

Frequency of cardiac involvement among patients with Ankylosing Spondylitis

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ABSTRACT

Background and aims: Ankylosing spondylitis (AS) is an idiopathic chronic inflammatory disease mainly involves sacroiliac and axial joints; but it may also have extra-articular involvement. Accordingly, this study was designed to determine the frequency of cardiac involvement among patients with ankylosing spondylitis.

Methods: This study was performed as a descriptive-analytical cross-sectional survey. In this study 50 consecutive patients with AS and 40 normal healthy subjects were enrolled and compared for cardiologic manifestations.

Results: The frequency of cardiac involvement was similar between AS patients and normal subjects ($P>0.05$). However, there was significant difference between 2 groups in point of mitral valve prolapse and mitral regurgitation ($P<0.05$).

Conclusions: Totally, according to the obtained results, it may be concluded that the frequency of cardiac involvement in AS patients and normal subjects were relatively similar.

Keywords: Ankylosing Spondylitis, Cardiac involvement, Prevalence.

INTRODUCTION

Ankylosing spondylitis (AS) is an idiopathic chronic inflammatory disease belonging to the group of spondyloarthritides associated with HLA B-27 involving sacroiliac and axial and also peripheral joints and it predominantly affects the spine.^{1,2} It also has extra particular involvements such as acute anterior uveitis, cardiac conductive problem, lung upper lobe fibrosis, neurological involvement, and amyloidosis.³⁻⁵ Prevalence of AS in northern America is relatively 0.2%⁶, and in Europe the frequency of this disorder is even more.^{7,8} The related incidence is also 7.3 to 8.9 per 100,000 subjects every year. Male to female ratio is 3-5 to one and the

clinical manifestations are different between the two sexes with less probability of progression to vertebral deformity.^{9,10}

AS patients, regarding to multi-system involvements, not only experience somatic problems but also psychological problems and totally their life quality may be decreased.^{11,12} So, rapid diagnosis and treatment in each system is crucial.^{13,14} However, the immune dysfunction is the hallmark of Ankylosing spondylitis, it may affect important vital organs such as cardiovascular system. The primary site of inflammation in AS is the entheses, the sites of insertion of tendons and ligaments into the bone. The importance is

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also more increased for involvement of essential organs such as cardiac system due to the decreased morbidity and mortality in early-diagnosis cases with prompt treatment. Accordingly this study was designed to determine the frequency of cardiac involvement in patients with ankylosing spondylitis.

METHODS

This observational cross-sectional comparative study was performed on 50 patients with AS (according to New York Criteria) attending to three training referral health care centre and they were selected in a census manner. For all the patients, in their visits, clinical examination, laboratory assessments especially for HLA-B27, and radiographic studies of spinal column and sacroiliac joints were performed and the grade of disease was determined.

We also selected a comparison group including 40 normal healthy individuals among the subjects who associated with patients and had no sign or symptom of AS or other rheumatologic diseases. The patients in two groups were similar for their age, sex, smoking status, and background history of diseases such as hypertension, ischemic heart disease, and diabetes.

Data analysis was performed among 90 subjects including 40 subjects in control group and 50 AS patients in intervention group. Data analysis was performed by SPSS (version 18.0) software [Statistical Procedures for Social Sciences; Chicago, Illinois, USA]. Chi-Square and independent-sample-T tests were used and P values less than 0.05 was considered statistically significant.

RESULTS

The mean (\pm standard deviation) age of control and patients groups were 33.97 ± 10.72 and 33.65 ± 10.32 years, respectively ($P > 0.05$). Thirty seven subjects (92.5%) in comparison group and 46 patients (92%) in case group were male ($P > 0.05$). The mean (\pm standard deviation) duration of involvement was 8.6 ± 6.3 years.

In AS group, 48 patients (96%) had low back pain, 43 subjects (86%) had enteritis, 50 patients (100%) had sacroileitis, and 22 subjects (44%) had peripheral arthritis. The HLA-B27 was positive in 27 patients (54%). The involvement was unilateral in one patient (2%). The frequency of cardiac involvement was similar across the groups (Table 1); however, the difference was significant for mitral valve prolapse and mitral regurgitation ($P < 0.05$).

