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Radiologically-Detectable Sacroiliac Involvement in Behcet's Disease

Background: The association of Behcet's disease (BD) and ankylosing spondylitis (AS) is still a matter of debate.

Objective: As the presence of sacroiliac joint (SIJ) involvement is an essential criterion in diagnosis of AS, we decided to determine the prevalence of SIJ involvement in BD and compare it with that of a control group.

Patients & Methods: We randomly selected two groups of 199 BD patients and 168 non-BD cases (the controls). All cases were over 20 years of age. Standard anteroposterior radiographs of the SIJ were obtained and interpreted by two rheumatologists and a radiologist blinded to the diagnosis. To determine the severity of the condition, the following 5-point scale was employed: Normal (0), pseudo-widening (1), sclerosis (2), erosion (3), and bony fusion (4). To eliminate any doubts, only grades 3 and 4 were considered as sacroiliitis. Both groups were separately evaluated for age ($\leq$30, and $>$30), and gender. Results were compared using Chi square test.

Results: The groups were matched for age and sex: There were 98 (49.2%) females in BD *vs.* 91 (54.2%) in the control group (p=0.35). The mean±SD age was 35±8.3 years in BD and 35±10 in control group (p=1). The SIJ was involved in 9 (4.6%) patients in BD and 7 (4.2%) patients in control group (p=0.93). Comparisons between the results of the unisexual cohorts revealed no significance either (p=0.68 for males, and p=0.64 for females). The age subdivisions (under- and over-30) again showed no significant difference (p=0.96 and p=0.69 for under- and over-30 patients, respectively).

Conclusion: The presence of radiographic signs of SIJ involvement is not mandatory for the diagnosis of AS.

Keywords: Behcet Syndrome, Spondylitis, Ankylosing, Sacroiliac Joint

Introduction

Behcet's disease (BD) is a multisystem, inflammatory disorder with a chronic recurrent course. It is characterized mainly by mucocutaneous and ophthalmologic manifestations. BD is seen mostly in the northern hemisphere and particularly in the countries along the ancient Silk Road. BD is a rare disease, even in the countries where it is much more frequent. In Iran, which is among the highly rated countries, the prevalence of BD is estimated to be 16 patients in 100,000 normal population. Males constitute nearly half of the patients (53%). The disease onset is mainly at the third decade of life with a mean age of 26.2 years. The frequency of symptoms in Iran is as follows: Oral aphthous lesions (95.8%); genital aphthosis (64%); skin manifestations (73.6%); ophthalmic manifestations (57.8%); and joint manifestations (39.9%). Rare manifestations include vascular, gastro-intestinal, CNS, and cardiopulmonary involvement and epididymitis. Laboratory abnormalities include pathergy phenomenon in 61.5% of patients, HLA-B5 in 54.6%, HLA-B51 in 39%, HLA-B27 in 9.6%, false-positive VDRL in 2%; raised ESR in 55.8%, and urinary abnormalities in 6.7% of patients. The association between BD and ankylosing spondylitis (AS) is still a matter of controversy. The same goes with the association between BD and sacroiliac joint (SIJ) involvement. Different researchers reported various frequencies of sacroiliitis and AS in BD patients.[1]

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Dilsen *et al*, reported that sacroiliitis was extremely common in BD and a considerable number of cases accompanied true AS, [2,3] as supported by some other studies.[4,5] Yet, there are a few studies which have shown neither SIJ involvement nor AS in BD.[6] On the other hand, there are studies showing only the high frequency of AS (and not SIJ involvement) in BD,[5,7-10] while some others revealed a high frequency of sacroiliitis in BD [3,11-14]. On the contrary, there are reports indicating that routine radiographic examinations yield no increased prevalence of sacroiliitis in patients with BD than normal population.[15-18]

It is known that radiographically-detectable sacroiliitis is frequent in AS and that it is by no means, an early or obligate manifestation of the disease.[19] In fact, some patients with typical AS have been described to lack the radiographic evidence of sacroiliitis.[20]

Since the presence of SIJ involvement is an essential criterion for the diagnosis of AS, especially in the New York criteria, we decided to determine the prevalence of SIJ involvement in BD and compare it to a control group.

