INTRODUCTION

Sleep paralysis (SP) and hypnic hallucinations (HH) are traditionally recognized as components of Narcolepsy-Catatpexy syndrome, which is relatively rare. However, the lifetime prevalence of isolated SP and HH (i.e. unaccompanied by other features of narcolepsy) is up to 50%. Typically, SP occurs while falling asleep or on awakening and is characterized by transient immobility, which resolves spontaneously without any sequel in a few seconds to minutes. Hypnagogic (occurring while falling asleep) and hypnopompic hallucinations (occurring on awakening) involving auditory, visual, or kinesthetic (movement) modalities, are also common, and are short lasting. For the sake of convenience, both will be collectively referred to as HH. SP and HH may occur together or separately. They can be extremely frightening and may lead to fear, anxiety, bizarre descriptions, and explanations, which in turn could attract psychiatric diagnoses. While earlier studies were largely epidemiological surveys on the general population, recently SP has been studied in patients with various diagnoses. Hallucinations in schizophrenia include all sensory domains (auditory, visual, tactile, and olfactory). Given the wide prevalence of SP and HH, it would be expected that a number of patients with schizophrenia might also experience SP and HH. In this context, it may be difficult for the patients

Background: Usually remembered in the context of Narcolepsy-Catatpexy syndrome, isolated sleep paralysis (SP) and hypnic hallucination are widely prevalent and because of the overlap of symptoms with schizophrenia, their identification is important but unrecognized.

Aims: To determine the presence of SP and hypnic hallucinations (HH) in people with schizophrenia and schizoaffective disorder

Study Design: Cross-sectional survey.

Methods: Participants were patients receiving follow-up care for schizophrenia from Assertive Community Treatment Team. A screening questionnaire was administered during their routine follow-up visits.

Results: Of 71 respondents (49 males, 22 females) only 11 (10 males and 1 female), that is, 15% reported SP, and 12 (7 males and 5 females), that is, 16.9% reported HH, a considerably low prevalence.

Conclusion: It is difficult to study the presence of SP and HH in patients with active or residual symptoms of schizophrenia, and more refined studies and appropriate questionnaires are required. The possibility of SP and HH confounding or being misdiagnosed as psychotic symptoms needs to be borne in mind.

Key words: Hypnic hallucinations, schizophrenia, sleep paralysis

ABSTRACT

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com
and the clinicians to distinguish the latter from the symptoms of schizophrenia. It is notable that SP and HH have not been formally studied in patients with schizophrenia, and barring anecdotes, only one study has been published on patients with schizophrenia. Notably, a number of reports alert clinicians about the possibility of misdiagnosing Narcolepsy-Cataplexy syndrome as schizophrenia. The co-occurrence of SP and schizophrenia could also pose a number of challenges and confound the clinical picture.

We hypothesized that the prevalence of SP and HH in schizophrenia would at least be similar to that in the general population.

METHODS

Cross-sectional survey of adult outpatients (age ≥ 18) with a diagnosis of schizophrenia or schizoaffective disorder (according to Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition diagnostic criteria) being followed up by the Assertive Community Treatment Team in London (a city in the province of Ontario in Canada) was conducted. The Health Research Ethics Board at the University of Western Ontario approved the study, and participants’ consent was obtained as per the Health Research Ethics Board guidelines. Patients with known Narcolepsy-Cataplexy syndrome, recent destabilization of Schizophrenia, mood disorders, cognitive dysfunction, and inability to provide consent were excluded.

Instruments

A questionnaire was used with three primary and four secondary questions if any of the primary questions were answered “Yes.”

Primary questions
- Have you ever woken from sleep (or while falling asleep) and felt like you were not able to move and speak?
- Have you heard sounds/voices while falling asleep or on awakening?
- Have you had visions while falling asleep or on awakening?

Secondary questions were asked as follows
- When was the 1st time you experienced it?
- How often do you experience it?
- When was the last time you experienced it?
- Did you report it to your physician/clinician?

Similar questionnaires have been used in various studies, but none of them has been specifically designed to assess patients with schizophrenia.

Patients were not screened for kinesthetic hallucinations or “out of body experience.”

