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Full Length Research Paper

HLA-B27 and Ankylosing Spondylitis in Jordan

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To describe HLA-B27 pattern in a group of Jordanian patients with ankylosing spondylitis who were diagnosed and followed up at the Rheumatology and Rehabilitation clinic - King Hussein Medical Centre during the period April, 2004 to June, 2010 and to review their clinical profile. A retrospective review of the medical records of 135 patients diagnosed to have Ankylosing Spondylitis attending the Rheumatology and Rehabilitation clinic at King Hussein Medical Centre. Patients were diagnosed to have Ankylosing Spondylitis according to the modified New York criteria. Data collected include: age, gender, duration of disease, demography, HLA-B27 positivity, X-ray findings and clinical profile. One hundred medical records were included as they contained sufficient data and the rest were eliminated. They were 89 males and 11 females with male to female ratio 8.1:1. Their age ranged between 21-44 years (mean age 34.7 years). HLA-B27 was found to be positive in 72% (72 patients). The majority were living in the northern part of Jordan (70%). All subjects had radiological evidence of bilateral sacroiliitis grade \geq II, and clinical evidence of Ankylosing Spondylitis. The HLA-B27 positivity is significantly associated with Ankylosing Spondylitis in Jordan and it is more prevalent in northern part of the country.

Keywords: Ankylosing Spondylitis (A.S), Human Leukocyte Antigen (HLA-B27), Sacroiliitis.

INTRODUCTION

Ankylosing Spondylitis (A.S) is a chronic inflammatory joint disease of axial joint and in particular both sacroiliac joint. Academic interest of (A.S) and related diseases was greatly stimulated by the discovery in 1973 of its relation to human leukocyte antigen (HLA- B27) (Colbert et al., 2010) and has remained extremely high, not least because of unique opportunities to study interactions of genetic and environmental factors in causing disease.

The HLA-B27 antigen is a class 1 antigen of the major histocompatibility complex occurs in 6-14% of white individuals, while 0.2-1.0% of whites have (A.S). The distribution follows the population frequency of HLA-B27 and is more common in whites than blacks.

Hereditary factors play an important role in the development of the spondyloarthropathies.

It is known that randomly selected individuals with HLA-B27 may have only a 2-10% chance of developing disease, whereas the risk for HLA-B27 positive relatives of HLA-B27 positive patients with ankylosing spondylitis is 25-50% (Taurog, 2010).

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Table1. Modified New York criteria

Modified New York criteria	
A definite diagnosis of ankylosing spondylitis requires the radiological criterion and at least one clinical criterion to be satisfied as defined below.	
Radiological criterion	
Sacroiliitis at least grade 2 bilaterally or grade 3 or 4 unilaterally.	
Clinical criteria	
•	Low back pain and stiffness for more than 3 months that improves with exercise but is not relieved by rest.
•	Limitation of motion of the lumbar spine in both the sagittal and frontal planes.
•	Limitation of chest expansion relative to normal values correlated for age and sex.

Table 2. Characteristic of 100 Patients with adult-onset A.S

Demographics	All Pt.	Females	Males
No.	100	11	89
Average age (yr)	34.7	34.5	35
Average Duration (yr)	11	11.9	10.1
Average age of onset (yr)	26	26.5	25.6
Prevalence of HLA27	72%		

HLA-B27 Positivity in AS Patients

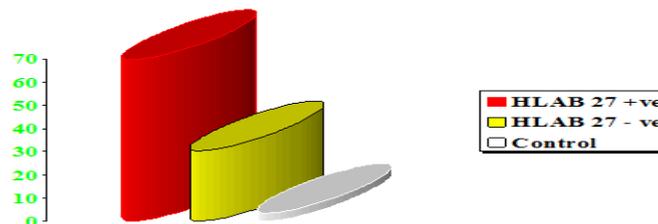


Figure 1. HLA-B27 positivity association in Jordanian patient

METHODS

A retrospective review of 135 hospitals medical records of patients who fulfilled and met the modified New York criteria of A.S followed up at the department of Rheumatology and Rehabilitation clinic - King Hussein Medical Centre during the period April, 2004 to June, 2010.

Data collected included age, gender, duration, demography, HLA-B27 association, imaging and clinical profile.

Thirty-five hospital medical records were eliminated as they have insufficient data. The remaining one hundred records which contained sufficient data were further analysed.

Patients were diagnosed to have Ankylosing Spondylitis according to the modified New York criteria (Ozgur and Salih, 2011) (Table.1).

Simple statical methods (median, frequency, and percentage) were used.

