ORIGINAL ARTICLE

AXIAL SPONDYLOARTHRITIS IN PATIENTS WITH CHRONIC BACKACHE USING ASSESSMENT OF SPONDYLOARTHRITIS INTERNATIONAL SOCIETY CRITERIA FOR AXIAL SPONDYLOARTHRITIS

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Background: Low back pain (LBP) is considered as one of the most frequent health problems which is responsible for forming a huge worldwide burden. This study was conducted with the aim to determine the frequency of axial-Spondyloarthropathy (axSpA) in patients presenting with chronic backache using Assessment of Spondyloarthritis International Society (ASAS) Criteria for axSpA. **Methods**: A total of 231 participants of either gender were enrolled with complaint of backache of more than or equal to 3 months duration and younger than 45 years. In the first stage, patients were interviewed and examined using standard questionnaire. In the second stage after going through laboratory investigations and imaging patients were classified into either axSpA (those meeting ASAS Criteria for axSpA) or non-SpA. **Results:** There were 65 males and 166 females. Mean age was 36.26 years. Eighty-nine (39%) patients were found to have axSpA as per ASAS Criteria. Majority of patients 70 (78.6%) in the imaging arm of ASAS Criteria were picked via MRI of sacroiliac joints. Peripheral arthritis was seen in 57 (64%) and Enthesitis in 52 (58.4%). **Conclusion:** MRI performed exceptionally to reveal sacroiliitis highlighting the importance of this imaging modality in axSpA, which we recommend to be included in diagnostic algorithm in evaluating patients with chronic backache under 45 years age.

Keywords: Inflammatory backache; Axial spondyloarthritis; Sacroiliitis

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INTRODUCTION

Chronic backache is defined as either episodes of back pain and limitations in activity nearly every day for the past 3 months or >24 episodes of pain that resulted in limited activity for 1 day or more in the past year.[1] Low back pain (LBP) is considered as one of the most frequent health problems which is responsible for forming a worldwide burden on one's self, the community and country level.[2] It has been observed that almost 80% of the population may have suffered LBP episode at least once during their lifetime[3] and is reported as a common reason for consulting a doctor.[4,5] LBP of the chronic nature has usually been found to be of degenerative aetiology, but in almost 5% of the patients it has an inflammatory background[6,7] and thus is named as inflammatory back pain (IBP). Axial spondyloarthritis (ax-SpA), accounting for an estimated prevalence of 0.5–1% in the general population, is a cause of IBP[8–10].

Patients with ax-SpA begin complaining of back pain and stiffness[11,12] due to the axial skeletal inflammation in their late adolescence or early adulthood, as the inflammatory back pain is the first most frequent symptom of ax-SpA[13]. Ax-SpA is seen to mainly involve the axial skeleton leading to sacroilitis (hallmark sign of SpA), as evidenced radiographically on the X-rays or non-radiographically on the magnetic resonance imaging (MRI). Under the umbrella term of Ax-SpA, come a number of diseases namely Ankylosing Spondylitis (the prototype), Psoriatic Arthritis, Enteropathic Arthritis, Reactive Arthritis and Undifferentiated SpA.[9]

Irrespective of the progress of Ax-SpA into ankylosing spondylitis (AS), it is responsible for a significant disease burden and has been related to other co-morbidities such as uveitis, psoriasis, inflammatory bowel disease, cardiovascular disease, osteoporosis and significant loss of work productivity.[14]

With the non-availability of a particular diagnostic test and the chances of inclusion of SpA in the differential diagnosis for LBP of chronic nature is quite low due to the commonality of the complaints. The delay in the diagnosis is its greatest drawback that may extend over 8–11 years.[15,16] Diagnosis at its earliest is becoming crucially important because therapies namely TNF antagonists have greater efficacy in the earlier stages of the disease.

