Original Article

Study of involvement of hip joint in ankylosing spondylitis

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Abstract

Objective: To study incidence of involvement of hip joint in Ankylosing Spondylitis. **Method and Material:** Total of 60 patients (39 Males and 21 females) were recruited in the study as per Modified New York Criteria (1984). Ankylosing Spondylitis was diagnosed when patient satisfied 1 of the three clinical New York criteria and had bilateral sacroilitis on MRI study. **Results:** 39 males and 21 females were studied (M: F-1.8:1). 55 patients were HLA B27 positive and 5 individuals were negative. Out of 60 patients 17 patients had hip joint involvement (28%). 85% patients presented before age of 40 years, 10 patients had juvenile onset AS. Incidence of hip involvement was 33% (7/21) in females and 20% (10/50) in males. Incidence of hip involvement interval in ASin males were 8.3 years and 2.71 years in females. **Conclusions:** Hip joint involvement is common in AS. Onset of hip joint involvement is 8.3 years in Males and 2.7 years in females. MRI of hip joint can detect subclinical hip involvement

Keywords: ankylosing spondylitis.

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INTRODUCTION

Ankylosing spondylitis (AS) is the prototype of SpA and is characterized by inflammation of the sacroiliac joints and spine, resulting in changes (narrowing, sclerosis, erosions and ankylosis) which are eventually evaluable on conventional radiographs[1]. This may lead to a completely ankylosed spine in a substantial number of patients. Clinical observations of patients and a number of clinical reports[2-5] indicate that hip involvement increases the burden of the disease and its prognosis. To illustrate the prognostic value of hip disease, it has been reported that radiographic spinal progression in AS patients is more prevalent in patients with hip arthritis vs. patients without hip involvement[6]. Due to the important and central function of the hip, impairment of hip functioning is clearly related to restricted body function in AS patients[7]. However, it seems that limited data are available regarding the epidemiology, the pathophysiological nature of hip involvement and its effects on function and disease activity. Data on the effectiveness of treatment strategies are also scarce. A specific treatment option in patients with end-stage hip disease is hip replacement surgery. Hip prostheses have a limited life span, and revision surgery is often needed. Ideally, new systemic treatment strategies should be explored to prevent hip damage, while also reducing signs, symptoms and progression in other diseased areas[8]. Among the inflammatory rheumatic diseases the longest delay between the onset of symptoms and making the diagnosis is currently found for Ankylosing spondylitis (AS) a mean duration of about 7 years has been reported. The mean age of onset of symptoms is in the mid-20s, thus at the normally most productive time of life. If undiagnosed and untreated, or not treated effectively enough, continuous pain, stiffness, and fatigue are the consequences. Furthermore, a potentially progressive of spinal mobility and function, together with the acute symptoms, cause a reduction in the quality of life and an increase in direct and indirect medical costs. Because the prevalence, including the early forms of the disease, has been estimated to be between 0.2 and 1%, 3–5 late

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diagnosis and inadequate treatment have also potentially socioeconomic consequences[9]. Until recently, the treatment options for AS were limited regular physiotherapy and treatment with non-steroidal anti-inflammatory drugs (NSAIDs) were the only available symptomatic treatments. Other treatment options, such as disease modifying anti rheumatic drugs or steroids, which are quite effective in other chronic inflammatory diseases such as rheumatoid arthritis, have no effect or only a very limited effect[9]. Thus, although an early and correct diagnosis was wanted to avoid unnecessary diagnostic and therapeutic procedures (such as disc surgery) this did not seem to be so urgent for many doctors and patients because of the lack of therapeutic choices[9]. This has changed now: NSAIDs should probably be taken more regularly once a diagnosis has been made, and tumor necrosis factor blockers offer an exciting new possibility for effective treatment and, hopefully, may also have the potential to stop progression[9]. There has been a great resurgence of interest in ankylosing spondylitis (AS) in recent years mainly because of the availability of new imaging techniques and highly effective new therapies such as the tumor necrosis factor inhibitors [10, 11]. These advances have transformed the treatment paradigm especially in those with aggressive disease [12]. Therefore, it has become extremely important that the patients be correctly diagnosed early in disease course, properly assessed for the severity of inflammation and mechanical damage, for obtaining full benefit of this therapeutic advance[13].

