Prevalence of insomnia in patients with chronic back pain

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ABSTRACT

Purpose. To estimate the prevalence of insomnia in patients with chronic back pain, and to correlate insomnia with severity of back pain and disability.

Methods. 63 women and 57 men aged 24 to 83 (mean, 55) years who presented with chronic back pain for >6 months were asked to complete a self-administered questionnaire to evaluate the Insomnia Severity Index (ISI), Oswestry Disability Index (ODI), and Numerical Rating Scale (NRS) for back pain.

Results. Of the 120 patients, 25 had no insomnia, 39 had sub-threshold insomnia, and 56 had clinically significant insomnia. According to the ODI, disability was minimal in 12 patients, moderate in 38, severe in 43, bed-binding in 26, and crippling in one. Of the 120 patients, 91 rated their NRS for back pain as 5 to 10 and 29 rated it as 1 to 4. Correlation was stronger between ISI and ODI than between ISI and NRS for back pain (r=0.59 vs. r=0.38).

Conclusion. 47% of patients with chronic back pain had insomnia. The ODI was more reliable than the NRS for back pain to detect insomnia. Back pain should be treated early to avoid serious health problems associated with insomnia.

Key words: back pain; sleep initiation and maintenance disorders

INTRODUCTION

Clinically significant insomnia is defined as having trouble initiating or maintaining sleep, or non-restorative sleep that causes significant stress or detrimentally impacts daytime function, and persists for more than a month. This may occur as a primary disorder or in association with another medical or psychiatric condition. The prevalence of insomnia in chronic pain populations is estimated to be 50 to 88%. Back pain is the most common of all chronic pain conditions, and is the most prevalent medical disorder in industrialised societies. People with chronic low back pain have arousal disturbances in their brain waves during sleep and awaken feeling unrefreshed. Thus, sleep problems and chronic pain should be managed together, as this helps restore normal functioning. We estimated the prevalence...
of insomnia in patients with chronic back pain and correlated insomnia with severity of back pain and disability.

MATERIALS AND METHODS

Between February 2008 and August 2008, 63 women and 57 men aged 24 to 83 (mean, 55) years who presented to our spinal clinic with chronic back pain for >6 months were asked to complete a self-administered questionnaire to evaluate the Insomnia Severity Index (ISI), Oswestry Disability Index (ODI), and Numerical Rating Scale (NRS) for back pain. Patients with primary sleep disorder and previous back surgery were excluded.

The ISI is a validated screening tool to assess the severity of insomnia experienced by patients. Based on the Diagnostic and Statistical Manual of Mental Disorders (4th edition), the ISI consists of 7 questions with regard to sleep onset, sleep maintenance, early awakening, level of satisfaction with sleep pattern, extent of interference with daily functioning, conspicuousness of impairment caused by sleep problem, and level of concern about current sleep problem. Each question is scored on 5-point Likert scale (0 to 4). Total scores range from 0 to 28; higher scores indicate more severe insomnia. Scores 0 to 7 indicate no clinically significant insomnia, 8 to 14 sub-threshold insomnia, 15 to 21 clinically significant insomnia (moderate), and 22 to 28 clinically significant insomnia (severe). The cut-off score of 14 has optimal sensitivity (94%) and specificity (94%). The ISI has been validated against both objective (polysomnography) and subjective (clinical interviews and sleep diary data) measures for reliability and validity. It has acceptable internal consistency and concurrent validity.1

The ODI has 10 sections to assess pain and limitation in various activities of daily living. Each section is scored 0 to 5. Total scores range from 0 to 50 and are converted to percentages 0 to 100%; higher percentages indicate greater disability.

The NRS for back pain is from 0 to 10; higher scores indicate greater back pain.

RESULTS

The mean ISI was 14 (range, 0–27). Of the 120 patients, 25 (21%) had no insomnia (ISI, 0–7), 39 (33%) had sub-threshold insomnia (ISI, 8–14), and 56 (47%) had clinically significant insomnia (ISI, >14). Of the latter, 39 were moderate and 17 were severe.

The mean ODI was 47% (range, 4–84%). The median score for its sleep component was 2. According to the ODI, disability was minimal (ODI, 0–20%) in 12 patients, moderate (21–40%) in 38, severe (41–60%) in 43, bed-binding (61–80%) in 26, and crippling (81–100%) in one.

The mean NRS for back pain was 7.1 (range, 1–10). Of the 120 patients, 91 rated it as 5 to 10 and 29 rated it as 1 to 4.

There were positive correlations between ISI and...
ODI \((r = 0.59, p < 0.001)\), ISI and NRS for back pain \((r = 0.38, p < 0.001)\), and ISI and sleep ODI \((r = 0.79, p < 0.001)\) [Fig.]. Correlation was stronger between ISI and ODI than between ISI and NRS for back pain \((r = 0.59 \text{ vs. } r = 0.38)\). Females had significantly higher ISI than males \((p = 0.044)\). All other variables were not significantly different between genders.

**DISCUSSION**

In the current study, 47\% of the patients had clinically significant insomnia, which is comparable to the 53\% reported in a study,\(^3\) and lower than the 65 to 89\% in other studies.\(^5\)–\(^8\) These differences could be due to different assessments of clinically significant insomnia and omission of clinically insignificant insomnia,\(^3\) as well as differences in inclusion of chronic back pain and exclusion of other types of chronic pain. According to the Diagnostic and Statistical Manual of Mental Disorders (4th edition), the prevalence of insomnia among the general public is 6\%,\(^9\) and is substantially higher among patients with chronic back pain.

In the current study, correlation was stronger between ISI and ODI than between ISI and NRS for back pain \((r = 0.59 \text{ vs. } r = 0.38)\). This may be due to a vicious circle that chronic back pain leads to poor physical functioning and necessitates excessive daytime rest that leads to inadequate sleep at night and aggravates pain and disability.

Chronic pain patients who also suffer from insomnia have greater pain intensity, trouble falling asleep, frequent awakenings, fewer hours of restful sleep, and higher levels of anxiety and depression.\(^5\)–\(^11\) In patients with insomnia, the risk of depression and alcohol/drug dependence is increased 4-fold, and the risk of death from coronary disease is increased 3-fold, in addition to an increased risk of developing hypertension.\(^3\)–\(^14\) There is a lack of awareness about the widespread problem of insomnia and these risks among physicians treating patients with low back pain. Thus, back pain should be treated early to avoid serious health problems associated with insomnia. Insomnia also affects job performance and personal relationships, for which patients should seek treatment for their back pain.

As all our patients were chronic back pain sufferers treated in a hospital, conclusions of the current study cannot be generalised to patients with back pain in the community.

**DISCLOSURE**

No conflicts of interest were declared by the authors.

**REFERENCES**