

## PHYSICAL MEDICINE

### ASSESSMENT OF ASYMPTOMATIC SACROILIITIS IN PSORIATIC PATIENTS BY COMPUTED TOMOGRAPHY

#### PSÖRİASİS HASTALARINDA ASEMPATOMATİK SAKROİLİİTİN BİLGİSAYARLI TOMOGRAFİ İLE DEĞERLENDİRİLMESİ

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#### SUMMARY

*This study was undertaken to determine the presence of asymptomatic sacroiliitis in psoriatic patients with respect to age-matched controls.*

*Plain film radiographs and computed tomography scans of sacroiliac joints were performed in 27 asymptomatic psoriatic patients and in 21 healthy controls and evaluated by two radiologists. The severity of sacroiliitis was scored using the New York grading system.*

*Sacroiliitis was observed on plain film radiography in 4(14,8%) and computed tomography revealed the presence of asymptomatic sacroiliitis in 8 (29,6%) of 27 psoriatic patients, whereas none (0%) in controls. No correlation was observed between the presence or absence of sacroiliitis, and the age and sex of patients, or duration of disease.*

*As a conclusion, asymptomatic sacroiliitis is common in psoriatic patients, whether its presence will predict a progression to an overt spondylarthropathy is not clear, and computed tomography is an effective method of examination of the sacro-iliac joints.*

**Key words :** Psoriasis, computed tomography; asymptomatic sacroiliitis

#### ÖZET

*Bu çalışma, psoriasis hastalarında asemptomatik sakroiliit varlığını kontrol grubu karşılaştırmalı olarak saptamak için yapılmıştır. Herbangi bir yakıması olmayan 27 psoriasis hastası ve kontrol grubunu oluşturan 21 sağlıklı kişide sakroiliak eklemlerin bilgisayarlı tomografisi ve düz grafileri çekildi ve iki radyolog tarafından değerlendirildi. Sakroiliit şiddetinin değerlendirilmesi New York grading sistemine göre yapıldı.*

*Asemptomatik sakroiliit düz grafilerde psoriasisli hastaların sadece 4(%14,8) ünde olmasına karşılık bilgisayarlı tomografide 8(%29,6) inde saptanırken, kontrol grubunda ise hiç rastlanmadı(%0). Sakroiliitin varlığı ya da yokluğu ile hastaların yaşı, cinsi ve hastalık süresi arasında korelasyon saptanmadı.*

*Sonuçta psoriatik hastalarda asemptomatik sakroiliit yaygın olarak görülmektedir ve bunun semptomatik bir spondilartropatiye progresyon göstereceği belli değildir. Bilgisayarlı tomografi sakroiliak eklemlerin değerlendirilmesinde etkili bir metottür.*

**Anahtar sözcükler :** Psoriasis, bilgisayarlı tomografi, asemptomatik sakroiliit

#### INTRODUCTION

Psoriasis is a chronic inflammatory dermatosis that affects approximately 2% of the population. (1). It is characterized by hyperproliferation of epidermal cells and inflammation resulting from infiltration of activated T helper cells and mononuclear cells and release of pro-inflammatory cytokines (2). It may also be associated with arthritis. Psoriatic arthritis causes inf-

lamination and swelling primarily in the hands, feet or in larger joints such as the knees, hips, elbows, and the spine. It may cause stiffness, pain, and joint damage About 10 percent of the people who have psoriasis on their skin also develop a form of arthritis called psoriatic arthritis (3).

Both sacroiliitis and spondylitis are associated with psoriatic arthritis, however this is seldom the presenting complaint (4).

The earliest changes of sacroiliitis are the result of an active synovitis and are therefore confined to the lower two-thirds of the joint. Tendinitis and enthesopathy lead to spread the inflammation to the upper third of the joint

Plain film examination of the sacroiliac joints can be extremely difficult to interpret due to the anatomic obliquity of the joint themselves and the thick overlying soft tissues. The superiority of computed tomography over plain films in the study of sacroiliitis is controversial (5), however the results of various studies revealed that computed tomography is more sensitive and is useful for early demonstration of sacroiliitis (6-8).