Over the last seventy years, numerous criteria and algorithms have been introduced for the classification of AS and ax-SpA. The Assessment of

Spondylo Arthritis International Society (ASAS) put forth new guidelines in 2009 for the diagnosis of SpA in patients with back pain of chronic nature.[17–19]

The definition of IBP has also been revised.[20] The main criteria for the imaging arm was the evidence of sacroiliitis on imaging (i.e., X-rays or MRI) and HLA-B27 for the clinical arm. The ASAS criteria is considered to be if at least one from the imaging arm or two from the clinical arm are present which includes characteristics of SpA, i.e., IBP, arthritis, enthesitis, uveitis, dactylitis, psoriasis, Crohn's disease/ulcerative colitis, good response to non-steroidal anti-inflammatory drugs (NSAIDs), family history of SpA, HLA-B27 and elevated C-reactive protein (CRP)].[17] The mentioned criteria besides being used for classification, could also play an important role in determining whether the patient should be referred for further analysis to a rheumatologist. As Ax-SpA has an onset in the 20s or the 30s of an individual, the chances of diagnosis are low because the younger population is less prone to consult a rheumatologist.

The Multicentre Ankylosing Spondylitis Survey Trial to Evaluate and Compare Referral Parameters in Early SpA (MASTER) study conducted in Germany, reported that presence of inflammatory back pain, HLA–B27, and/or sacroiliitis on imaging amongst undiagnosed patients of <45 years and complains of chronic back pain is a consistent screening method for the orthopaedists and primary care physicians to make a diagnosis of ax-SpA.[21] The complaint of back pain due to IBP (an important symptom of SpA) is a frequent presenting symptom to the GPs and orthopaedic surgeons besides the rheumatologists[18] with a prevalence of ~5% in accordance to British General Practice surgeries[25] and chiropractic settings[20]. The overall prevalence of SpA, similar to that of rheumatoid arthritis has been estimated to be approximately 1%.[22] The objective as identified by the ASAS for the benefit of the patient lies in the early diagnosis of the disease.[23,24] The objective of this study was to determine the frequency of axial Spondyloarthropathy (ax-SpA) in patients presenting with chronic backache using ASAS Criteria for ax-SpA in a tertiary care institute.

MATERIAL AND METHODS

This cross-sectional study was conducted at the department of Rheumatology, Liaquat National Hospital over a period of 8.5 months spanning from 12 March to 30 November 2016. This study was approved by the Research/ethics committee and informed consent was obtained from the patients. Participants comprised either gender, aging between 18 to 45 years. Patients with associated diagnosis of other autoimmune diseases such as, rheumatoid arthritis or systemic lupus erythematosus, pregnant women, patients with backache along with neurologic deficit, i.e., motor weakness of lower limb/s, bladder and bowel involvement, or with other co-morbids, such as chronic kidney disease, congestive heart failure and patients with current and past history of malignancy were not included in the study. A detailed history of backache as well as other related components in accordance with ASAS Criteria for ax-SpA was taken and examination of the musculo-skeletal system was carried out. Data was analysed by SPSS 21.0. Mean and standard deviation were computed for quantitative variable and frequencies and percentages were calculated for categorical variables. Stratified analysis was done and post-stratification chi square test with p-value ≤ 0.05 taken as statistically significant.

RESULTS

A total of 231 patients were enrolled comprising 65 males and 166 females. The mean age of patients was 36.26±9.44 years and mean BMI was 22.99±4.72 kg/m2. Eighty-nine (39%) patients were found with axial-SpA. The detailed demographic results and their association with SpA are presented in Table-1 and clinical associations in Table-2. Significant association was found with low backache, buttock pain, and improvement of pain with activity, peripheral arthritis, enthesitis, uveitis, good response to non-steroidal anti-inflammatory drugs (NSAIDs), increase CRP and morning stiffness as presented in table-2. X-Ray and MRI were also done for patients. Detailed results are shown in table-3.

Table-1: Frequency and association of SpA/non-SpA with demographic factors.

	n (%)			*p*-value
	SpA (n=89)	**Non SpA (n=142)**	**Total (n=231)**	
Age(years)	35.80±8.31	36.54±10.09	36.26±9.44	0.561
BMI(kg/m2)	23.55±4.97	22.64±4.54	22.99±4.72	0.153
Duration of backache(months)	42.79±42.83	45.82±54.40	44.65±50.19	0.656
Gender				
Male	27 (30.3)	38(26.8)	65 (28.1)	0.556
Female	62 (69.7)	104(73.2)	166 (71.9)	
Occupation				
Unemployed	25 (28.1)	48(33.8)	73 (31.6)	0.528
Labour	12 (13.5)	17 (12)	29 (12.6)	
Private Job	38 (42.7)	50 (35.2)	88 (38.1)	
Self employed	10 (11.2)	14 (9.9)	24 (10.4)	
Student	4 (4.5)	13 (9.2)	17 (7.4)	
Marital Status				
Married	9 (10.1)	27 (19)	36 (15.6)	0.069
Unmarried	80 (89.8)	155 (81)	195 (84.4)	
°Mean±SD, Independent t-test applied.				
Chi-square test applied.				
p-Value≤0.05 considered as significant.				

