

Cancer-related dysfunctional beliefs about sleep may influence insomnia of cancer patients regardless of depression

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INTRODUCTION

- Sleep disturbance is very common in cancer patients because of various symptoms that occur in the course of cancer treatment like pain, nausea and anxiety. However, there is a tendency to consider insomnia symptoms of cancer patients as a natural course.
- Depression is known as one of main predictive factors of insomnia in cancer patients. But depression is closely related to insomnia even in the absence of cancer, so in most of previous studies depressive symptoms are regarded as the factor influencing insomnia in cancer patients. Dysfunctional beliefs about sleep also may be related with insomnia and depression simultaneously.
- The aim of this study was to explore whether dysfunctional beliefs about sleep may influence insomnia regardless of depression.

METHODS

Participants and assessments

- All of 264 cancer patients who visited sleep clinic for cancer patients in Asan Medical Center, Seoul, South Korea, (January ~ November, 2017) were included in this study. At the first time of visit, patients were assessed with several scales, and clinician interviewed the patient to evaluate psychiatric symptoms. This is a retrospective medical records review study.
- Insomnia Severity Index (ISI), Patient Health Questionnaire-9 (PHQ-9), Fear of Progression (FoP), State and Trait Anxiety Inventory (STAI), and Cancer-related Dysfunctional Beliefs about Sleep (C-DBS) have been used.
- Cancer-related Dysfunctional Beliefs about Sleep (C-DBS) is has 2 questions about sleep related to cancer. “My immune system will have serious problems if I don’t go to sleep at a certain time”(question 1, immune dysfunction) and “If I don’t sleep well at night, my cancer may recur or metastasize”(question 2, cancer recurrence).

Statistical analysis

- To compare the demographic and clinical characteristics of depressed and non-depressed patients, t-test has been used. Pearson’s correlation has been used to identify the association between various factors and C-DBS. Based on these results, stepwise linear regression analysis has been performed to find the factor related to insomnia.

RESULTS

- Patients were 53.7 ± 11.2 years old, and 68.6% were female. Most common cancer of the subjects were breast (49.6%), gastric (7.2%), and pancreatic cancer (7.4%). The cancer stages were as follows; I (21.6%), II (30.3%), III (20.1%), and IV (25.4%). 56.4% of patients were significantly depressed.(PHQ-9 score ≥ 10)
- We have found that the high C-DBS score was correlated with high ISI, PHQ-9, and FoP scores (all, $p < 0.01$) but not with age, cancer stage, and STAI). (Table 1)

Table 1. Correlation of demographic variables and psychological characteristics with C-DBS

Variables	C-DBS (r)	P-value
Age	-0.110	0.075
Cancer stage	-0.008	0.894
ISI**	0.468	0.000
FoP**	0.372	0.000
STAI	0.062	0.314
PHQ-9**	0.240	0.000

ISI : Insomnia Severity Scale
 FoP : Fear of Progression
 STAI : State and Trait Anxiety Inventory
 PHQ-9 : Patient Health Questionnaire-9
 C-DBS : Cancer-related Dysfunctional Beliefs about Sleep
 ** p-value < 0.01

- Based on these findings we have constructed stepwise linear regression model.(Table 2)

Table 2. The risk factors for insomnia, result of stepwise linear regression analysis

Outcome variables	Explanatory variables	β	P-value
ISI ($R^2=0.30, p < 0.001$)	C-DBS**	0.431	0.000
	PHQ-9**	0.390	0.000
	FoP**	-0.175	0.010

ISI : insomnia Severity scale
 FoP : Fear of Progression
 PHQ-9 : Patient Health Questionnaire-9
 C-DBS : Cancer-related Dysfunctional Beliefs about sleep

- In this model, dysfunctional belief about insomnia in cancer patient, depressive symptoms and fear of cancer progression are risk factors of insomnia. P-value of them are all under 0.01, so they are all important factors to predict the insomnia of cancer patients.
- But still depression is also critical risk factor in this model and depression itself is associated with sleep disturbance. Therefore we have performed another analysis without depressed patients (PHQ-9 ≤ 9) to rule out the effects of depressive disorder.(Table 3)

Table 3. The risk factors for insomnia, in non-depressed (PHQ-9 ≤ 9) cancer patients

Outcome variables	Explanatory variables	β	P-value
ISI ($R^2=0.149, p < 0.001$)	C-DBS**	0.396	0.000
	Age	0.054	0.544
	Cancer stage	0.097	0.266
	FoP	-0.073	0.422
	STAI	-0.130	0.136
	PHQ-9	0.065	0.462

Index is same as above
 ** p-value < 0.01

- According to the result, C-DBS is a only predictable factor for insomnia disorder in cancer patients who are not depressed. Cancer stage and anxiety were not associated with sleep disturbance in this group.

CONCLUSION

- In cancer patients, the people who have cancer-related dysfunctional belief about sleep is tend to experience severe insomnia symptoms, more depressive symptoms and feel more fear of cancer progression.
- Cancer-related dysfunctional belief about sleep, depression and fear of disease progression can cause insomnia in cancer patient. Among non-depressed patient, cancer-related dysfunctional belief about sleep is significant risk factor for insomnia.
- Cancer-related dysfunctional belief about sleep can be a important tool to evaluate insomnia risk in cancer patients regardless of experiencing depression.