This study was undertaken to determine the presence of asymptomatic sacroiliitis by computed tomography in psoriatic patients with respect to age matched controls.

#### **MATERIALS and METHODS**

Twenty-seven asymptomatic patients with psoriasis (15 men of mean age  $26.53 \pm 9.51$  years and 12 women of mean age  $33.67 \pm 18.23$  years) and twenty-one healthy controls (11 men of mean age  $25.05 \pm 10.14$  years and 10 women of mean age  $32.08 \pm 16.06$  years) were included for prospective study. With informed consent, each one underwent CT of the sacroiliac joints.

Plain film radiographs of the sacroiliac joints were first obtained than CT was performed in the coronal plane, using a Hitachi 450 HQ scanner (120 kV, 90mAs, 250 FOV). Imaging was performed with 5-mm contiguous slices through each sacroiliac joint with the gantry angled to the joint following review of a preprocedural topogram.

The presence or absence of sacroiliitis on CT scans was recorded by two radiologists independently, prospectively and blind to patients diagnosis. The severity of sacroiliitis was scored using the New York grading system (9); 0-normal; 1-suspicious; 2-localized sclerosis, erosion, joint widening; 3-diffuse sclerosis, erosion; 4-ankylosis. The level of interobserver agreement was subsequently scored using the K statistic. The number of patients with asymptomatic sacroiliitis and psoriasis was compared to the number detected in healthy controls.

Finally correlation was made between the presence or absence of sacroiliitis and the age, sex, and duration of disease and grade of sacroiliitis, using regression analysis.

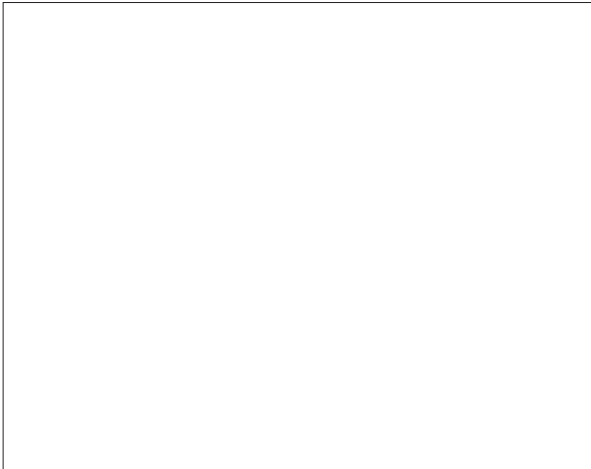
#### **RESULTS**

There were 15 men of mean age  $26.53 \pm 9.51$  years and 12 women of mean age  $33.67 \pm 18.23$  years in psoriatic patients, and there were 11 men of mean age  $25.05 \pm 10.14$  years and 10 women of mean age  $32.08 \pm 16.06$  years in controls. The mean duration of psoriasis is  $66.41 \pm 77.29$  months (range 1-300). Sacroiliitis was observed on plain film radiography in 4 (14,8%) with interobserver agreement in 75% and on CT in (grades 2 to 3) in 8 (29.6 %) of psoriatic patients (5men and 3 women), with interobserver agreement in 88.9 % (K(0.89), and in 0 (0%) of controls, with interobserver agreement in 100 % (K(0.1). The presence of sacroiliitis in psoriatic patients was statistically significant compared to controls ( $p < 0.01$ ). All numbers of the sacroiliitis were bilateral and symmetric. No correlation was observed between age, sex, duration of disease, and presence of asymptomatic sacroiliitis ( $p > 0.05$ ). Five (33.33 %) of 15 men and 3(25 %) of 12 women were shown to have asymptomatic sacroiliitis. There was no correlation between the New York grade of sacroiliitis and the duration of disease ( $p > 0.05$ ). Two (one man and one woman) of psoriatic patients had grade 3 sacroiliitis (Figure 1) and the remainders (4 men and 2 women) are all grade 2 sacroiliitis. The radiologists disagreed on three CT films. One of CT film was accepted as grade 3 by one radiologist whereas as grade 2 by the other one. The remaining two films were evaluated as normal or suspicious by two radiologists respectively (Figure 2).

