any underlying health issues by measuring your weight (in kilos), height (in meters), and BMI. Blood mass index (kg/m2) = mass (in kg) divided by height (in m2)
We determined the kind and severity of the illness by doing a clinical examination of the psoriatic lesion and a thorough skin check.

Statistical methods
We will input the data into a social science statistics tool, SPSS, and then perform the proper statistical tests on the assembled data.

4.Results

Table (1) Disease progression in the individuals included in the study

Disease trajectory		
Onset		
Gradual	n (%)	26 (86.7)
Sudden	n (%)	4 (13.3)
Course		
R & E	n (%)	16 (53.3)
Progressive	n (%)	14 (43.3)
Duration (year)	n (%)	4 (0.08 - 12)

Numb; %: Ratio; R & E: Erupting and Remitting

Although four patients (13.3%) reported a rapid start of symptoms, the majority of 26 individuals (86.7%) had a more gradual onset of symptoms. The illness progressed in different ways in different individuals; for example, although 53.3% of patients had a relapsing and remitting course, 43.3% of patients had a progressive course. Patients' illness durations varied from 0.08 to 12 years, with 4 years being the average.

5.Discussion

Hereditary factors account for over 70% of illness susceptibility, whereas environmental variables impact the remaining 30%.Several investigations have identified potential candidate genes that might play a role in the etiopathogenesis of psoriasis [7].

A gene's coding region (the exon) and its non-coding region (the intron) are separated from one another by a non-coding spacer. Long segments of DNA called introns are just now having their biological roles explained. Although every gene starts with exons, the majority of genes really include a varied number of introns that rotate with the exons [8]. Protein amino acid sequences are mostly determined by the coding sections of genes, but the degree of gene expression in any given tissue at any given time is also determined by these areas. In the genome, you may find a single copy of the majority of genes [9].

Variations in DNA sequences that occur in populations at a frequency of one percent or greater are called polymorphisms. In biology, it refers to a sort of genetic diversity that occurs in discrete individuals within a species, leading to the existence of several forms or varieties of people. A population's members may be classified into two or more clearly different forms when there is a discontinuous genetic variance. This is most clearly shown by the fact that higher creatures have evolved to have distinct male and female reproductive systems. The diversity of human blood types is another illustration [10].

Although over 30 SNPs have been linked to an increased risk of psoriasis, only two gene mutations—IL36RN and CARD14—have been shown to cause the disease on their own, impacting the skin and immune system simultaneously [11].

6.Conclusion

Given the high heritability of psoriasis, the idea of gene polymorphism might represent a breakthrough in the search for psoriasis pathogens.

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