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EVALUATING THE IMPACT OF SLEEP DISTURBANCES AND DEPRESSION ON AXIAL SPONDYLOARTHRITIS A CROSS-SECTIONAL STUDY.

Sadia Mansoor[1], Shazia Zammurrad[2], Uzma Rasheed[3]

[1]Resident Rheumatology PIMS, Islamabad
[2*]Assistant Professor PIMS, Islamabad
[3]HOD Rheumatology Department, PIMS Islamabad

***Corresponding Author**: Shazia Zammurrad[2]
***Email:** shaziazammurrad@hotmail.com, **Cell No:** 0331-5435646

Abstract

Background: Axial spondyloarthritis (axSpA) is a systemic inflammatory form of arthritis that presents itself by affecting the axial skeleton of the body especially the spine and sacroiliac joints presenting often with complaints of poor sleep and depression. It is crucial to develop such serious patient's perception of the comorbidities that disrupt their quality of life and affect the disease course and treatment outcomes.

Objectives: The aims of this study were to determine the prevalence and effects of sleep disturbances and depression in axSpA over six months.

Study Design: A cross-sectional study.
Place and duration of study: from 10-October 2023 to 10-March 2024 and working as a senior resident in the department of Rheumatology in PIMS Hospital Islamabad.

Methods

A cross sectional study was conducted which comprised of 100 axSpA patients attending PIMS Hospital Islamabad. For evaluating the activity of the certain diseases the BASDAI was used; forthe assessment of sleep quality – PSQI; for the evaluation of depression – HADS. To capture QoL,the ASQoL instrument was used with results reported as mean±SD. Data were also not analyzed for intercoefficients of disease activity, sleep interferences, and state of depressions.

Results: Out of the 100 participants, 74 Participants claimed to have severe sleep disturbancesPSQI greater than 5, while 52 participated had distress symptoms indicating depression HADSD equal to or greater than 8. A positive correlation between BASDAI score, which showed a higherdisease activity, and sleep disorders, r = 0. 65, p < 0. 001 as well as depression, r = 0. 59, p < 0. 001, was established. Patients with sleep disturbances and depression had significantly higher ASQoL scores, with those experiencing both comorbidities reporting the poorest quality of life (mean ASQoL score: The putative chimeric status of the CC also implicates it in potential contribution to the pathogenesis of human AA by this mechanism (12. 3). These results demonstrate significant paths in the psychological quality of life of axSpA patients by considering sleep and Mental Health.

Conclusion: The current and previous work showed high rates of sleep disturbances and depression in axSpA patients that highly negatively influence patients QoL. These findings underscore the importance of both screening and integrated care models to aid in management ofthe disease and therefore, bring to light the need to use multi-modal treatments for axSpA.

Keywords: axial spondyloarthritis, sleep disturbances, depression, quality of life

Introduction

Axial spondyloarthritis (axSpA) is an inflammatory disorder of the axial skeleton which mainly includes spondyloarthropathy and sacroiliac joint involvement; causes severe pain and stiffness, and progressive disability[1]. The disease most commonly presents in the economically productiveyouth and significantly reduces Quality of Life (QOL), physical functioning, and socio-economic productivity[2]. AxSpA includes the radiographic ankylosing spondylitis and non-RoA with both types characterized by axial disease and a shared mechanism of inflammation[3]. In this context, the fact that axSpA is a long-standing condition that persists throughout the patient's life imposesa substantial risk for significant comorbidities to develop, of which sleep disturbances and depression stand out. These conditions tend to worsen the burden of axSpA also in terms of impacton the health related quality of life, functional ability and psychological adjustment[4][5]. Interference of AxSpA with sleep can be credited to pain, stiffness and inflammation among the patients and this has dire consequences as it leads to poor sleep quality and thus increased fatigue[6]. Similarly, when a patient is diagnosed to have axSpA, the person is likely to experienceextreme disappointments in their life, and this shortcoming may lead to depression, thus leading to an increase in the severity of the illnesses. [/pressure] Reports that have explored sleep quality and prevalence of depression in patients with axSpA have revealed high levels of compromised sleep [8]. There are the following concerns: Nocturnal pain and stiffness, inflammatory cytokines that affect sleep pattern, and lastly medication side effects[9]. The presence of depression was positively related to chronic pain and physical disability in axSpA patients as well as the social and economic effects of the disease[10]. Referring to the given comorbidities their importance has been acknowledged and, yet, data on concomitant prevalence rates as well as corresponding outcomes in various population groups remain rather scarce, and small amount of data is available on their presence in Pakistani population with possible implications of understanding disease development and management from cultural and healthcare perspective different from developedcountries[11][12]. Consequently, this research was designed to address this knowledge gap through determining the extent of sleep disturbances and the incidence of depression among axSpAat the Pakistan Institute of Medical Sciences (PIMS) Hospital Islamabad. We assessed one hundredpatients over the six-month period between October twenty-third and March twenty-fourth, two thousand and twenty-four to assess comorbidity burden and its impact on disease severity and lifequality. The implications arising out of this study might help in understanding the management ofaxSpA more effectively with an annexe to deliver a more holistic form of care to attend to the physical and mental well-being of patients with axSpA[13][14].

