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The demographic and clinical spectrum of Arab versus Asian patients with ankylosing spondylitis in the UAE

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Abstract Ankylosing spondylitis is a rather uncommon condition in the UAE. Over a period of 10 years. 28 hospital-based patients diagnosed as having AS were retrospectively studied. They included 17 Arabs and 11 Asians. The onset of AS in most patients in this study was in adulthood (mean age at onset was 27.7 years in Arabs and 28.75 years in Asians). HLA B27 was positive in 56 and 81% in these two populations, respectively (P>0.05). Analysis of these figures, however, along with previous relevant published data, could indicate that Arabs with AS are less likely to be B27-positive than Asians. Among the Arab patients there was not a single case from the local community, which could be attributed to the extremely low rate of B27 phenotype in their normal population. The interracial variations in the frequency of clinical features were statistically insignificant, therefore indicating some degree of similarity in the form and disease expression in both groups. AS is characterized as being predominantly axial in the majority of our patients. Extraspinal (oligo-poly) arthropathy involved mainly hips and knees, and there have been fewer extra-articular manifestations compared with other series published.

Key words Ankylosing spondylitis · HLA B27 · Arabs · Asians · Population survey

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Introduction

Ankylosing spondylitis (AS) is a chronic inflammatory condition that chiefly affects the sacroiliac joints and the spine. The strong association of AS with the histocompatibility antigen HLA B27 (B27) has been amply confirmed. Nonetheless, the strength of this association and the form and disease expression vary among various racial groups. B27 exhibits marked differences in its prevalence in different normal populations. The highest rate is in natives of the circumpolar Arctic and Subarctic regions, but it is virtually absent or rare in the indigenous populations of South America, equitorial and southern Africa, and Australia. The prevalence rate can also differ among subgroups with the major racial groups [1, 2].

In a recent survey in healthy potential live donors for renal and bone marrow transplantation in the United Arab Emirates (UAE), the antigen was positive in 5.7% in Arabs and 7.4% in Asians from the Indian subcontinent. Some significant variations of the marker have been observed among the Arab subgroups. Arabs from the UAE exhibit an extremely low rate (0.5%), and unexpectedly some Arabs with African admixture show relatively higher frequency rates of B27 [3].

In this report we present the profile of AS and its relationship to B27, as seen in a group of Arab and Asian patients in the UAE. Although based on hospital data, the report provides potential insight into the status of this genetic marker and AS in this community. It would also be useful in HLA and disease-associated studies.

Patients and methods

Asians (from the Indian subcontinent) and Arabs (local people and Arab expatriates) make up the bulk (85%) of the general population (nearly 2 million) in the UAE. Abu Dhabi Emirate, including Abu Dhabi City, has a population of 0.6 million inhabitants. Mafraq Hospital where this study was conducted is one of three general hospitals that provide health care in Abu Dhabi. The study was approved by the ethics committee of the hospital.

Table 1 The frequency of general features of AS in Arabs and Asians (*NS* non-significant)

	Arabs (17)	Asians (11)	*P* value
M : F	4.6 : 1	10 : 1	
Age (mean) in years	34	33.5	
Age at onset (mean) in years	27.7	28.75	
Duration of illness (mean) in years	6	4.8	
Other enthesopathies	4/16 (25%)	2/10 (20%)	NS
Uveitis	3/15 (20%)	1/11 (9%)	NS
Pulmonary involvement	1/41 (7%) (restrictive pulmonary defect)	2/10 (20%) (restrictive pulmonary defect; apical fibrosis)	NS
Other joint involvement	4/7 (23.5%) (2 with hip involvement; 2 with knee involvement)	4/11 (36%) (3 with hip involvement; 1 with multiple large and small joint involvement)	NS

Table 2 Relationship between B27 in healthy individuals and patients with AS in both groups (*PS* present study)

Population	Patients		Healthy individuals		Odds ratio	95% confidence interval
	No.	B27+%	No.	B27+%		
Arabs	16 (PS)	9 (56%)	559 (3)	32 (5.7%)	21.1	7.4–60.5
	32 (1)	26 (81%)	355 (1)	11 (3%)	135.5	46.4–395
Asians	11 (PS)	9 (81%)	176 (3)	13 (7.4%)	56.4	44.0–288
	130 (1)	(83–100%)	456 (1)	(2–8%)	–	–

Between 1987 and 1996, 28 residents of the city were diagnosed as having AS. Their medical records were retrospectively studied. All were clinically evaluated with particular attention to features known to be associated with spondyloarthropathies. They satisfied the modified New York criteria of definite AS [4]. The spinal limitation was graded as being mild, moderate or severe by self-administered assessment of lumbar and cervical mobility under a clinician's supervision. The patients rated their ability to touch their toes with their knees straight and any difficulty they experience on turning their heads. The radiological diagnosis of sacroilitis was made by a specialist radiologist.