Table 1: Cardiac involvement in AS patients and comparison groups

Involvement Type	AS Patients	Comparison Group	P Value
Aortic Stenosis	3(6%)	----	>0.05
Aortic insufficiency	3(6%)	2(5%)	>0.05
Mitral Stenosis	1(2%)	1(2.5%)	>0.05
Mitral Regurgitation	9(18%)	----	0.004
Mitral Valve Prolapse	11(22%)	2(5%)	0.023
Tricuspid Stenosis	1(2%)	----	>0.05
Tricuspid Regurgitation	1(2%)	----	>0.05
Pulmonary Regurgitation	----	----	>0.05
Pulmonary Stenosis	1(2%)	----	>0.05
Abnormal Electrocardiogram	1(2%)*	4(10%)**	>0.05

*As Right bundle branch block; **2 cases of PVC, one case of right bundle branch block, and one invert T case

DISCUSSION

Heart involvement is the main cause of mortality and morbidity in MS patients.¹⁵ This study showed that mitral valve prolapse and regurgitation were the only cardiac involvements differed between AS patients and comparison group. These two involvements were also the most common ones in AS patients. In the conducted study in Turkey¹⁶ among 88 AS patients, 5.7% had mitral valve prolapse and 5.7% and 2.3% had mitral regurgitation and aortic insufficiency, respectively. The reported frequencies in our study were higher.

In conducted study in Hungary¹⁷ among 100 AS patients, 14% had cardiac valvular involvement and 17% had conductive disorder. However, in our study the frequency of valvular involvement was higher and the conductive disorders were less common. Another study in Ireland¹⁸ showed that 7 out of 24 AS patients had cardiac involvement of which one patient had pericardial effusion, three had conductive disorder, and 2 had aortic insufficiency. These frequencies showed that valvular disorder in their study were lower and the conductive disorders were higher.

In the study performed in the United States,¹⁹ 44 AS patients and 25 healthy volunteers were compared and it was seen that 82% and 27% in patients and control groups had aortic valve disorder that the observed frequencies were lower in our study. Another study in the United States²⁰ demonstrated that 10% and 33% of AS patients had aortic valve involvement and conductive disorders, but the frequency of valvular disorders was higher in our study and the conductive problems were less common. A different study²¹ indicated that 5 patients of 28 AS patients had dilated cardiomyopathy in echocardiographic evaluation, although we could not integrate the echocardiographic findings in our study which was a limitation of our study. Also Park et al demonstrated

that the prevalence of aortic and mitral regurgitation was very low and there was no significant difference between the control and the patient groups.²² However, in our study the mitral valve regurgitation was significantly higher in patients with AS in comparison with control subjects.

CONCLUSION

It may be concluded that the frequency of cardiac involvement in AS and normal subjects was similar, but some types such as mitral regurgitation and mitral valve prolapse were more common among AS patients compared with normal healthy subjects. However, further studies are required for certification of our findings in current study.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interests.

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REFERENCES

1. Van der Linden S1, van der Heijde D.. Clinical aspects, outcome assessment, and management of ankylosing spondylitis and postenteric reactive arthritis. *Curr Opin Rheumatol.* 2000; 12(4): 263-8.
2. Van der Linden S, van der Heijde D. Ankylosing spondylitis. Clinical features. *Rheum Dis Clin North Am.* 1998; 24(4): 663-76.
3. Khan MA. Update on spondyloarthropathies. *Ann Intern Med.* 2002; 136(12): 896-907.
4. Reveille JD, Arnett FC. Spondyloarthritis: update on pathogenesis and management. *Am J Med.* 2005; 118(6): 592-603.