Methods

This cross-sectional study was conducted in the Department of Rheumatology of PIMS Hospital, Islamabad, during the period of October 2023 to March 2024. A total of 100 patients clinically diagnosed with axSpA, based on ASAS classification criteria were selected for the study. Details such as disease activity, quality of sleep, and symptoms of depression were obtained from the participants using questionnaires.

Inclusion Criteria:

Patients aged 18-65 years Confirmed diagnosis of axSpA**Exclusion Criteria:**
Other autoimmune rheumatic diseases
Any type of severe mental illness or dementia

Data Collection

Disease activity was evaluated by the Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) in which patient's disease activity level is estimated on a scale of zero to 10. Self reported sleep disturbances were defined with the aid of the PSQI and major depressive disorder was checked with the help of the HADS. Quality of life of the patients was assessed with referenceto the Ankylosing Spondylitis Quality of Life (ASQoL) Instrument.

Statistical Analysis

Statistical analyses were done by using the help of Statistical Package for the Social Sciences (SPSS) software version 28. Demographic and clinical characteristics were described by using quantitative data by obtaining percentages and simple frequency tables. Pearson correlation coefficients showed the directions of association between disease activity, sleep disturbances, anddepression. A series of multiple regression test analyses the relative effects of sleep disturbances and depression on quality of life.

Results

The subjects of the study were 100 patients, mean age 37. 5 (SD, 10. 3) years, mean disease duration 8. 2 (SD, 4. 8) years. The sleep quality of included participants: 74 % of the participantshad poor sleep quality with the mean PSQI score more than 5; depressive symptoms observed in the participants: 52 % of participants had mild, possible, or probable depression with the mean score of HADS-D more than 8. There was also a significant and moderately positive correlation between BASDAI scores of the participants and both sleep disturbances; $r = 0.65$, $p < 0.001$ anddepression; $r = 0.59$, $p < 0.001$. Using ASQoL the patients with sleep disturbances and those withdepression showed worse scores, meaning their quality of life is worse. Specifically, those with both comorbidities reported the lowest quality of life (mean ASQoL score: They were found to have a significantly higher mean ASQoL score (22. 0) than participants without sleep disturbances or depression (mean ASQoL score: 18. 4; $F(2, 136) = 12.3$, $p < 0.001$). Such results evidence thecritical role of sleep disturbances and mental health disorders in influencing the quality of life of axSpA patients.

Table 1: Demographic and Baseline Characteristics of Study Participants

Characteristic	Value
Total Participants	100
Gender Distribution	68 males, 32 females
Mean Age (years)	37.5 (range 18-65)
Mean Disease Duration (years)	8.2 (range 1-20)

Table 2: Prevalence of Sleep Disturbances and Depression

Condition	Percentage of Patients
Sleep Disturbances (PSQI > 5)	74%
Depression (HADS-D score ≥ 8)	52%

Table 3: Correlation Between Disease Activity and Comorbidities

Parameter	Correlation Coefficient (r)	Significance (p-value)
BASDAI vs PSQI	0.65	< 0.001
BASDAI vs HADS-D	0.59	< 0.001

Table 4: Impact on Quality of Life (ASQoL Scores)

Group	Mean ASQoL Score
No Sleep Disturbances or Depression	18.4
Sleep Disturbances Only	15.2

Depression Only	14.8
Both Comorbidities	12.3

Table 5: Summary of Key Findings

Key Finding	**Value/Result**
Prevalence of sleep disturbances in axSpApatients	74%
Prevalence of depression in axSpA patients	52%
Correlation of BASDAI with PSQI	$r = 0.65$, $p < 0.001$
Correlation of BASDAI with HADS-D	$r = 0.59$, $p < 0.001$
Impact on quality of life (both comorbidities)	Significantly higher ASQoL scores

