The association between pro-inflammatory marker, interleukin (IL)-1b and psychosocial status among persons with insomnia and depressive disorders

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Abstract

Background and purpose: Sleep disturbance is a very common complaint that results in physical and emotional distress among social work service users. Emotional distress and sleep disturbance probably were associated with lower immune function assessed by pro-inflammatory marker. Yet there is little research from the perspective of psychosocial and physiological well-being. This study aimed to assess the relationship between pro-inflammatory marker (IL-1b) with perceived stress, emotional distress and sleep disturbance in persons with insomnia and depressive disorder in the community.

Methods: Persons with sleep complaints accompanied by depressive disorders in the community filled in an online screening questionnaire. Chinese version Center for Epidemiologic Studies Depression Scale (CES-D) was set as a screening test for depressive disorder. 236 participants who had CES-D ranged 10 – 34 without any bipolar and other psychotic diseases were recruited.

Outcome measures including CES-D, Pittsburgh Sleep Quality Index (PSQI), perceived stress scale (PSS) and hospital anxiety and depression scale (HADS) were assessed. Correlation analyses were conducted by pearson correlation coefficient. Two groups divided by the cutoff point for each outcome were compared by independent t-test.

Results: The mean age was 55.5 (SD=10.5). The majority of participants were female (n=175, 74.2%). The participants had severe sleep disturbance [mean=13.5, (SD=3.2), median = 14] and mild to moderate depression (CESD) [mean = 21.8, (SD=6.4) and median= 22]. The mean and median of PSS score was 21.0 (SD = 4.2) and 21.0, respectively. The participants had mild anxiety (mean = 8.4, SD=3.3 for HADS-anxiety) and mild depression (mean = 7.6, SD = 3.3 for HADS-depression). The median scores for HADS-anxiety and depression were 8.0 and 8.0, respectively. The mean IL-1b was 0.114 (SD=0.212).

IL-1b was significantly associated with PSQI score (r = -0.182, p = 0.006) and PSS scale (r = 0.139, p=0.032), but not for CESD score (r =0.102, p=0.118), anxiety (r=0.051, p=0.437) and depression (r=0.097, p=0.138). If the participants were grouped by the median of 22 for CESD as cutoff point, we found that the person with CESD score of at least 22 had higher level of IL-1b than those less than 22 [0.143 (0.247) vs 0.083 (0.160), p =0.026). If cutoff point for HADS-depression was set as 7, the participants with depression score of not less than 7 had higher level of IL-1b compared with those with less 7 [0.136 (0.239) vs 0.078 (0.151), p = 0.024]. However, there was not significant difference between two sub-groups divided by cutoff point of 7 for HADS-anxiety [0.118 (0.215) vs 0.105 (0.206), p = 0.686].

Conclusion and implications: This study showed that insomnia persons with higher perceived stress level and depressive symptoms also experience higher level of pro-inflammatory biomarker. The mind-body-behavior connection is established. Social workers may consider using bio-markers as outcome indicators for future interventions.