5. Braun J, Sieper J. Ankylosing spondylitis. *Lancet*. 2007; 369(9570): 1379-90.
6. Braun J, Bollow M, Remlinger G, Eggens U, Rudwaleit M, Distler A, et al. Prevalence of spondylarthropathies in HLA-B27 positive and negative blood donors. *Arthritis Rheum*. 1998; 41(1): 58-67.
7. Trontzas P, Andrianakos A, Miyakis S, Pantelidou K, Vafiadou E, Garantziotou V, et al. Seronegative spondyloarthropathies in Greece: a population-based study of prevalence, clinical pattern, and management. The ESORDIG study. *Clin Rheumatol*. 2005; 24(6): 583-9.
8. De Angelis R, Salaffi F, Grassi W. Prevalence of spondyloarthropathies in an Italian population sample: a regional community-based study. *Scand J Rheumatol*. 2007; 36(1): 14-21.
9. Zeidler H, Mau W, Khan MA. Undifferentiated spondyloarthropathies. *Rheum Dis Clin North Am*. 1992; 18(1): 187-202.
10. Lee W, Reveille JD, Davis JC, Jr., Learch TJ, Ward MM, Weisman MH. Are there gender differences in severity of ankylosing spondylitis? Results from the PSOAS cohort. *Ann Rheum Dis*. 2007; 66(5): 633-8.
11. Yilmaz O, Tutoglu A, Garip Y, Ozcan E, Bodur H. Health-related quality of life in Turkish patients with ankylosing spondylitis: impact of peripheral involvement on quality of life in terms of disease activity, functional status, severity of pain, and social and emotional functioning. *Rheumatol Int*. 2013; 33(5): 1159-63.
12. Davis JC, Jr., Revicki D, van der Heijde DM, Rentz AM, Wong RL, Kupper H, et al. Health-related quality of life outcomes in patients with active ankylosing spondylitis treated with adalimumab: results from a randomized controlled study. *Arthritis Rheum*. 2007; 57(6): 1050-7.
13. Braun J, Pincus T. Mortality, course of disease and prognosis of patients with ankylosing spondylitis. *Clin Exp Rheumatol*. 2002; 20(6 Suppl 28): S16-22.
14. Dincer U, Cakar E, Kiralp MZ, Dursun H. Diagnosis delay in patients with ankylosing spondylitis: possible reasons and proposals for new diagnostic criteria. *Clin Rheumatol*. 2008; 27(4): 457-62.
15. O'Neill TW, Bresnihan B. The heart in ankylosing spondylitis. *Ann Rheum Dis*. 1992; 51(6): 705-6.
16. Yildirim A, Aksoyek S, Calguneri M, Oto A, Kes S. Echocardiographic evidence of cardiac involvement in ankylosing spondylitis. *Clin Rheumatol*. 2002; 21(2): 129-34.
17. Nagyhegyi G, Nadas I, Banyai F, Luzsa G, Geher P, Molnar J, et al. Cardiac and cardiopulmonary disorders in patients with ankylosing spondylitis and rheumatoid arthritis. *Clin Exp Rheumatol*. 1988; 6(1): 17-26.
18. O'Neill TW, King G, Graham IM, Molony J, Bresnihan B. Echocardiographic abnormalities in ankylosing spondylitis. *Ann Rheum Dis*. 1992; 51(5): 652-4.
19. Roldan CA, Chavez J, Wiest PW, Qualls CR, Crawford MH. Aortic root disease and valve disease associated with ankylosing spondylitis. *J Am Coll Cardiol*. 1998; 32(5): 1397-404.
20. Wilkinson M, Bywaters EG. Clinical features and course of ankylosing spondylitis; as seen in a follow-up of 222 hospital referred cases. *Ann Rheum Dis*. 1958; 17(2): 209-28.
21. Brewerton DA, Gibson DG, Goddard DH, Jones TJ, Moore RB, Pease CT, et al. The myocardium in ankylosing spondylitis. A clinical, echocardiographic, and histopathological study. *Lancet*. 1987; 1(8540): 995-8.
22. Park SH, Sohn IS, Joe BH, Hwang HJ, Park CB, Jin ES, et al. Early cardiac valvular changes in ankylosing spondylitis: a transesophageal echocardiography study. *J Cardiovasc Ultrasound*. 2012; 20(1): 30-6.

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