RESULTS

Seventy-one patients consented to participate in the study. There were 22 female and 49 male participants, and their mean age was 46.51 years (range: 23–73; standard deviation: 11.14). They all suffered from schizophrenia or schizoaffective disorder and were on various antipsychotic medications. None of the patients was known or suspected to have a diagnosis of the Narcolepsy-Cataplexy syndrome. Twenty-eight patients refused to consent, and another 34 were not asked to participate on account of their prevailing mental state. Their demographic details were not collected. The results are presented below.

|                 | SP only (%) | HH only (%) | SPHH (%) | Neither (%) | Total participants |
|-----------------|-------------|-------------|----------|-------------|-------------------|
| SP – Sleep paralysis; HH – Hypnic hallucinations; SPHH – Sleep paralysis with hypnagogic hallucinations |
| 4 (5.6)         | 5 (7.04)    | 7 (9.85)    | 55 (77.46) |             | 71                |

SP was reported by 11 (4 + 7) = (15%) respondents (10 of 49 males and 1 of 22 females). HH were reported by 12 (5 + 7) = (16.9%) participants (7 males and 5 females). Of these, 2 reported visual, 7 reported auditory, and 3 had both visual and auditory hallucinations. Notably, 55 respondents (77.46%) did not report SP or HH. Also, prior to the study no patients had reported or were inquired about SP/HH by their clinicians. None of the participants who endorsed SP/HH provided information about the age at onset, frequency, and the last time when they experienced SP/HH.

DISCUSSION

The prevalence of SP/HH was lower than expected in both the genders but considerably lower in females. The low prevalence is at variance with the prevalence of SP among patients with bipolar disorder and schizophrenia, which was 42% compared with 39% in the control group, in a study conducted in Korea. Likewise, a strong association with SP and depression, and posttraumatic symptoms, and depression and anxiety in patients with childhood sexual abuse, have been reported. However, low prevalence was also noted in a sample of patients with anxiety disorders.

The reasons for low prevalence are unclear but may be due to sample characteristic of respondents and also those who did not consent. A number of patients had ongoing active or residual psychotic symptoms. It is possible that a number of participants may have had difficulty with the concept of SP/HH, or had difficulty in distinguishing between HH and hallucinations of schizophrenia. Recently, however, it has been shown that it is possible to distinguish between the hallucinations in narcolepsy and schizophrenia. However, the study reported here involved assessing SP and HH, coexisting with schizophrenia. Also, the questionnaire used only standard terminology, and no cultural terminology...
or metaphors were used. It has been demonstrated that variability in reported prevalence may at least in part be explained by the questionnaire itself.\cite{19}

The clinical implications of the findings are not clear. If the prevalence is at least as high as the general population, then for this sample, it is possible that there was underreporting of SP/HH, admittedly, this is speculative. Nevertheless, considering the overlap with symptoms of schizophrenia and narcolepsy, and narcolepsy and isolated SP/HH, it can be argued that the same confounding effects exist with schizophrenia and SPHH as there are between schizophrenia and narcolepsy. To be exact, hallucinations, among all the symptoms of narcolepsy are most likely to be confused with psychosis. Whereas, SP is more likely to lead to bizarre descriptions which may lead to a suspicion (diagnosis) of psychosis, and which may also lead to “delusional” explanations. The other symptoms of Narcolepsy-Catataplexy syndrome, daytime drowsiness, cataplexy, and sleep attacks are rather distinctive and less likely to lead to a suspicion of psychosis. Thus, it is possible that in schizophrenia, some delusional thinking may have been triggered by SP/HH if at all patients experienced them. It is then possible that due to lack of awareness about these phenomena, they may not have been inquired after. It is also possible that SP/HH and schizophrenia may coexist with the possibility that the ongoing HH may lead to an impression that the psychosis has remained untreated although the hallucinations of schizophrenia may have actually responded to treatment and the patient/clinician does not make the distinction between HH and psychotic symptoms. This may lead to erroneous treatment decisions.

Obvious limitations include a small sample size, use of self-report, and exclusion of modalities other than auditory and visual hallucinations. Further, the relationship of SPHH to psychotic symptoms was not examined, and the effect of medications was not taken into account. Among those reporting SP/HH, their interpretation, and emotional reactions were not examined.

