

Original Research Reports

Insomnia in Patients With Unexplained Chest Pain

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Objectives: *The current study was designed (1) to assess insomnia symptoms and sleep-related beliefs in a population of patients presenting in emergency department with unexplained chest pain (UCP) and (2) to examine the associations between insomnia and pain. Methods:* This is a report of secondary data from a cross-sectional study performed in the emergency department of 2 academic hospitals. Patients with UCP seen in an emergency department were assessed using sleep questionnaires and the Anxiety Disorders Interview Schedule for Diagnostic and Statistical Manual of Mental Disorders, fourth edition. **Results:** Nearly every second patient with UCP (44%) seen in an emergency department suffered from clinically significant insomnia symptoms. Most patients with an anxiety or a mood disorder had insomnia, but a minority of patients with insomnia had an anxiety or a mood disorder. Insomniacs with an anxiety disorder were

similar to insomniacs without comorbid anxiety for sleep-related beliefs and depressive symptoms, and both groups of insomniacs reported more depressive symptoms and faulty beliefs than both groups of good sleepers, i.e., either with or without an anxiety disorder. Results from regression analyses revealed that insomnia was associated with pain on univariate regression analysis and accounted for 1.3% of the variance in both pain intensity and interference. However, this association was rendered nonsignificant when additional variables were added to the model. Conclusions: Insomnia symptoms are an important, but often disregarded, feature present in a significant proportion of patients with UCP. As insomnia showed stronger associations with pain than anxiety or depression, it may represent an important factor contributing to the development and recurrence of UCP.

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Chest pain is the second most frequent reason for consultation in emergency departments (ED).¹ In the United States, more than 5 million individuals are seen in an ED with a chief complaint of chest pain each year.² Approximately 50% of these patients present with noncardiac or unexplained chest pain (UCP).³ Interestingly, a large proportion of patients with UCP (20%–40%) also have a psychiatric disorder⁴; anxiety and mood disorders, particularly panic disorder and major depressive disorder, are the most common. Anxiety and mood disorders are closely associated with sleep problems. Epidemiologic surveys have demonstrated that 70%–90% of individuals with an anxiety disorder or a mood disorder (often major depressive

disorder) report insomnia.^{5,6} Insomnia increases risk of depression and anxiety⁷; it is also a common residual

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METHOD

symptom after successful treatment for these problems⁸ and increases the risk of relapse.⁹ Therefore, UCP seems to be associated with some degree of sleep difficulties,¹⁰ although a thorough assessment of insomnia symptoms in this population has yet to be done.

Significant data are available concerning the prevalence, detection, consequences, and costs of insomnia in patients in primary care clinics. Insomnia is present in 25%–35% of patients who consult a general practitioner.^{11,12} The prevalence rate increases to 59% in patients with anxiety or depression.¹² It is noteworthy that 50%–69% of patients do not report their insomnia symptoms to their physician¹¹; underreporting is attributed to general practice patients' perceived difficulty convincing physicians that their sleep difficulties are serious.¹³ The rate of detection of sleep problems may be even lower in patients with UCP than in general medicine patients because physicians' inquiry and validation of symptoms tends to be less thorough in patients in the former population.¹⁴

Inquiring about sleep problems by physicians is essential because insomnia is associated with poor health status, depression, and dysfunctional beliefs¹⁵ as well as decreased productivity and significant functional impairment.¹⁶ Individuals with insomnia report greater health care use,^{12,16} with longer and more frequent hospitalizations and emergency room visits.¹⁷ They also report more physical pain than do good sleepers.¹⁸ The direct and indirect costs of this problem are estimated to be approximately \$15 billion per year, i.e., \$2000 per patient with insomnia per year.¹⁹ Thus, insomnia symptoms may plausibly contribute to the overall socioeconomic burden of UCP.

In summary, patients with UCP complain of unexplained somatic symptoms, leading them to visit an ED frequently, where they are administered numerous costly tests that often yield negative results. Although not yet empirically demonstrated, it is likely that this population suffers from significant insomnia, which may be associated with their pain. The objectives of the present study were (1) to assess insomnia symptoms in a population of patients presenting to an ED with UCP and (2) to examine the associations between insomnia and pain. Our main research questions were as follows: (1) what is the proportion of individuals with UCP who report significant insomnia, (2) are insomnia symptoms associated with an underlying anxiety or mood disorder in this population, and (3) is insomnia associated with pain intensity?

This study represents secondary analyses from a cross-sectional study of panic in ED patients with UCP.²⁰ The research protocol was approved by the ethics committee at the Montreal Sacré-Coeur Hospital and the University-Affiliated Hospital of Levis, and participants gave written informed consent. Montreal Sacré-Coeur Hospital serves an urban population, and the University-Affiliated Hospital of Levis serves a rural and urban population. The 2 hospitals are roughly 250 km apart. Each ED receives approximately 50,000 visits per year.

Data collection for the primary study had already started when sleep assessment was included in the protocol. As a consequence, only a proportion ($n = 324$; 42%) of the original sample ($n = 771$) is included in the present study. There were no significant differences on sociodemographic characteristics (age, gender, marital status, and employment status) between participants who provided sleep data and those who did not.

Participants

Participants were recruited from Monday to Friday between 8 AM and 4 PM (refer to [Figure 1](#) for the recruitment flowchart). To be eligible for the study, patients had to be at least 18 years old, fluent in written and oral English or French, and report chest pain with a negative serial electrocardiogram and cardiac enzyme test results (troponin < 0.06). Exclusion criteria included any objective medical cause for chest pain (e.g., cause identifiable by radiography; positive stress test result; or objective signs of ischemia, arrhythmia, or myocardial necrosis), any medical condition that could invalidate the interview (e.g., psychotic state, intoxication, intellectual deficiency, or cognitive disorder), any unstable medical condition that could prevent the proceedings of the interview and questionnaire completion, and any documented trauma to or near the chest.

Protocol

Research assistants accessed ED databases to identify consecutive patients who presented with chest pain, and consulted patients' medical records to assess eligibility. The evaluation interview was administered

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