Table-2: Frequency and association of SpA/non-SpA with clinical factors

	n (%)			*p*-value
	SpA (n=89)	Non-SpA (n=142)	Total (n=231)	
Smoker	13 (14.6)	12 (8.5)	25 (10.8)	0.143
Alcohol	12 (13.5)	15 (10.6)	27 (11.7)	0.501
Whole Backache	23 (25.8)	38 (26.8)	61 (26.4)	0.878
Neck pain	7 (7.9)	16 (11.3)	23 (10)	0.401
Dosral Lumbar Spine pain	7 (7.9)	35 (24.6)	42 (18.2)	0.001
Low Back pain	52 (58.4)	53 (37.3)	105 (45.5)	0.002
Buttock pain	14 (15.7)	3 (2.1)	17 (7.4)	0.000
Pain Improves with Activity	79 (88.8)	28 (19.7)	107 (46.3)	0.000
Pain Improves at Rest	6 (6.7)	108 (76.1)	114 (49.4)	0.000
Pain Awakens at Second Half of Night	21 (23.6)	1 (0.7)	22 (9.5)	0.000
Peripheral Arthritis	57 (64)	72 (50.7)	129 (55.8)	0.047
Enthesitis	52 (58.4)	14 (9.9)	66 (28.6)	0.000
Uveitis	16 (18)	2 (1.4)	18 (7.8)	0.000
Psoriasis	4 (4.5)	1 (0.7)	5 (2.2)	0.074
Crohns disease/ulcerative colitis	2 (2.2)	0 (0)	2 (0.9)	0.147
Good Response NSAIDs	65 (73)	10 (7)	75 (32.5)	0.000
Family History SpA	2 (2.2)	1 (0.7)	3 (1.3)	0.561
HLA-B27	3 (3.4)	0 (0)	3 (1.3)	0.109
Morning Stiffness				
Nil	33 (37.1)	16 (11.3)	62 (26.8)	0.000
> 30 (minutes)	46 (51.7)	25 (17.6)	71 (58)	
< 30 (minutes)	10 (11.2)	101 (43.7)	111 (48.0)	
Chi-square test applied.				
p-Value≤0.05 considered as significant.				

Table-3: Frequency and association of SpA/non-SpA with X-ray, MRI and CRP

	n (%)			*p*-value
	SpA (n=89)	Non-SpA (n=142)	Total (n=231)	
X-Ray Both Sacroiliac Joints. Normal/GRADE 0	66 (74.1)	0 (0)	66 (74.1)	0.000
X-ray both SI Joints. Unilateral GRADE 3 changes	8 (9)	0 (0)	8 (3.5)	0.000
X-Ray Both Sacroiliac Joints Bilateral GRADE 2-3.	15 (16.9)	0 (0)	15 (6.5)	0.000
X-Ray Spine changes	62 (69.7)	121 (85.2)	183 (79.2)	0.005
MRI Acute sacroiliitis (unilat)	19 (21.3)	0 (0)	20 (8.7)	0.000
MRI Acute sacroiliitis(bilat)	54 (60.7)	0 (0)	54 (23.4)	0.000
CRP (positive)	55 (61.8)	22 (15.5)	77 (33.3)	0.000
ESR				
HIGH	33 (37.0)	30 (21.1)	63 (27.2)	0.008
NORMAL	56 (62.9)	112 (78.8)	167 (72.2)	
Chi-square test applied.				
p-Value≤0.05 considered as significant.				