Patients and Methods

We randomly selected two groups of 199 patients with BD (case group) and 168 with non-Behcet's disease (control group). All cases were over 20 years of age. Standard anteroposterior (AP) radiographs of the SIJ were obtained and interpreted independently by two rheumatologists and a radiologist blinded to the diagnosis. Two months later, the same X-rays were taken and interpreted by the same persons, blinded to their first interpretations.

The following 5-point scale was employed to quantify the severity of disease: Normal (0), pseudo-widening (1), sclerosis (2), erosion (3) and bony fusion (4). Only grades 3 and 4 were considered as SIJ involvement to ensure a more accurate diagnosis of sacroiliitis, In most cases, a single AP view of the pelvis is sufficient to establish or exclude significant sacroiliitis (defined as grade 3 or 4 in the New York classification system).[19]

Sacroiliitis may present as different patterns explained below:

1. Bilateral and symmetric, as in AS and entropathic arthropathies
2. Bilateral and asymmetric, as in psoriasis and Reiter syndrome
3. Unilateral, as in tuberculosis or salmonellosis.

In BD, the radiological findings are often bilateral and symmetric, very similar to that observed in AS (Figures 1 and 2).

The inter-observer error among the radiographic readings of the three physicians was evaluated. Two months after the first study of the radiographs, the radiograms were re-read to calculate the intra-observer error too. The scores reported by three observers were then added up and divided by three to obtain a mean score for each patient. Based on this mean score, we determined whether a patient has sacroiliitis or not. The results were compared by Chi square test between BD and control groups. Moreover, cases and controls were further evaluated within subgroups for age (≤30 and >30 age groups) and gender.

Results

Both groups were sex- and age-matched. There were 98 (49.2%) females in the BD and 91 (54.2%) in the control groups (p=0.35). The mean±SD age of BD and control subjects were 35±8.3 and 35±10 years, respectively (p=1).

Rheumatologist 1 reported 16 cases of SIJ involvement in BD group (14 bilateral). The number was 9 cases (all bilateral) as reported by rheumatologist 2, and 2 cases (one bilateral) according to the radiologist. This translates to a mean of 9 cases (4.6%). For the control group, the SIJ involvement was 13 cases (10 bilateral) as reported by rheumatologist 1, 6 cases (5 bilateral) according to rheumatologist 2, and 3 cases (2 bilateral) as diagnosed by the radiologist: A mean of 7 cases (4.2%). The difference between the means in BD and the control group was not statistically significant (p=0.93).

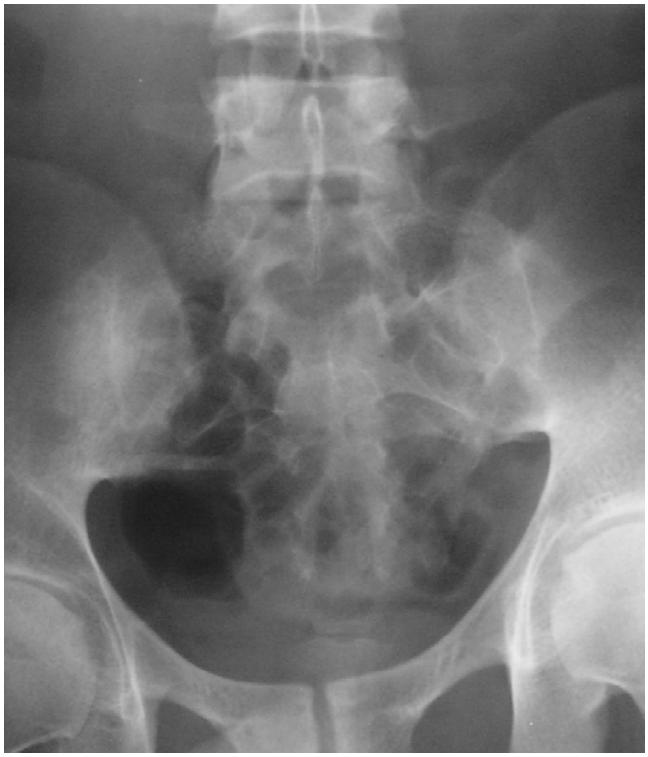

Figure.1: Behcet's disease with sacroiliitis: Erosion and hazy borders are seen on both sides.