The study has highlighted the difficulties in assessing for SP/HH in patients with Schizophrenia and underscored the need for devising appropriate questionnaire in this group of patients. More refined studies are required to address these issues, which will lead to greater awareness of these phenomena in patients with psychotic disorders, and their importance in the diagnosis and treatment of psychotic disorders. It may be helpful in future studies to include less severely ill patients to start with. From clinical standpoint it is worthwhile inquiring about SP/HH in patients with psychotic disorders, and should be thought of as a differential or a comorbid diagnosis.

Acknowledgment

The authors would like to thank Professor Richard O’Reilly for kindly providing some of the data. The study was presented at the Regional Mental Health Care Annual Research Day on May 13, 2009, at St Thomas. Ontario, Canada.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Shapiro CM, Dement WC. ABC of sleep disorders. Impact and epidemiology of sleep disorders. BMJ 1993;306:1604-7.
2. Ohayon MM, Priest RG, Caulet M, Guilleminault C. Hypnagogic and hypnopompic hallucinations: Pathological phenomena? Br J Psychiatry 1996;169:459-67.
3. Gangdev PS. Sleep paralysis accompanied by secondary psychiatric disturbance. S Afr Med J 1996;86:386-7.
4. Gangdev PS, Ramjee PU. Sleep paralysis presenting with reactive depression. S Afr Med J 1996;86 12 Suppl:1617-8.
5. Gangdev P. Relevance of sleep paralysis and hypnic hallucinations to psychiatry. Australas Psychiatry 2004;12:77-80.
6. McNally RJ, Clancy SA. Sleep paralysis, sexual abuse, and space alien abduction. Transcult Psychiatry 2005;42:113-22.
7. Paradis CM, Friedman S. Sleep paralysis in African Americans with panic disorder. Transcult Psychiatry 2005;42:123-34.
8. Yeung A, Xu Y, Chang DF. Prevalence and illness beliefs of sleep paralysis among Chinese psychiatric patients in China and the United States. Transcult Psychiatry 2005;42:135-45.
9. Otto MW, Simon NM, Powers M, Hinton D, Zalta AK, Pollack MH. Rates of isolated sleep paralysis in outpatients with anxiety disorders. J Anxiety Disord 2006;20:687-93.
10. Szkl-coxe M, Young T, Finn L, Mignot E. Depression: Relationships to sleep paralysis and other sleep disturbances in a community sample. J Sleep Res 2007;16:297-312.
11. Liddon SC. Sleep paralysis, psychosis, and death. Am J Psychiatry 1970;126:1027-31.
12. Park JH, Yang CK. Sleep paralysis in schizophrenia and mood disorder. Sleep Med Physiol 2002;9:115-21.
13. Shapiro B, Spitz H. Problems in the differential diagnosis of narcolepsy versus schizophrenia. Am J Psychiatry 1976;133:1321-3.
14. Douglass AB, Hays P, Pazzlerka F, Russell J. Florid refractory schizoaffective disorders that turn out to be treatable variants of HLA-associated narcolepsy. J Nerv Ment Dis 1991;179:12-7.
15. Kishi Y, Konishi S, Koizumi S, Kudo Y, Kurosawa H, Kathol RG. Schizophrenia and narcolepsy: A review with a case report. Psychiatry Clin Neurosci 2004;58:117-24.
16. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV TR). Washington, DC: American Psychiatric Association; 2000.
17. Abrams MP, Mulligan AD, Carleton RN, Asmundson GJ. Prevalence and correlates of sleep paralysis in adults reporting childhood sexual abuse. J Anxiety Disord 2008;22:1535-41.
18. Fortuny HA, Lappenschma GA, Nienhuis FJ, Furer JW, Hodiamont PP, Rijnders CA, et al. Psychotic symptoms in narcolepsy: Phenomenology and a comparison with schizophrenia. Gen Hosp Psychiatry 2009;31:146-54.
19. Fukuda K. One explanatory basis for the discrepancy of reported prevalences of sleep paralysis among healthy respondents. Percept Mot Skills 1992;77 (3 Pt 1):803-7.