#### **DISCUSSION**

A variety of inflammatory disorders may involve the spine and the sacroiliac joint. Of these, the seronegative spondyloarthropathies (consisting principally of ankylosing spondylitis, psoriasis, inflammatory bowel disease and, Reiter's syndrome) are of particular importance. Differentiation between these disorders can often be accomplished by attention to radiographic detail and clinical features. In ankylosing spondylitis, bilateral sacroiliac joint alterations are common; whereas in psoriasis, both the erosions and reparative bone are more extensive and, asymmetrical sacroiliac joint changes may be observed (10).

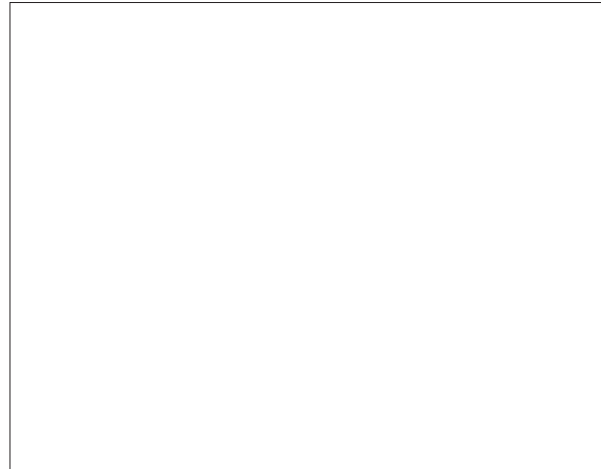
The results of this study shows that CT is more sensitive methods of detecting asymptomatic sacroiliitis than plain films with less interobserver variability (75% versus 88.9%) and also CT is a better method of detecting early inflammatory changes.



**Figure 1:** It was agreed as grade 3 sacroiliitis by two radiologists independently.

In this study; all numbers of the sacroiliitis were bilateral and symmetric. Other studies have documented different patterns of involvement. Like this study, some studies showed bilateral and symmetric involvement of sacroiliac joints to be the most common radiographic abnormalities (5,11), whereas the other ones reported the changes to be bilateral and asymmetric (12,13) As mentioned previously, computed tomography is more reliable imaging technique than plain films. It certainly is more reproducible, more sensitive, and more accurate than plain films(614). In this study the rate of asymptomatic sacroiliitis in psoriasis was 29.63%, and is consistent with the reports of other studies (13). As seen in psoriasis, asymptomatic sacroiliitis was encountered also among other family members of psoriatic patients, in first degree relatives of patients with ankylosing spondylitis, and in patients with inflammatory bowel disease (15-18). The clinical importance of asymptomatic sacroiliitis and its prognostic value are not clear, and although not recorded in this study, it is now established that there is an association between HLA-B27 and psoriatic arthritis, both in its peripheral arthropathy and spinal disease in which radiological sacroiliitis is present. Spinal disease without radiological sacroiliitis is probably not associated with HLA-B27 (19). Since spondyloarthropathy is rarely detected at the onset of psoriatic arthritis (20), early identification of asymptomatic sacroiliitis may lead to consideration of unsuspected cases.

In this study, grade 4 sacroiliitis was not observed and it is a feature of more severe spinal disease as seen in ankylosing spondylitis (21). Male/female ratio was 1.33/1 and is consis-



**Figure 2:** It was agreed as grade 0 (normal) sacroiliitis by two radiologists independently.

tent with results from some studies (22). However, other studies found higher male/female ratio (4). Much of the discrepancy in the reported incidence of sacroiliitis in psoriasis has been related to methods of patient selection, to the technique of radiographic examination, and to the expertise of the observers. Hanly, et al (23) have reported that, a long-term follow up patients with psoriatic spondyloarthropathy revealed a significant increase in the number of sacroiliitis.

In conclusion, asymptomatic sacroiliitis is a feature common in psoriatic patients, however it is still not clear, whether its presence will predict a progression to an overt spondylarthropathy or not.

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