

Original Article**HLA-B27 and Ankylosing Spondylitis - A One Year Study**

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Contact No- 7999895421, Email: [shweta.angel17@gmail.com](mailto:shweta.angel17@gmail.com)**Abstract****Background:** *HLA-B27 also known as Human Leukocyte Antigen is a class I antigen of the major histocompatibility complex and is strongly associated with Ankylosing spondylitis (AS). The purpose of the present study is to investigate the distribution of HLA-B27 in patients with AS of different groups in Indore.***Design and Setting:** *Study design was cross-sectional and the setting was in the rheumatology clinics of Maharaja Yashwant Rao Hospital in Indore where most of Ankylosing spondylitis patients were followed up.***Methods and Materials:** *Patients with diagnosis of AS who met the New York modified criteria for AS was tested for HLA-B27. Approximately 80 patients were tested for HLA-B27 with the help of flowcytometer in the department of pathology, MYH hospital, Indore.***Results:** *Of all the individuals, 66 were positive (82.5%) for HLA-B27.***Conclusion:** *HLA-B27 in our small group of patients is present in 82.5%, suggests that HLA-B27 is important factor in the pathogenesis of Ankylosing spondylitis.***Keywords:** *Ankylosing spondylitis (AS), and HLA-B27, Male (M), Female (F).***Introduction**

The human leukocyte antigen (HLA) system is a class I surface antigen encoded by the B locus in the major histocompatibility complex (MHC) in humans. This super locus contains a large number of genes related to immune system functions in humans. Since, the first association was described in 1973 between the presence of HLA-B27 + tissue type, Ankylosing spondylitis and AAU (Acute Anterior Uveitis).<sup>[1,2]</sup>

Of all the known association between HLA and diseases, strongest association is seen in AS (ankylosing spondylitis) the b27 antigen is present in over 90% of patients with AS as compared with B27 prevalence of 8% in Caucasians in general.

Other associated diseases are reiter's syndrome, reactive arthritis, and acute anterior uveitis. These diseases are so strongly interrelated in the presence of B27 and called as B27 associated diseases or Seronegative spondyloarthropathies.<sup>[3]</sup>

In present study, antibody against HLA-B27/7 antigen was used to study the association with AS.

## Material and Methods

### 1. General Information

A total of 80 patients having clinical features AS who were admitted to MYH hospital, Indore in the department of rheumatology since June 2017 to May 2018 were analyzed.

The age of onset, sex, HLA-B27 antigen detection and its association with AS was investigated.

### 2. Diagnostic criteria of AS

Eighty patients with diagnosis of AS who met the 1984 New York modified criteria for AS were tested for HLA-B27. Criteria consisting of pain, of insidious onset, in lumbar spine and morning stiffness for more than three months, improved by exercise but not relieved by rest; limitation of lumbar spine motion in both the sagittal and frontal planes; limitation of chest expansion relative to normal values for age and gender; and 2) radiological criterion: bilateral grade 2–4 or unilateral grade 3–4 sacroiliitis on X-ray.<sup>[4]</sup>

Patients with positive rheumatoid factor were excluded from the study.

3. Detection of HLA- B27 antigen – the HLA-B27 antigen analysis was performed using Flowcytometer- Navios type (Beckman coulter – 8 colors and two lasers).

## Results

### 1. Sex and Age of onset

A total of 80 cases with HLA-B27 associated AS and AAU, including 60 males and 20 females (3:1) were enrolled as shown in table I, suggesting significantly higher incidence in male population against the female population. Age of onset ranged from 06 to 75 years. The mean age of onset is 16-30 years for male patients which was significantly younger than female patients with 31-45 years.

**Table I-** Sex and age of 80 patients with AS

No. of patients	80	
Sex	M	F
	60	20

### 2. Detection of HLA- B27 antigen

A total of 80 patients of AS were analyzed for HLA- B27. As shown in table II, 66 patients were positive for HLA- B27 antigen including 55 males and 11 females. The positive rate of HLA-B27 was 92.0% (55/60) for males and 55% (11/20) for females.

**Table II-** Prevalence of HLA-B27 in 80 patients with AS

HLA-B27	Positive		Negative	
No. of cases	66		14	
	M	F	M	F
	55	11	05	09

## Discussion

In the population of patients with AS approximately 75% were male and rests of the patients are female, giving the ratio of 3:1 and age of onset is approximately 16-30 years. The incidence of AS when correlated with sex shows the little variation.

Yuqin Wang et al found the ratio of male and female patient is 2.4:1 and age of onset is 37± 12 years.<sup>[5]</sup>

Prevalence of HLA B27/B7 antigen is 82.5 % in the patients of AS predominance is seen here also in the male patients. Yang et al found 75.2% of males with HLA B27/B7 and Wang et al also reported 70.9% prevalence of HLAB27/B7 in males compared to 29.1 % in females.<sup>[5,6]</sup>

Venera Vasilica et al in 2005 and Pavia et al in 2000 reported that 67.5% patients and 50.0% patients of AS shows the presence of HLA B27/B7.<sup>[7,8]</sup>

## Conclusion

This is the first study to evaluate the prevalence of HLA-B27 among AS patients living in area of Indore. The population studied includes locals of Indore. The results suggest that there is higher

prevalence of HLA-B27 among patients. There is a lack of knowledge about the percentage of HLA-B27 in AS among the Asians .Further studies with larger number of patients in healthy individuals is also needed.

#### Conflict of interest

There is no conflict of interest.

#### References

1. Brewerton DA, Caffrey M, Hart FD, James DCO, Nicholls A, Sturrock RD. Ankylosing spondylitis and HL-A 27. *Lancet* 1973; 1: 904–7.
2. Brewerton DA, Caffrey M, Hart FD, James DCO, Nicholls A, Sturrock RD. Acute anterior uveitis and HL-A 27. *Lancet* 1973; 2: 994-6.
3. Ebringer A. The cross-tolerance hypothesis, HLA-B27 and ankylosing spondylitis. *Br J Rheumatol* 1983; 22: 53-66
4. McCannel CA, Holland GN, Helm CJ, Cornell PJ, Winston JV, Rimmer TG. Causes of uveitis in the general practice of ophthalmology. *Am J Ophthalmol* 1996; 121(1):35-46.
5. Yuqin Wang, Xiaoya Lu, Yulin Wang, Liping Mao, Yunfeng Gu, Pengfei Chen,Meiqin Zheng, Clinical Analysis Of 240 Pateints With HLA-B27 Associated Acute Anterior Uveitis, *Eye science* 2012;27;169-172.
6. Peizeng Yang, Wenjuan Wan, Liping Du, Qingyun Zhou ,Jian Qi,Liang Liang, Chaokui Wang,Lili Wu, Aize Kijlstra, clinical features of HLA –B27 positive acute anterior uveitis with or without Ankylosing spondylitis in a Chinese cohort, *Br J Ophthalmol* 2017;0:1-5.
7. Venera Vasilica Vasilca, Elena Rezus, Petru Cianga, Florin Zugun – Eloae, E. Carasevici, Spondyloarthritis – Associated Hla-B Phenotypes In Northeastern Romania Population, *Journal Of Preventive Medicine* 2005; 13 (3 - 4): 34-42.
8. Eduardo S Paiva, Damien C Macaluso, Albert Edwards, James T Rosenbaum, Characterisation of uveitis in patients with psoriatic arthritis, *Ann Rheum Dis* 2000;59:67–70.