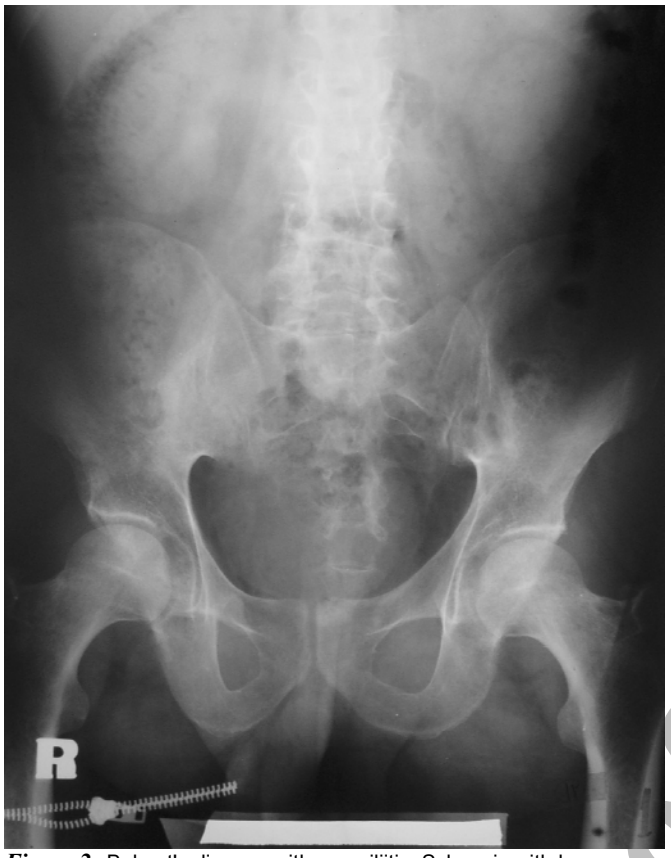

Figure 2: Behcet's disease with sacroiliitis: Sclerosis with bony fusion are seen on both sides

Table 1: Comparison of sacroiliac joint involvement in Behcet's patients and controls stratified by gender

Gender	BD Group	Control Group	p-Value
Female	4/98 (4.1%)	4/91 (4.4%)	0.64 (NS)
Male	5/101 (4.9%)	3/77 (3.9%)	0.68 (NS)

Table 2: Comparison of sacroiliac joint involvement according to age group

Age Group	BD Group	Control Group	p-Value
≤ 30 years of age	3/64 (4.7%)	2/61 (3.3%)	0.96 (NS)
> 30 years of age	6/135 (4.4%)	5/107 (4.7%)	0.69 (NS)

The presence of sacroiliitis were compared within the age and sex subgroups in BD cases and non-BD controls, none of which proved statistically significant (Tables 1 and 2).

There was no significant difference between the results of the two rheumatologists (p=0.22 for BD, p=0.16 for the control group), but the difference was significant between rheumatologist 1 and the radiologist (p=0.001 for BD, p=0.02 for the control group).

Through a second study performed two months later, the intra-observer error was calculated that revealed no significant difference. In our first study, we found 9 cases with SIJ involvement among 199 BD. The number of cases was 10 according to the second study (p=0.64). Out of 168 cases of control group, 7 had SIJ involvement in the first study. The number of cases was similar in the second study (p=0.78).

In the BD group, the mean±SD elapsed time between the diagnosis of BD and the beginning of our study was 10.8±7.7 years in patients with SIJ involvement and 8.8±6.6 years in those without (p=0.24).

Discussion

We found no statistically significant difference in SIJ involvement between BD and control groups. Albeit, the incidence of AS was higher in our BD patients than in normal population.

We found only one (0.5%) case of true AS among 199 BD patients studied, whereas in the whole group of our BD patients (n=4151), we had 62 (1.5%) patients with AS. This may partly explain the low frequency of SIJ involvement in our study.

The SIJ involvement is a late symptom. In our study the time gap between the diagnosis of BD and conduction of our study was 8.8 years for BD patients without SIJ involvement, while it was 10.8 years for BD patients with sacroiliitis.

We conclude that the presence of radiographic signs of SIJ involvement is not mandatory for the diagnosis of AS, as it was stated in the diagnostic criteria of Amor[21] and ESSG[22].