All of the routine hematological and biochemical work-up, rheumatoid factor and brucella antibodies were performed by the hospital laboratories. The ECG, echocardiography recordings and appropriate radiographs of clinically involved sites were also reviewed. In patients with associated renal calculi, the diagnosis of the latter was established by a specialist urologist, along with positive appropriate radiological tests and biochemical analysis of crystaluria. Tissue typing for HLA B27 was also carried out locally, using microlymphocytotoxicity test on predropped sera (Biotest, Frankfurt/M, Germany). The test does not recognize the B27 subtypes. Fisher's exact test was used to test for statistical significance in the difference between percentages. For these tests a two-sided P value of <0.05 was considered significant. We also calculated odds ratio point estimates and their 95% confidence interval. An odds ratio was considered significant if its 95% confidence interval excluded 1. The report does not discuss the treatment modalities of the patients.

Results

Seventeen patients were Arabs and 11 were Asians. They were 24 males and 4 females (M : F 6 : 1). Their mean age at assessment and that at onset were 34 and 28 years, respectively. In the majority of patients the onset of AS occurred in adulthood. The group of Arabs consisted of individuals from Egypt, Lebanon, Palestine, Jordan, Syria and Oman, and three other Arabs of African admixture but not a single patient from the local community. The Asian group was a mixture of Indian, Pakistani and Bengali pateints. A family history of AS was positive in only two Arabs and in none of the Asians. Brucella serology and RF were negative in all patients. HLA B27 was positive in 18/27 tested patients (66.6%). Bilateral and unilateral sacroiliitis were present in 13 and 4 Arabs, respectively, versus 8 and 3 in their Asian counterparts. Significant spinal disease with limitation (moderate to severe) was observed in 4/17 in Arabs compared to 6/11 in Asians, ($P>0.05$). Marked disability (ARA grade 4) [5], however, occurred in one Arab female with severe hip joint disease. Other features of the disease in each population are shown in Table 1. In relation to genetic heterogeneity, uveitis, peripheral arthropathy and respiratory complications occurred in 3/18, 6/18 and 3/18, respectively, in B27-positive patients compared to 1/9, 2/9, and 0/9 in B27-negative patients ($P>0.05$). Associated conditions with AS included the presence of calcium oxalate renal stones in four Arabs and one Asian. In four of them, the onset of symptoms began during the course of AS illness and was not related to the bacterial overgrowth syndrome. Others were diabetes mellitus (DM), hypertension, migraine, idiopathic mixed peripheral neuropathy and, interestingly, a case of diffuse idiopathic skeletal hyperostosis (DISH). The relationship between B27 and AS in both groups is shown in Table 2.

Discussion

The small number of cases contracted over a period of 10 years in this report may suggest that AS is an uncom-

mon disease in the community. Nonetheless, since there are another two general hospitals in the city to which patients can also be referred and since our report was not a formal epidemiological study, the incidence and prevalence of AS cannot be extrapolated. The quoted sex ratio of AS has ranged from 10 : 1 to the most recent and widely accepted 2.5 – 5.1 M : F range [6]. In this study, the relatively high ratio of the whole group and that of the Asians alone are likely to have been influenced by the fact that a sizable population of married Asian males are living alone in the UAE. The lack of cases of AS in UAE Arabs indeed conformed with earlier views indicating that those Arabs have a negligible risk of developing B27-associated diseases, as their normal population exhibited an extremely low prevalence of the marker [3]. Neighboring healthy Saudis were also shown to have low B27 (1.3%) [7]. Reports on B27 phenotype in healthy Asians from the Indian subcontinent indicated prevalence rates of 2 – 9% in various studied groups [1 – 3, 8, 9]. Asian patients, on the other hand, including individuals in this study, have an increased prevalence of B27, which ranges from 73 to 100% [1, 2, 9, 10]. With regard to B27 subtypes, AS or related spondyloarthropathies have so far been documented in individuals possessing any one of the following subtypes: B2701, B2702, B2704, B2705, or B2707 [2]. Asian Indians have been found to have four of these, namely, B2702, B2704, B2705 or B2707 [2]. The corresponding figures of B27 subtypes in Arabs are so far missing in the literature. B27 data nonetheless (including our present figure) indicate a relative decline in the marker in the groups of patients studied.

In a recent study, a rate of 67% was reported in a group of Arab patients in Saudi Arabia [11] compared to 81% quoted earlier by Khan [1]. These data may, however, suggest that Arabs with AS would less likely be B27-positive than Asians and certainly less likely than other populations known to have higher rates of the marker like Caucasians, for example [1, 2]. In future, screening Arabs for B27 subtypes and perhaps Bw60 (a subdivision of HLA B40) would probably provide further demarcation in the relationship between AS and B27 in this ethnic group. HLA Bw60 was found to increase susceptibility to AS in HLA B27-positive Caucasian patients [12].