DISCUSSION

Back pain due to inflammation in the axial skeleton in patients with ax-SpA usually begins insidiously in late adolescence and early adulthood, causing chronic inflammatory back pain and stiffness. In our study mean age was 36 years which is in accordance with other studies. Female predominance was observed as reported in the literature.[25–27] We observed that 38.5% met the ASAS criteria which is higher than studies[5,24,27] and lower as compared to what have been reported by Deodhar *et.al*.[26] The main reason for non-achievement of on time and proper diagnosis is mainly due to delay in referring the patient to suitable expert. The fact was proven in the two published studies, i.e., MASTER from Germany and Recognizing and Diagnosing Ankylosing Spondylitis Reliably [RADAR] from 16 countries who put forth the point that a simple referral policy was three pronged, i.e., complains of back pain for more than 3 months, <45 years and 1 of 3 SpA-related features.[26] Mean backache duration in our study was approximately 4 years which is compatible with other studies.[25,27,28] A gap of almost 10 years between the emergence of the first symptom and the establishment of the diagnosis have been reported by the studies.[26,29,30] where then MRI plays a pivotal role in early diagnosis of ax-SpA as depicted in our study that only 16/89 (17.9%) patients had x-rays consistent with SpA While the major bulk of patients had normal x-rays and these 70/89 (78.6%) patients diagnosed using MRI which otherwise had been easily missed, highlighting the importance of inclusion of this imaging modality in the diagnostic algorithm.

The improvement of pain with activity observed in our study is also reported in literature.[25] Enthesitis was diversely reported in patients who had SpA. In our study it was 58% which is higher than other studies.[25,26] Uveitis, psoriasis, and Crohn"s disease in our study were comparable to the previous studies.[25,26] Due to the raising awareness of SpA amongst the primary healthcare professionals, the fact is being emphasized that those physicians who deal with the prospective extra-articular manifestations such as inflammatory bowel disease, psoriasis, or uveitis on the daily basis should also be made aware of the disease.[31]

In our study, the response to NSAIDs for back pain was 73% which is comparable to what is reported by Sieper J *et al*.[20] Family history of SpA was lower in this study as compared to other studies.[17,20,21] A large proportion of our patients had raised levels of CRP which is comparable with another study.[21] In our study HLA B-27 was done in 4 patents and out of 4, 3 patients were positive.

In accordance to the recommendations provided by ASAS for the early referral of patients with suspicion of axial SpA which included: complains of back pain of chronic nature, i.e., more than 3 months in patients below the age of 45 years was retained as entry criterion while IBP in combination with other ax-SpA characteristics, i.e., HLA-B27 positive, sacroiliitis on imaging, peripheral and/or extra-articular manifestations, positive family history for SpA, good response to NSAIDs and elevated acute phase reactants) were included as one of the additional parameters, resulting in referral of those patients.[25]

In general, the presence of IBP plus three further typical SpA features result in a probability of about 90% for ax-SpA. If a combination of SpA features with acute anterior uveitis, HLA-B27, or MRI is present, then the presence of IBP plus two such features may be sufficient to reach a probability of disease of >90%. Such a high disease probability with an acceptable error rate should lend sufficient confidence for making the diagnosis of ax-SpA. This is in accordance with the generally accepted principles of decision analysis. If the probability is 80–89% it would consider the diagnosis of axial-SpA as probable or highly probable.[32]

CONCLUSION

The basis of diagnosis of ax-SpA utilizing the ASAS Criteria is the presence of a range of SpA features, namely clinical features with imaging findings or HLA-B27 positivity. More appropriately it could be said that the more the presence of the SpA features, the greater the chances of reaching the proper diagnosis. The diagnosis is said to be made with great caution when along with 0–1 clinical features, there is either the presence of HLA-B27 positivity or sacroiliitis on imaging (MRI or X-ray), but not both at the same time. Proper education and awareness about ax-SpA imparted to the non-rheumatologists can result in appropriate and timely diagnosis in patients with chronic back pain. The presence of sacroiliitis on MRI, the system of referral policies and the emergence of new and more effective drug regimens all play an important role in the early diagnosis as well as the proper management of the patients with ax-SpA and as a consequence could save the highly productive years of individuals suffering from otherwise devastating condition.

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AUTHORS' CONTRIBUTION

TR: Data collection, results preparation and writing of article. TPU: Review of article. LN: Review of results. SRA: Article writing and review. KP: Data Collection and compiling. WA: Data Collection.

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