References

1. Olivieri I, Besana C, Cantini F, Emmi L: Behcet's Disease and spondyloarthropathy. In Hamza M, ed: Behcet's Disease. Tunis: Pub Adhoua, 1997:399-402.
2. Dilsen N,Konice M, Aral O: Why Behcet's disease should be accepted as a seronegative arthritis. In: Lehnert, Barnes CG, eds: Recent advances in Behcet's Disease. London, New York, Royal society of medicine services, 1986:281-284.
3. Dilsen N, Konice M, Ovul C. Arthritic patterns in Behcet's disease. In: Behcet's syndrome. Excerpta medica, international congress series. 1979;467:145-149.
4. Assad-Khalil S, Abou-Seil M, El-Siwy F et al. Prevalence of ankylosing spondylitis and sacroiliitis in 250 patients with Behcet's disease: clinical, radiological and genetic study (abstr). Rev Med Intern 1993 (suppl 1);14:63.
5. Olivieri I, Gemignani G, Pecori F et al. Coexisting ankylosing spondylitis and Behcet's syndrome: a report of 6 cases. In: O'Duffy JD, Kokmen E, eds: Behcet's Disease: Basic and clinical aspects. New York: Marcel Dekker, 1991:247-252.
6. Yazici H,Yurdakul S, Hamuryudan V. Behcet's disease. In: Klippel J.H., Dieppe PA,eds: Textbook of Rheumatology, second ed. Philadelphia: Mosby, 1998: 7 ; 2601-2606.
7. Davatchi F, Shahram F, Gharibdoost F et al. Behcet's disease. Analysis of 2806 cases. Arthritis Rheum 1995(suppl); 38:391.
8. Nadji A, Shahram F, Davatchi F et al. Does spondyloarthropathy seen in Behcet's disease change the features of Behcet's disease? In: Bang D, Lee E, Lee S, eds. Behcet's disease, Seoul, design Mecca Publishing Co. 2000: 879-881.

9. Kallel MH, Bejia I, Fournie B et al. Association of Behcet's disease and ankylosing spondylitis. Rev Rhum (Engl.Ed.) 1995; 62: 295-299.
10. Benamour S, Zeroual B, Alaoui FZ: Joint manifestations in Behcet's disease: A review of 340 cases. Rev Rhum (Engl.Ed) 1998; 65(5): 299-307.
11. Kremer P, Wendling D. Association of Behcet's disease and spondyloarthropathy. Rev Rhum (Engl.Ed) 1996; 63: 69-70.
12. Caporn N, Higgs ER, Dieppe PA et al. Arthritis in Behcet's syndrome. Br J Radiol 1983; 56: 87-91.
13. Pande I, Uppal SS, Kailash S et al. Behcet's disease in India: A clinical, immunological, immunogenetic and outcome study. Br J Rheumatol 1995; 34: 825-830.
14. Dubost JJ, Sauvezie B, Galtier B et al. Syndrome de Behcet et spondyloarthrite ankylosante. Rev Rhum 1985; 52: 457-461.
15. Yazici H, Tuzlaci M, Yurdakul S. A controlled survey of sacroiliitis in Behcet's disease. Ann Rhum Dis 1981; 40: 558-9.
16. Chamberlain MA, Robertson RJH. A controlled study of sacroiliitis in Behcet's disease. Br J Rheumatol 1993; 32: 693-8.
17. Yurdakul S,Yazici H, Tuzun Y et al. The arthritis of Behcet's disease: A prospective study. Ann Rhum Dis 1983; 42: 505-515.
18. Gow P, Lehner T, Panayi GS. Joint manifestations in Behcet's syndrome. In: Lehner T, Barnes CG, eds: Behcet's Syndrome. Clinical and immunological features. London:Academic press, 1979: 223-239.
19. Van der Linden SM. Ankylosing spondylitis. In: Kelley WN, Harris ED, Ruddy S, Sledge CB, eds: Textbook of Rheumatology, fifth ed. Philadelphia: W.B. Saunders company 1997: 969-982.
20. Khan MA, Van der Linden SM, Kushner I et al. Spondylitic disease without radiologic evidence of sacroiliitis in relatives of HLA-B27 positive ankylosing spondylitis patients. Arthritis Rhum 1985; 28: 40-43.
21. Amor B, Dougadous M, Mijiyama M. Classification criteria for the spondyloarthropathies. Rev Rhum 1990; 57: 85-89.
22. Dougados M, Van der Linden S, Juhlin R, et al. The European spondyloarthropathy study group preliminary criteria for the classification of spondyloarthropathy. Arthritis Rheum 1991; 34: 1218-1227.