The extra-spinal arthropathy that involved mainly the hips and knees in our patients was in contrast to the multiplicity and higher prevalence of peripheral arthropathies in other series. Nearly 75% of Singapore Chinese [13] and about one quarter to half of Caucasian patients [14, 15] were reported to have multiple peripheral arthropathies. A dominant lower limb (oligo- to polyarthritis) was seen in 40% of Asian Indians with AS [9] and in one-third of the Arab group in Saudi Arabia [11]. Other extra-articular manifestations were also not numerous in our patients. Uveitis, for instance, has been reported to occur in 25 – 40% of Caucasians [16], 20% in Asian Indians [17], between 7.8 and 11% in Chinese [13] and 0% in Zimbabwe Africans [18]. None of our patients had cardiac involvement attributable to AS. Similar findings have been observed in the predominantly Arab group from Saudi Arabia and in Singapore Chinese [11, 13]. In patients from south India, aortic and mitral regurgitation and conduction defects occurred in 8, 2 and 2%, respectively [17]. In the West, conduction defects and arrythmias occur in 5 – 10% of men with AS versus a prevalence of aortic regurgitation of up to 90% [19]. The genetic heterogeneity-related data showed a higher prevalence of uveitis and peripheral arthropathy in B27-positive patients, which was consistent with the widely accepted concept that B27-positive patients suffer more often from polyarthropathy that is frequently associated with sacroiliitis and acute anterior uveitis [1, 20]. The failure, however, of these data to reach statistical significance could well be due to the small number of patients in this series. The co-occurrence of renal stones in five cases may be incidental, but more work is required to verify further the background of such an association with AS.

References

1. Khan MA, van der Linden SM (1990) Ankylosing spondylitis and other spondyloarthropathies. Rheum Dis Clin North Am 16: 551 – 579
2. Khan MA (1994) Spondyloarthropathies. Editorial overview. Curr Opin Rheumatol 6: 351 – 353
3. Al-Attia HM, Al-Amiri N (1995) HLA-B27 in healthy adults in UAE. An extremely low prevalence in Emirian Arabs. Scand J Rheumatol 24: 225 – 227
4. Van der Linden SM, Valkenburg HA, Cats A (1984) Evaluation of diagnostic criteria for ankylosing spondylitis. A proposal for modification of the New York criteria. Arthritis Rheum 27: 361 – 368
5. Steinbroker O, Traeger CH, Batterman RC (1949) Therapeutic criteria in rheumatoid arthritis. JAMA 140: 659 – 662
6. Kennedy LG, Will R, Calin A (1993) Sex ratio in the spondyloarthropathies and its relationship to phenotypic expression, mode of inheritance and age at onset. J Rheumatol 20: 1900 – 1904
7. Sheth KV, Edward JA, Godwin JT (1985) Study of the HLA gene and antigen frequency from a Saudi Arabian hospital. Tissue Antigens 25: 156 – 162
8. Zafar N, Askari H, Naqvi A, Hafiz S, Rizvi A (1994) HLA frequencies in the Pakistani population. Transplant Proc 26: 1883
9. Chopra A, Raghunath D, Singh A (1990) Spectrum of seronegative spondarthritides (SSA) with special reference to HLA profile. J Assoc Phys India 38: 351 – 355
10. Contractor NM, Bale UM, Mehta MM, Bhatia HM (1982) HLA and disease in Indian population. Proc Recent Trends Immunohaematol 80 – 88
11. Al Arfaj A (1996) Profile of ankylosing spondylitis in Saudi Arabia. Clin Rheumatol 15: 287 – 289
12. Robinson WP, van der Linden SM, Khan MA, Rentsch HU, Cats A, Russell A, Thomson G (1989) HLA-Bw60 increases susceptibility to ankylosing spondylitis in HLA-B27 + patients. Arthritis Rheum 32: 1135 – 1141
13. Koh WH, Howe HS, Boey ML (1993) Ankylosing spondylitis in Singaporean Chinese- a clinical profile. Singapore Med J 34: 518 – 520
14. Carbone LD, Cooper C, Michet CJ, Atkinson EJ, O'Fallon WM, Melton LJ (1992) Ankylosing spondylitis in Rochester, Minnesota 1935 – 1989. Is the epidemiology changing? Arthritis Rheum 35: 1476 – 1482

15. Hart FD, MacIagan NF (1955) Ankylosing spondylitis. A review of 184 cases. Ann Rheum Dis 14: 77 – 83
16. Edmunds L, Elswood J, Calin A (1991) New light on uveitis in ankylosing spondylitis. J Rheumatol 18: 50 – 52
17. Achuthan K, Porkodi R, Ramakrishnan S, et al. (1990) Pattern of rheumatic diseases in South India. V. Ankylosing spondylitis. A clinical and radiological study. J Assoc Phys India 38: 774 – 776
18. Stein M, Davis P, Emmanuel J, West G (1990) The spondyloarthropathies in Zimbabwe: a clinical and immunogenetic profile. J Rheumatol 17: 1337 – 1339
19. Wolheim FA (1993) Ankylosing spondylitis. In: Kelly WN, Harris E, Ruddy S, Sledge C (eds) Textbook of rheumatology, 4th edn. Saunders, Philadelphia, pp 984
20. Maksymowvch WP, Chou CT, Russell AS (1995) Matching prevalence of peripheral arthritis and acute anterior uveitis in individuals with ankylosing spondylitis. Ann Rheum Dis 54: 128 – 130