Daytime Dysfunction in Patients with Inflammatory Bowel Disease

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INFLAMMATORY BOWEL DISEASE

- **The pathogenesis of IBD remains unknown.**
- **It involves a deregulated host immune response to intestinal flora in genetically susceptible individuals.**
- **Genetic variants incompletely explain the variance in disease incidence.**
- **Sleep is an environmental risk factors for IBD that is being studied.**

SLEEP

- **Sleep is closely related to the acute phase reaction (APR).**
- **Injury to tissue activates the APR which results in daytime dysfunction.**
- **The major pro-inflammatory cytokines that are important in IBD pathogenesis are also increased in disturbed sleep.**

- **IBD is associated with poor sleep quality, prolonged sleep latency and increase use of sleeping pills.**
- **Clinically active IBD patients have significantly worse sleep than patients with inactive disease.**
- **Patients in remission were found to be more likely to relapse in 6 months if their sleep is disturbed.**

DAY DYSFUNCTION

- **Daytime dysfunction: A lack of enthusiasm to carry out daily functions and having trouble staying awake while driving, eating meals, or engaging in social activity.**
- **43% of adults report interference with daily activities at least a few days a month due to daytime dysfunction.**
- **This can lead to serious morbidity and increased economic costs. Each year, in the United States, more than 50 000 motor vehicle accidents are attributed to driving while sleepy.**

- **There are no studies that have analyzed daytime dysfunction and IBD activity**

- **We hypothesized that daytime dysfunction would be significantly worse in IBD patients with active disease.**

METHODS

- Prospective and cross-sectional study.
- Patients with CD or UC were eligible for enrollment.
- Patients were identified from the IBD clinic of the University of Oklahoma Health Sciences Center.
- Data on demographics , steroid use, depression, and anxiety were collected.

- Sleep quality was measure by a 19-item Pittsburgh Sleep Quality Index (PSQI).
- Daytime dysfunction was captured as a sub-score of the PSQI.
- IBD activity was measured using the Harvey Bradshaw Index and the Modified Mayo Score.
- Histological data was obtained from recent ileocolonoscopies performed within 90 days of the initial visit.
- Patients were categorized into three mutually exclusive groups: active disease, subclinical inflammation, and complete remission.

STATISTICAL METHODS

- **Two-sided *t* was used for continuous variable and outcomes.**
- **Chi-square ([chi]^2) test or Fisher's exact test was used for categorical variables and outcomes.**
- **Continuous variables were reported as mean ± SD and categorical variables as percentages.**
- **The Pearson's correlation coefficient (r) was used to measure the strength of the linear association between continuous variables.**

RESULTS

	1- Active disease group (n=24)	2- Subclinical inflammation group (n=21)	3- Complete remission group (n=12)	P 1 and 3	P 2 and 3
Age	37.13 (13.95)	39.00 (14.37)	38.08 (16.68)	.857	.869
Gender Female	17 (70.83%)	13 (61.90%)	7 (58.33%)	.479	>.999
BMI >30kg/m^2	7 (29.17%)	9 (45.00%)	1 (8.33%)	.392	.061
Steroid Use	14 (58.33%)	3 (14.29%)	2 (16.67%)	.032	>.999
Depression	7 (29.17%)	2 (9.52%)	0 (0.00%)	.070	.523
Anxiety	6 (25.00%)	6 (28.57%)	0 (0%)	.079	.065
PSQI	9.21 (3.89)	7.48 (2.40)	3.67 (2.27)	<.001	<.001
Duration of Sleep	0.71 (1.00)	0.57 (0.68)	0.25 (0.45)	.067	.153
Sleep Disturbance	1.58 (0.50)	1.71 (0.46)	1.08 (0.67)	.017	.003
Sleep Latency	1.63 (1.01)	1.29 (1.06)	0.92 (1.00)	.055	.332
Day Dysfunction due to sleepiness	1.50 (0.78)	1.33 (0.73)	0.42 (0.51)	<.001	<.001
Sleep Efficiency	0.83 (0.92)	0.62 (0.67)	0.17 (0.39)	.004	.020

- **Fifty seven patients with IBD were recruited for this study.**
- **The mean age of participants was 38.07 ± 15, and 37 (64.9%) were females.**
- **24 had clinically active disease, 21 participants had subclinical disease, and 12 participants were in complete remission.**
- **Patients in both the active disease group and subclinical inflammation groups had significantly elevated PSQI scores compared to the group in complete remission.**

- **The group with complete remission had a PSQI mean score that was within normal limits.**
- **Daytime dysfunction and daytime dysfunction due to sleepiness were significantly greater in the active disease group and subclinical inflammation group as compared to patients in complete remission.**
- **Patients in both the active disease group and subclinical inflammation groups had significantly more sleep disturbances when compared to patients in complete remission.**
- **Sleep efficiency was significantly better in patients in complete remission compared to patients in the active disease group and subclinical inflammation group.**

- **High C-reactive protein was also associated with poor sleep quality and daytime dysfunction.**
- **Patients in both the active disease group and subclinical inflammation groups had overall poor sleep quality when compared to patients in complete remission.**
- **Daytime dysfunction was significantly greater in the active disease group and subclinical inflammation group as compared to patients in complete remission group.**

- **There were no significant differences between the clinically active and subclinical inflammation groups.**
- **To our knowledge our study is the first to show that patients with IBD have greater daytime dysfunction compared to asymptomatic IBD controls.**
- **We found no difference in any sleep measure between the clinically active and subclinical inflammation groups.**

THANK YOU