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Brief report

Clinical features of respiratory and nocturnal panic disorder subtypes

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Abstract

Our aim is to compare the panic disorder (PD) respiratory subtype and the nocturnal panic subtype. A group of 193 PD patients (DSM-IV) was examined in the Laboratory of Panic and Respiration in the Institute of Psychiatry of the Federal University of Rio de Janeiro. The diagnoses were made using the SCID-I for DSM-IV. The subtypes were the respiratory (with 4 out of 5 prominent respiratory symptoms during the panic attacks [PA]) vs. non-respiratory, likewise PD with nocturnal (during sleep) PAs vs. PD with only diurnal PAs. The respiratory subtype accounted for 56.5% ($n=109$) of our sample; the non-respiratory subtype, 43.5% ($n=84$); the nocturnal subtype, 49.2% ($n=95$); and the non-nocturnal subtype, 50.8% ($n=98$). Despite a rich literature concerning correlations between the respiratory system and nocturnal panic attacks, our data do not support these findings, as the comparison of proportions in the respiratory and nocturnal groups did not differ. The non-nocturnal subtype was significantly associated with agoraphobia, and the respiratory subtype was not associated with these variables.

Keywords: Respiration; Panic attack; Nocturnal panic attack; Respiratory; Subtype

1. Introduction

In recent years, considerable attention has been paid to the phenomenology of panic attacks (Gorman et al., 2000). The data have led to an increased recognition that panic attacks are multi-dimensional, with heterogeneity in their phenomenology. The *locus ceruleus* is a norepinephrine-containing nucleus in the brain and there is evidence, both clinical and preclinical, relating abnormal functioning of noradrenergic neurons in the brain to the pathogenesis of PD. Brain structures such as the amygdala, thalamus, hypothalamus, hippocampus, locus ceruleus, and prefrontal cortex are neuroanatomically and functionally interrelated, depending on a balance of noradrenergic and serotoninergic catecholamines, and responsible for different components of panic attacks and respiratory central control (Gorman et al., 2000). Klein (1993) proposed that panic attacks were related to the hypersensitivity of the brainstem chemoreceptors. During sleep, higher carbon dioxide levels could trigger

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a false suffocation alarm, leading to a panic attack with shortness of breath, choking, drowning sensation, chest pain, palpitations and fear of dying, explaining the possible relationship between the respiratory system and nocturnal panic attacks (Klein, 1993).

There is scientific evidence that the "respiratory symptoms" group is a distinct panic disorder subtype (Briggs et al., 1993). Briggs et al. (1993) studied the descriptions of the most recent severe panic attack of 1108 PD patients who were retrospectively divided into two groups according to the presence of prominent respiratory symptoms. The group with prominent respiratory symptoms suffered more spontaneous panic attacks and seemed to respond better to antidepressants, whereas patients with non-respiratory subtype had more situational panic attacks and seemed to respond better to benzodiazepines.

The connection between respiratory regulation centers and PD has been reported in the medical literature (Biber and Alkin, 1999; Gorman et al., 2000; Valença et al., 2002). Nardi et al. (2004) found that PD patients who had hyperventilation-induced panic attacks frequently fulfilled criteria for the respiratory subtype, had a stronger familial history for PD and a higher incidence of major depression episodes. Moynihan and Gevirtz (2001) studied the differences in respiratory function in patients with the respiratory and cognitive subtypes, according to Ley's (1992) classification system of panic disorder subtypes. They found that patients in the respiratory group had a significantly lower resting end-tidal CO_2 level than the cognitive subtype, which, in turn, was not significantly different from nonpanic controls (Moynihan and Gevirtz, 2001). This finding was explained through the hypothesis that respiratory panickers are oversensitive to CO_2 concentrations and hyperventilate (Klein, 1993). Biber and Alkin (1999) examined the sensitivity to carbon dioxide in PD patients throughout the proposed subtype model. Patients with PD with prominent respiratory symptoms were more sensitive to CO_2 challenge (Biber and Alkin, 1999; Valença et al., 2002), had higher scores in the Panic and Agoraphobia Scale, and had a longer period of illness than patients with non-respiratory symptoms. Patients within the respiratory subtype seemed to smoke more than those in the non-respiratory subtype (Biber and Alkin, 1999). In a study on familial history of PD, it was found that relatives of PD patients with prominent respiratory symptoms had an almost threefold higher risk for the disorder and an almost sixfold higher risk for panic with smothering symptoms compared with to relatives of patients without such prominent symptoms (Horwath et al., 1997).

About 18% to 45% of panic disorder patients experience nocturnal panic attacks (NPA) (Craske et al., 2002), and these PAs are frequently more severe than diurnal PAs in terms of chest pain, nausea, dizziness and fear of going crazy or losing control (Craske and Barlow, 1989). Uhde (1994) posited that after an NPA, the patient would develop a conditioned fear of sleep, which would lead to sleep deprivation and, consequently, aggravate diurnal and nocturnal PAs, as well as avoidant behaviors. Craske and Barlow (1989) also found that PD patients with a history of NPAs had twice as many diurnal PAs and had more severe PAs, with more chest pain/discomfort, nausea and choking/smothering sensations than patients without a history of NPAs. Merrit-Davis and Balon (2003) revised several studies and found significant clinical and physiological differences between nocturnal and non-nocturnal panic. In patients who had NPAs, Lopes et al. (2002) found prominent respiratory symptoms and association with respiration-related sleep disorders, such as sleep apnea syndrome. Norton et al. (1999) detected more symptoms within the PAs in nocturnal panic patients compared with those without nocturnal panics. In recent studies (Craske et al., 2002; Craske and Tsao, 2005) great differences were not found when comparing these groups. Still, there was less agoraphobia, more sleep disturbance and a greater difficulty of sleep onset in patients with NPAs (Craske and Tsao, 2005). In a recent study, Lopes et al. (2005) found no differences between these subtypes, regarding cognitive impairment, clinical and demographic features.

We aim to subtype a large group of PD patients, identify correlations, and compare the subgroups with regard to demographic and clinical characteristics. Our expectation is to find a correlation between the respiratory subtype and nocturnal panic attacks. We also expect to find higher agoraphobia, greater familial history and higher incidence of benzodiazepine use in the non-respiratory group.

2. Methods

We examined 193 patients in their first visit to the Laboratory of Panic and Respiration, in the Institute of Psychiatry of the Federal University of Rio de Janeiro. There were 116 women and 77 men, and the mean age was 35.7 (S.D.=9.2) years. After all subjects received a clinical diagnosis of PD made by a psychiatrist, they were interviewed by two other clinicians with the Structured Clinical Interview Diagnostic—SCID-I (First et al., 1997) for DSM-IV (APA, 1994). If the two clinicians disagreed on the diagnosis, they met to