MATERIALS AND METHODS

Patients: The study included 60 consecutively diagnosed patients with primary Ankylosing Spondylitis seen at the "Rheumatology OPD" of this hospital over a period of 18 months. Diagnosis was made according to the modified New York criteria. New York Criteria (1984)

- Low back pain with inflammatory characteristics
- Limitation of lumbar spine motion in sagittal and frontal planes
- Decreased chest expansion
- Bilateral sacroiliitis grade 2 or higher
- Unilateral sacroiliitis grade 3 or higher

Definite ankylosing spondylitis when the fourth or fifth criterion mentioned presents with any clinical criteria. Patients with reactive arthritis, psoriasis, arthritis associate with inflammatory bowel disease, traumatic and rheumatoid hip arthritis and undifferentiated spondyloarthropathy were excluded. An investigator administered questionnaire was used to gather data prospectively. Demographic data- Data on age, sex, age at onset of symptoms of Ankylosing Spondylitis, age of onset of symptoms of hip involvement, age at diagnosis, and symptom duration were recorded. Age at symptom onset was defined as the time when the first symptom, whether axial disease, peripheral arthritis, or enthesitis, developed. Interval between onsets of AS to hip involvement noted.

Clinical data: Detailed information related to inflammatory back pain, peripheral arthritis, root joint involvement, enthesitis, extra-articular manifestations (e.g., uveitis, mucocutaneous, gastrointestinal, etc.), family history, treatment History, and other past medical history was obtained. Family history was defined as first- or second-degree relative with AS or chronic inflammatory bowel disease or psoriasis. Inflammatory back pain was diagnosed according to the criteria which consisted of[1] morning stiffness of >30 min duration,[2] improvement in back pain with exercise but not with rest,[3] awakening because of back pain during the second half of the night only, and[4] alternating buttock pain. If at least two of these four parameters were fulfilled, the patient was considered to have inflammatory back pain. Peripheral arthritis was defined as presence of swelling and/or restricted movement in at least one peripheral joint and/or history of previous swelling in at least one peripheral joint confirmed by a rheumatologist. Enthesitis was defined as inflammation and/or pain of peripheral enthesis, such as calcaneal insertion of the Achilles tendon, plantar fascia, tibial tuberosity, greater trochanter, chondro-sternal junction, and iliac crest. Attempt was made to identify differences in clinical characteristics based on presence or absence of Hip joint involvement, gender, and juvenile onset AS (JOAS, onset before the 16 years of age) vs. adult onset AS (AOAS). Clinical Assessment scoring, for the assessment of disease severity and functional capacities:[1] disease activity by Bath Ankylosing Spondylitis Disease Activity Index (BASDAI);[2] function by Bath Ankylosing Spondylitis Functional Index (BASFI) ; and[3] damage or deformity of the spine by Bath Ankylosing Spondylitis Metrology Index (BASMI). Laboratory data Routine laboratory investigations, including complete blood count, erythrocyte sedimentation rate (ESR), liver enzymes, were recorded for most patients. HLAB27 status was also noted. Radiological data all the available radiographs, including spine, pelvis, and other joints, were obtained and reports recorded in case record form.

