

## Sleep disturbance in lupus patients

**Evaluation of: Chandrasekhara PKS, Jayachandran NV, Rajasekhar L, Thomas J, Narsimulu G: The prevalence and associations of sleep disturbances in patients with systemic lupus erythematosus. *Mod. Rheumatol.* 19(4), 407–415 (2009).** Fatigue is a common problem in systemic lupus erythematosus (SLE), and there is a great interest in the role of sleep disturbances in this regard. In the current study of 50 SLE patients, two-thirds were poor sleepers according to Pittsburgh Sleep Quality Index scores. Despite correlations between sleep disturbance and several factors, SLE disease activity was the only independent determinant of sleep quality. A study limitation was the failure to assess some important factors such as physical activity. Still, these findings underline the importance of sleep disturbance in SLE and its importance as a contributing factor to fatigue.

**KEYWORDS:** fatigue ■ SLE ■ sleep ■ systemic lupus erythematosus

Sleep disturbance is a multifactorial problem that commonly affects patients with rheumatic diseases [1]. The prevalence of fatigue is strikingly elevated in systemic lupus erythematosus (SLE); Zoanana-Nacach *et al.* reported an 86% prevalence of this symptom in their sample of Caucasian, Hispanic and African-American SLE patients [2]. The association between fatigue and poor sleep quality in lupus patients has already been demonstrated [3,4]. However, the etiology of sleep disturbance in SLE is not well understood.

Da Costa *et al.* published their findings on determinants of sleep quality in SLE patients in 2005; they concluded that depressed mood was the only factor that remained significantly correlated with poor sleep quality in SLE and noted trends suggesting both prednisone use and lower levels of physical activity as determinants of poor sleep quality [5]. Recently, Chandrasekhara *et al.* published the outcome of their study on the prevalence and associations of sleep disturbances in SLE patients.

### Summary of methods & results

The study of Chandrasekhara *et al.* recruited SLE patients during outpatient hospital visits at the Nizam's Institute of Medical Sciences (Hyderabad, India). The 50 subjects fulfilled American College of Rheumatology (ACR) revised criteria for SLE, did not have any other underlying conditions associated with disturbed sleep and did not experience cognitive dysfunction according to the mini mental status examination [1].

The Pittsburgh Sleep Quality Index (PSQI), a self-reported questionnaire, was used to assess sleep quality and disturbances over a 1-month interval. Subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication and daytime dysfunction are the components generated from the PSQI. The Center for Epidemiological Studies Depression Scale (CES-D), a self-reported scale, was used to assess depressive symptoms, the Indian Health Assessment Questionnaire (Indian HAQ) was used to measure functional disability, and a Visual Analog Scale was employed to assess arthritis-related pain severity over the past week. The Systemic Lupus Activity Measure-Revised (SLAM-R) was used to determine disease activity over the past month and cumulative damage was measured using the Systemic Lupus International Collaborating Clinics/ACR Damage Index. Sociodemographic data and medications were also recorded, as was the presence or absence of ACR criteria for fibromyalgia (FM). A total of 50 age- and sex-matched controls were also recruited and completed the PSQI.

The mean age of lupus patients was 26 years old (standard deviation [SD]: 9) and the majority were taking prednisolone (92%), had mild disease activity (94%) and no organ damage. The majority (62%) of the SLE patients were poor sleepers according to the definition of a PSQI global score of at least 6; the prevalence of sleep disturbance for the comparator group was not provided. However, individual

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PSQI component scores were all significantly poorer in the lupus group when compared with the controls.

In the SLE group, unadjusted analyses suggested that a depressed mood, functional disability and lupus disease activity were strongly correlated with sleep quality; pain also showed a modest but significant correlation. In multiple regression analyses, lupus disease activity was the only factor that was significantly and independently correlated with poor sleep quality in the SLE subjects.

### Discussion

The reported prevalence of sleep disturbance in this study (62%) is comparable to that reported by Da Costa *et al.* in 2005 (56%) [5]. However, a recent Australian study found that 80% of their SLE subjects had sleep disturbances [6]. While the work of Chandrasekhara *et al.* suggested that disease activity is the most important contributor to sleep disturbance, the study by Da Costa *et al.* emphasized the role of depression in sleep disturbance in SLE. Although both studies used the same standardized tools to assess sleep (PSQI) and depression (CES-D), and both cohorts had similar profiles of disease activity (average SLAM-R: 6, SD: 4, reported in the Canadian study; average SLAM-R: 4, SD: 3, in the present study), there were important differences that may explain their findings. The subjects in the work of Chandrasekhara *et al.* were, on average, 19 years younger, with a much higher percentage on steroid therapy (92%, compared with 26% of the subjects of Da Costa *et al.*) and a higher prevalence of depressed mood (70%, compared with 29% in the Montreal-based study [29%]). Finally, Chandrasekhara *et al.* failed to study the impact of aerobic exercise on sleep quality; this is an important limitation since Da Costa *et al.* found a strong correlation between this

modifiable factor and sleep quality [5]. In fact, it is possible that the finding of disease activity as a determinant of sleep quality in the work of Chandrasekhara *et al.* might be, in part, driven by lower physical activity in the patients with the most active disease.

### Future perspective

The recent work of Chandrasekhara *et al.* regarding the prevalence and associations of sleep disturbances in SLE reinforces the idea that lupus is associated with poor sleep quality, which may drive the profound fatigue experienced by many patients. Further investigation into factors that could influence sleep quality in lupus patients promises to be interesting. Both disturbed respiratory patterns [7,8] and abnormal periodic limb movements [7] have been found to be highly prevalent in SLE, with one study specifically showing a threefold increased prevalence of 'restless leg syndrome' (RLS; characterized by nocturnal sensory/motor complaints that disturb sleep [9]) in SLE compared with controls [7]. The sample sizes are small in available studies (in the study of Iaboni *et al.*,  $n = 35$  [8]; in the study of Valencia-Flores *et al.*,  $n = 14$  [7]). Chandrasekhara *et al.* excluded patients with sleep apnea from their study and did not assess for RLS or periodic limb movements. Therefore, the effects of disturbed respiratory patterns or abnormal periodic limb movements on sleep in SLE still need to be further studied. Of interest, steroids may have a beneficial effect on RLS symptoms [10], so a careful study of these interacting factors is warranted.

Sleep complaints have been shown to significantly compromise health-related quality of life in patients with chronic illnesses [11] and in the general population [12]. As of yet, there are few data exploring how sleep disturbance

#### Executive summary

##### Summary of the study

- The prevalence of sleep disturbance in systemic lupus erythematosus (SLE) is significant.
- Depressed mood, functional disability, pain and disease activity were associated with sleep disturbance in unadjusted analyses.
- Disease activity was the only factor that was found to have an independent correlation with sleep quality in SLE in the current study.

##### Conclusion

- The factors influencing sleep disturbance are numerous and inter-related.
- It may be possible to target modifiable factors to improve the patients' sleep, combat fatigue and improve quality of life.

##### Future perspective

- Further efforts are needed to investigate other factors that could affect sleep quality in SLE patients, such as disturbed respiratory patterns and abnormal limb movement during sleep.
- The impact of sleep disturbances on depressive symptoms and health-related quality of life in patients with SLE remains to be studied.
- This may in turn help to further elucidate pathogenic pathways and possibly allow targeted treatment of the factors that influence sleep quality and fatigue in SLE patients.

impacts health-related quality of life in SLE. Thus, this represents another important area for future research.

#### Financial & competing interests disclosure

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Papers of special note have been highlighted as:

■ of interest

■ of considerable interest

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