

The Lag Time of Diagnosis of Axial Spondyloarthritis: A Bangladesh Perspective

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To cite this article:

Abu Tahir Muhammad Tanveer Hasan, Muhammad Abdul Alim. The Lag Time of Diagnosis of Axial Spondyloarthritis: A Bangladesh Perspective. *American Journal of Internal Medicine*. Vol. 8, No. 6, 2020, pp. 254-257. doi: 10.11648/j.ajim.20200806.12

Received: September 24, 2020; **Accepted:** October 15, 2020; **Published:** October 30, 2020

Abstract: Background & Objective: The lag time of diagnosis of axial spondyloarthritis varies from country to country. The aim of this study was to find out the lag time of diagnosis of axial spondyloarthritis in Bangladesh based on the patients visiting the morning Rheumatology OPD of a tertiary-care hospital. Materials & Methods: This study was conducted in the Department of Rheumatology of Enam Medical College & Hospital, Savar, Dhaka, Bangladesh from October, 2018 to December, 2019. Ninety six patients with axial spondyloarthritis were recruited and they were enquired about their ages, places of residence, educational qualifications and duration of axial pain as well as peripheral pain. The participants also underwent estimation of ESR by Westergren method. Results: Mean age of the participants was 39.98 years. The mean and median lag times of diagnosis were 58.17 and 36 months respectively. The lag time of diagnosis followed a nonnormal (right-skewed) distribution. There was no significant difference between males and females ($p \approx 0.921$), between rural and urban participants ($p \approx 0.221$), between those with and without peripheral involvement ($p \approx 0.387$) as well as between those with and without elevated ESR according to Mann-Whitney U test. But the median lag time in those who were highly educated, ie. those who completed at least a bachelor degree was significantly ($p \approx 0.016$) shorter than that in those who were not highly educated. Conclusion: There is a considerable median delay in the diagnosis of axial spondyloarthritis in Bangladesh. Further research is required to identify the factors contributing to the delay so that those can be addressed to shorten the lag time.

Keywords: Axial Spondyloarthritis, Lag Time, Diagnosis, Bangladesh

1. Introduction

The spondyloarthritis (SpA) family comprises ankylosing spondylitis (AS), nonradiographic axial SpA (nr-axSpA), peripheral SpA, psoriatic arthritis, SpA associated with Crohn's disease and ulcerative colitis, reactive arthritis and juvenile-onset SpA. Ankylosing spondylitis and nr-axSpA are collectively known as axial SpA [1]. The point prevalence of spondyloarthritis in Bangladesh is 1.2% [2].

The reasons for the classification of SpA into categories are both historical and practical, but each category does not necessarily represent a discrete entity - the clinical, laboratory, and imaging findings can overlap. The diagnosis and management approaches for patients suspected of having any type of SpA are also similar in general [3, 4].

The major clinical features which differentiate spondyloarthritis (SpA) from other forms of arthritis are the

distribution and type of musculoskeletal manifestations and certain extraarticular features. Patients with axial SpA characteristically have chronic low back pain. Patients with either axial or peripheral SpA can exhibit peripheral musculoskeletal features, which include dactylitis (sausage digits), enthesitis, and peripheral arthritis [1].

Delay in diagnosis is a great challenge in axial SpA [5]. A delay of 5-10 years was reported about a decade ago [6]. This lag time did not have a major impact in the past due to an absence of effective treatment modalities [7]. This delay did not have much impact in the outcome previously due to lack of an effective treatment modality [8]. But with the invention of TNF- α inhibitors, early diagnosis of axSpA has become very important for the achievement of an early treatment response and may contribute to the prevention of spinal structural damage [8-11]. The aim of our study was to determine the lag time of diagnosis of axial SpA in a tertiary

hospital in Bangladesh.

2. Materials & Methods

This study was conducted in the Department of Rheumatology of Enam Medical College & Hospital, Savar, Dhaka, Bangladesh from September 2018 to December 2019. Ninety-six patients with axial spondyloarthritis were recruited and they were enquired about their ages, places of residence, educational qualifications and duration of axial pain & peripheral pain. Lag time of diagnosis was defined as the interval between the onset of persistently present symptoms due to spondyloarthritis and the diagnosis of the disease. The participants also underwent estimation of ESR by Westergren method. The correction of ESR for age was performed by using the following formulas: the upper limit of the reference range equals (age in years)/2 for men and (age in years + 10)/2 for women [12].

3. Results

Ages of the participants ranged from 18 to 70.75 years. Mean age was 39.98 years. 81.3% of the participants were females and 18.8% were males. The female preponderance of the respondents may be explained by the fact that they were picked up mainly during the morning OPD hours when most of the males have to stay in the workplace. There were 51 participants living in urban areas and 45 participants living in rural areas.