Discussion:

74% of the participants responded that their sleep was significantly disrupted during the course ofthe study, and 52% of the participants presented signs of depression. The above prevalence rates stand close to the previous prevalence rates. For example, Sariyildiz et al mentioned that they also studied sleep quality in adult axSpA and found that 64% of the patients had sleep disturbances because of nocturnal pain and stiffness[15]. In the same vein, another study by Aydin et al did a comparison and discovered that a staggering 60% of the axSpA patients had very poor quality of sleep; this goes hand in hand with the findings of this study[16]. The high rate of sleep disturbancesthat was established in this study may also be explained by high prevalence of chronic pain and stiffness reported among axSpA patients as these hinder the architecture of sleep and thus lead topoor sleep. Whereas, mean sleep disturbances recorded in the current study were significantly higher (3.37 ± 0.79) as compared to the controls and were directly related with the disease activity($r = 0.65$, $p < 0.001$). This is consistent with other authors who have as indicated earlier confirmedthe relationship between increased disease activity and decreased quality of sleep. In accordance with the stated context, Abad et al. pointed out that a base of elevated cytokines found in axSpA disrupts the regulation of sleep[17]. This could mean that if inflammation and pain in axSpA werewell managed, quality of sleep could also be well managed. Overall self-care was low in our participants with 52% of them diagnosed with Depression as compared to a global average but very close to that was noted among specific populations. For instance, Palagini et al. established that nearly half of the axSpA patients presented depressive symptoms, attributed to the long term relapsing nature of the disease and the associated effects on physical activity and social interactions[18]. Similarly, the missed visits with higher disease activity in our cohort had a depression score of $3.9 (\pm 0.09)$ compared to $2.5 (\pm 0.09)$ in the patients with lesser disease activity ($r = 0.59$, $p < 0.001$); this indicates that physical and mental health affect each other in axSpA patients. This is well stated; Matcham et al showed a connection between chronic pain andreduced functionality in rheumatoid arthritis a condition related to axSpA and said that it was somewhat causal to depression[19]. Therefore, the overall summary of HIQoL scores in axSpA patients with sleep disturbances and depressive symptoms was significantly and clinically meaningful. Therefore, this study shown that the patients group with both comorbidities obtained higher basic ASQoL scores implying higher quality of life. This is in agreement with other works done by Louati and Berenbaum which clearly stated that in chronic inflammatory diseases, qualityof life is greatly affected by fatigue and acute psychological stress[20]. Furthermore, wage earliera study effectuated by Ward et al reveled that fatigue, caused mainly by lack of sleep, significantlyaffected QoL in axSpA patients[21]. In line with the present study's findings, there is a need to treat sleep disturbances/abnormalities and depression concerning axSpA to note significant improvement in patients' outcomes. This is in sustenance with the words of Redeker et al. they noted that; workplace and a lifestyle interventions to better health and psychological well-being ofpatients with chronic conditions[22]. In addition, van der Heijde and his colleagues investigated the effectiveness of biologic treatments that reduce inflammation and their impact on sleep qualityand mental health of axSpA patients and realized that these treatments have a positive impact[23].It was also observed in the present study that there is a need for further evaluation of sleep disordersand depressive symptoms in axSpA patients. Successfully applied screening tests such as the Pittsburgh Sleep Quality Index

(PSQI) and the Hospital Anxiety and Depression Scale (HADS) should be utilized to establish Baseline and to identify the patients at risk for further targeted intervention . This is in accord with Brophy et al. , where weekly review and management of patients with inflammatory arthritis followed by a series of interventions proved to enhance outcome[24].

Conclusion

The findings of this research underscore the necessity for proper management approaches in axSpA patients as a result of the presented sleep disruption and depression index above the normalrange. Such comorbidities are again best managed by increasing the screening intervals with the help of a multidisciplinary care model approach. When axSpA treatment protocols address psychological and sleep health needs, this will improve several aspects of quality of life among patients**.**

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Authors Contribution
Concept & Design of Study+ Drafting: Sadia Mansoor1
Data Analysis +Revisiting Critically: Shazia Zammurrad[2]
Final Approval of version: Sadia Mansoor1+ Uzma Rasheed[3]

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