RESULTS

In our study, there were, 39 (65%) males and 21 (35%) females, aging from 11 - 60 years. Male to female ratio is 1.85:1. Out of 60 patients 55(91.6%) were HLA B27 positive and 5 (8.33%) were HLA B27 negative. Hip joint involvement was present in 17 (28.3%) patients and 43 (71.6%) patients did not have hip joint

involvement.(Table 1).Out of 17 patients, with hip joint involvement, in our study 10(58%) were males and 7 (41%) were females. Average age of onset of Ankylosing spondylitis in this study is 22.97 years. Patients with hip joint involvement had earlier onset (22.2 years) than those without hip joint involvement (23.8 years.). Juvenile onset AS was seen in 10 patients out of which 5 (50%) patients had hip joint involvement. Total no. of patients with adult onset of AS was 50 (83%), out of which 10 (20%) had hip joint involvement. Interval between onset of AS to hip joint involvement is 8.3 years in Males and 2.71 years in females. Mean Schober of patients with hip joint involvement is 2,17 cms and without hip involvement is 3.33 cms. Chest expansion in patients with hip involvement is 2,35 cms and without hip involvement is 3.20 cms. Mean BASDAI was 6.21 in patients with hip involvemenr and 4.59 without hip joint involvement. Mean BASFI in patients with hip involvement was 7.95 and without hip involvement was 3.43. Mean BASMI in patients with hip involvement is 5.8 and without hip involvement is 1.95.Mean ESR in patients with hip joint involvement was 71.41 and without hip involvement was 42.60 at the end of 1hr. P values of schober test, chest expansion, BASFI,BASMI and ESR were very significant. (Table 2).

Table 1: Break up of patients in correlation to hip joint involvement and HLA B 27

Total no. of patients	With hip joint involvement	Without hip joint involvement	HLA B27 Positive	HLA B27 Negative
60	17	43	55	5
Males (39)	10	29	36	3
Females(21)	7	14	19	2
Juvenile onset(10)	5	5	5	5
Adult onset(50)	12	38	45	5

Table 2: Clinical comparison of patients with and without hip joint involvement

Mean	With Hip joint involvement	Without Hip joint Involvement	P value
Schober's test(cms)	2.17	3.33	0.0009
Chest Expansion(cms)	2.35	3.2	0.0071
BASDAI	6.21	4.59	0.0625(NS)
BASFI	7.95	3.43	0.0001
BASMI	5.8	1.95	0.0001
ESR	71.4	42.6	0.0001

DISCUSSION

This, prospective study, was aimed mainly at gathering information regarding, the demographic, clinical and laboratory features of hip involvement in Ankylosing Spondylitis (AS) patients at presentation. As per study done by Reveille *et al*, most of our patients, also, were below age of 40 years[14]. Average age of onset of AS in this study is, 22.2 years, than, those without hip involvement are 23.8 years, but the difference is not statistically significant. Age of onset is similar to that found in other study by Calin *et al*. As shown by Joel *et al*, correlation of AS with HLA B27 is 92% and 5% HLA B27 negative patients[15,16]. As per study done by Bert *et al*, 29% of their patients with hip joint involvement had a juvenile onset of disease vs. 15% without hip involvement had juvenile disease and we also found, in our study, that patients with juvenile onset AS has early hip joint involvement as compared to adult onset AS[8]. Study done by J. S. Marks *et al*, onset of development of hip joint involvement in AS is 10 years and in females is 5 years [17]. In our study, it is 8.3 years in males and 2.7 years in female respectively. As reported in the literature, M: F ratio is 9:1, but in our study, M:F ratio is 1.85:1, which reflects that disease is not uncommon in female[18-20]. Patients with hip involvement had higher disease activity (6.21), as measured by BASDAI, than in patients without hip involvement. (4.59), but the difference is statistically not significant. Patients with hip involvement have high BASFI scores than without hip involvement. Hip involvement also affects, other activities related to spinal mobility. An alternative explanation could involve the association of hip involvement with more severe axial disease in terms of ankylosis progression. High disease activity (High BASDAI score) and worse physical function (High BASFI score) are closely related to health care utilization, work loss, sick leave and associated cost of illness[21-24]. High mean BASMI in patients with hip involvement has significantly limited lumbar flexion and limited cervical rotation. Higher ESR in patients with peripheral arthritis has been reported, could represent more severe inflammation among those with peripheral arthritis[25]. Patients of ankylosing spondylitis should be screened for hip joint involvement, as early diagnosis and treatment can improve prognosis of patients and functional impairment.

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