Only a minority of the participants (8.3%) was highly educated i.e. completed at least the bachelor degree. ESR was elevated in 53.1% of the participants and normal in the rest.

All the participants had axial involvement, i.e. inflammatory neck or back pain. Concomitant peripheral involvement, i.e. arthritis or enthesitis was present in 79.2% of the participants. Peripheral involvement preceded axial involvement in 14.6% of the participants. There was no significant difference ($p \approx 0.457$) between males and females with regard to the mode of onset.

Table 1. Central Tendencies of Duration of Axial symptoms, Duration of Peripheral Symptoms and Lag Time of Diagnosis.

Interval	Duration of Axial Symptomns	Duration of Peripheral Symptoms	Lag Time
Mean	55.66	23.14	58.17
Median	36	5.67	36
Mode	36	0	36

The central tendencies of duration of axial symptoms, duration of peripheral symptoms and lag time of diagnosis are shown in table 1.

Observing the central tendencies (mean>median), it is

evident that lag time has a nonnormal (positive skewed) distribution. So Mann-Whitney U test was done to compare medians of lag times across groups (table 2).

Table 2. Comparison of Median Lag Times of Diagnosis between Different Groups.

Grouping Variable	Median Lag Times (Months)		P Value (Mann-Whitney U test)
Sex	Female	Male	0.921
	36	30	
Residence	Rural	Urban	0.261
	36	36	
Educational Status	Not Highly Educated	Highly Educated	0.016
	36	12	
Concomitant Peripheral Involvement	Present	Absent	0.387
	36	36	
ESR	Normal ESR	Elevated ESR	0.175
	48	30	

It is evident from table 2 that the median diagnostic lag time in highly educated individuals was significantly lesser than that in those who are not highly educated. There was no significant difference between males and females as well as between rural and urban residents with regard to median lag times. Median lag times of those with and without peripheral involvement were equal. Moreover, there was no significant difference between median lag times of those with normal ESR and those with elevated ESR.

4. Discussion

The mean and median lag times in our study were 55.66 and 36 months respectively. In fact, the lag times vary from

country to country. For example, the mean lag times in the United Kingdom, India, Germany and France were reported to be 9.39, 6.9, 5.7 and 4.9 years respectively. The median lag times in the same countries were found to be 5, 5.9, 2.3 and 2 years respectively [5, 7, 13, 14]. It is pretty obvious that each of the studies recorded a mean lag time that is higher than the corresponding median lag time. This is indicative of a nonnormal (right-skewed) distribution meaning that some of the participants had very long lag times (i.e. outliers with larger values) [15]. The same phenomenon was observed in our study. As per our study, there was no significant difference between median lag times of diagnosis in males and females with axial SpA. In the Indian study the mean lag time of diagnosis in males did not vary significantly

from that in females [6]. On the other hand, in the German study, female sex was associated with a longer diagnostic delay [13]. Our study showed that the median lag time in highly educated participants, ie. those who completed at least a bachelor degree had a significantly shorter lag time than that in those who were not highly educated. This may be explained by the evidence that people with higher levels of education have greater levels of health literacy [16] (defined as the degree to which the individuals have the capacity to obtain, possess and understand basic health information and services needed to make appropriate health decisions [17]). There was no significant difference between the rural and urban participants in terms of the diagnostic lag time. This may be explained by the location of the study place which is a tertiary hospital located in an urban area closely surrounded by rural areas so that both rural and urban patients get access to the hospital to similar extents.

It is pretty obvious that although the diagnostic lag time of axial SpA varies from country to country, it is quite considerable in all the instances mentioned above. There are several possible explanations. Firstly, axial SpA is a relatively uncommon cause of a quite common symptom called 'back pain', which is experienced by 60-80% of the general population at some point in their lives [18]. Secondly, as general practitioners have been found to have difficulty in differentiating inflammatory back pain from other types of back pain and not to be aware of the extra-articular features, patients are less likely to be investigated properly or referred to rheumatologists [19]. Thirdly, standard radiographs are less sensitive than MRI to detect sacroiliitis [20, 21]. But MRI is a costly imaging modality and testing for HLA-B27 is expensive too. As a result, may people may not afford the confirmation of the diagnosis of axial SpA.

5. Conclusion

Our study reveals a long median lag time between the onset of persistent symptoms and the diagnosis of axial SpA. Potential contributors to the delay are poor educational status of patients leading to low health literacy, lack of skills of general practitioners to differentiate inflammatory from mechanical back pain and decreased availability and high costs of investigation modalities, eg, testing for HLA-B27 and MRI of sacroiliac joints. These factors need to be addressed thoroughly to lessen the lag time.

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