RESULTS

One hundred patients were enrolled in this study. There were 89 males and 11 females the ratio was estimated to be (8.1:1). Their age ranged between 21-44 years (yrs) with mean age 34.7 (yrs). The average age of onset was 26(yrs). The average duration was 11(yrs). Seventy two patients (72%) found to have positive HL-B27. Seventy patients (70%) of them live in the northern part of Jordan.

All subjects had radiological evidence of bilateral sacroiliitis grade \geq II, squaring of vertebrae (50%), and Bamboo spine (18%). All have definite A.S based on modified New York criteria. (Table.2), (Fig. 1-2).

Extra axial findings in the recruited subjects were 34% with peripheral arthritis, 13% associated with acute anterior uveitis, and 2% complicated with renal amyloidosis (Table.3).

Geographic Distribution HLA-B27 in Jordan

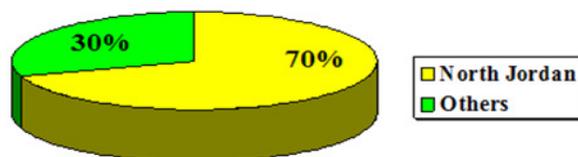


Figure 2. Geographical distribution of patients

Table 3. Prevalence of HLA-B27 in Neighboring Countries.

<i>Prevalence of HLA-B27 in Neighboring Countries</i>			
Country	Author and Journals	HLA B27- Pos	
		AS	Control
Lebanon	H. Awada et. Al Arthritis Rheum 1997	13.8%	4%
UAE	Al Attia HM et al Rheumatol Int 1998	Arabs 56% Asian 81%	
KSA	Al-Arfaj A Clin Rheumatol 1996	67%	
Kuwait	Alharbi SA et al Eur J Immunogenet 1996	25.7%	4%
Iran	Davatchi F et al J Rheumatol supp 1977	92%	2.5%
India	Mishra MN et al Iran J Immunol	76%	3.5%
Israel	Brautbar C et al J Rheumatol Supp 1977	79%	3%

Table 4. Extra Axial clinical Feature in Patients.

Extra axial clinical Features	(%)
Peripheral arthritis	34 %
Acute anterior uveitis	13 %
Renal amyloidosis	2 %

DISCUSSION

This study was performed to describe the HLA-B27 pattern in a group of Jordanian ankylosing spondylitis patients. Such epidemiological data were not well studied in Jordan and neighboring countries. In this study the percentage of HLA-B27 positivity was (72%), which is slightly lower than the findings in two previous Jordanian studies, though these studies were relatively small in number (AL-Amayreh and Zaiadat, 2000; Askari et al., 2000). The prevalence of HLA-B27 among AS patients in the Arab world is generally lower than the worldwide

figure, ranging from 13.8 to 84%. The prevalence of HLA B27 in Iraq was (84%), in UAE (56%), whereas in KSA it was (67%). On the other hand it was (58.6)% in Egypt, (60)% in Syria, (13.8%) in Lebanon and (73.4)% in Iran (Al-Arfaj, 1996; Alharbi et al., 1996; Al-Attia and Al-Amiri, 1995; Awada et al., 1997; Davatchi et al., 1977). One study from Israel showed similar incidence compared to other countries in the region (79%) (Brautbar et al., 1977), but remains lower than most of European studies (Table.3).

A new study was conducted to assess the prevalence of HLA-B27 among patients with AS living in Qatar, the

overall percentage was (69%) and a higher prevalence was found among local population (82%) (Abdelrahman et al., 2012).

Mishra MN. et al reported that HLA-B27 positivity is (76%) in Indian patient with A.S (Mishra and Singal, 2010).

The incidence of HLAB27 positivity is higher in Europe as Masi et al documented that HL-B27 is present in over than (90%) of patient with A.S (Masi and Medsger, 1979).

The gender distribution showed male predominance which is similar to other countries.

It was of interest to find that more than two thirds (70%) of patients with positive HLA-B27 were coming from the northern part of Jordan which indicates the importance of geographical factor (Figure. 2).

Another findings in our study was peripheral arthritis which was seen in (34%) similar to previous study conducted in Saudia Arabia (33%) whereas (13%) associated with acute anterior uveitis higher than the incidence reported in the same study by AL-Arfaj (7%) (Al-Arfaj, 1996), however (2%) developed renal amyloidosis.

As most of patients with ankylosing spondylitis are HLA-B27 positive. They should be aware that the risk of transmitting the same antigen to their children is (50%). Thereafter, children who are HLA- B27 positive have a 1 in 3 chance of developing A.S (Taurog, 2010).

CONCLUSION

The HLA-B27 positivity is significantly associated with A.S in Jordan and it is more prevalent in northern part of the country.

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