Schizophrenia Research 118 (2010) 285–291

Contents lists available at ScienceDirect

Schizophrenia Research

journal homepage: www.elsevier.com/locate/schres

Schizophrenia patients with polydipsia and water intoxication are characterized by greater severity of psychotic illness and a more frequent history of alcohol abuse

Simon Poirier [a,b,d], Geneviève Legris [b,d], Philippe Tremblay [b,d], Rodrigo Michea [a,c], Laurence Viau-Guay [a], Chantal Mérette [a,b], Roch-Hugo Bouchard [a,b], Michel Maziade [a,b], Marc-André Roy [a,b,*]

[a] Centre de Recherche Universite Laval Robert-Giffard, Beauport, QC, Canada
[b] Psychiatry, College of Medicine, Laval University, Québec, QC, Canada
[c] Psychiatry, Hôtel-Dieu de Lévis, Lévis, QC, Canada
[d] Psychiatry, CHUQ, Québec, QC, Canada

ARTICLE INFO

Article history:
Received 18 August 2009
Received in revised form 29 December 2009
Accepted 30 December 2009
Available online 21 January 2010

Keywords:
Polydipsia
Alcohol
Schizophrenia
Subtype
Intoxication
Kraepelinian

ABSTRACT

Polydipsia and water intoxication (PWI) are relatively frequent among schizophrenic subjects, particularly in institutional settings and may lead to severe complications. However, little is known on their association with other characteristics of psychosis. Hence, we took advantage of a cohort of 114 subjects extensively assessed on natural history and clinical variables to examine the correlates of PWI in chronic schizophrenia.

We randomly sampled DSM-IV schizophrenic subjects from: i) a lower functioning subgroup, i.e., long-term psychiatric wards or highly structured group housing facilities; and ii) a higher functioning subgroup, i.e., patients living in the community without supervision. Subjects were assessed from multiple sources for lifetime severity of positive, disorganisation, negative and depressive symptoms, premorbid adjustment, age of onset, level of functioning, comorbid diagnoses of substance abuse and lifetime history of PWI.

Twelve subjects (10.5%) met our PWI criteria. We observed more severe psychotic symptoms, earlier onset, poorer current adjustment and more frequent prior alcohol use disorder in PWI subjects. When restricting comparisons to patients living in institutional setting, differences on clinical and natural history variables vanished but the association between PWI and prior alcohol abuse persisted (72.7% in PWI vs. 21.4% in non-PWI subjects, $p<0.01$). Onset of alcohol abuse predated the onset of PWI by a mean of 12.8 years.

PWI schizophrenic subjects are characterized by a non-specific greater severity on a broad array of clinical and natural history variables and by a specific association with prior alcohol abuse. Thus, our data suggest that a greater severity of illness and a prior history of alcohol use disorders interact in increasing the risk of developing PWI in chronic schizophrenic patients.

1. Introduction

It has been estimated that polydipsia not explained by medically induced polyuria (i.e., compulsive drinking) may occur in over 20% of chronic psychiatric inpatients and that 30% of these compulsive drinkers develop symptoms of water intoxication (De Leon et al., 1994). Water intoxication may lead to hyponatremic encephalopathy which is associated

* Corresponding author. Centre de recherche Université Laval Robert-Giffard, 2601 de la Canardière, Beauport, P. Québec, Canada G1J 2G3. Tel.: +1 418 663 5741; fax: +1 418 663 9540.
E-mail address: marc-andre.roy@crulrg.ulaval.ca (M.-A. Roy).

0920-9964/$ – see front matter © 2010 Elsevier B.V. All rights reserved.
doi:10.1016/j.schres.2009.12.036

with potentially serious complications. Indeed, Vieweg et al. (1985) have reported that as many as 18% of the deaths of schizophrenic (SZ) long-term inpatients under 53 years of age may be related to PWI.

A variety of disorders have been associated to polydipsia and water intoxication (PWI) but it has been found in past studies that SZ patients are overrepresented among PWI subjects (Riggs et al., 1991). This has led to the suggestion of a specific pathogenic pathway of PWI and SZ. Indeed, this association is unlikely to result from a chronic antipsychotic treatment since an association between SZ and PWI was reported long before the introduction of antipsychotics (Sleeper, 1935).

While many epidemiological studies found an association between PWI and chronic SZ (De Leon et al., 1994; Mercier-Guidez and Loas, 2000), only a few studies investigated the clinical, natural history or neurobiological correlates of PWI in SZ. Some studies in SZ inpatients reported an association of PWI with: a chronic undifferentiated or a Kraepelinian form of SZ (Bralet et al., 2007); an early age of SZ onset; extended hospitalisations with minimal response to antipsychotics; heavy tobacco use; high frequency of tardive dyskinesia and brain abnormalities (Kirch et al., 1985); and a comorbid alcohol abuse diagnosis (Ripley et al., 1989). However, important methodological limitations (e.g., small sample size, lack of blindness of dependent variable and PWI ratings, unsystematic sampling of subjects, lack of operational definition of PWI, and limited scope of variables used) preclude concluding about the scope and validity of the differences between PWI and non-PWI SZ. More definitive data on associations between PWI and dimensions of severity of SZ could help to better understand this important condition and to identify valid SZ subtypes.

The present paper aims to better investigate the correlates of PWI in SZ in a longitudinal study with contemporaneous information using a sample with limited sampling biases and which covers the full severity spectrum of SZ. Subjects were extensively assessed on natural history and clinical variables using several sources of information over lifetime (i.e. personal interview, extensive medical records and history from family informants) and PWI was assessed blind to ratings on other variables. We examined whether PWI is a non-specific indicator of greater severity of illness or a specific dimension of poor outcome in SZ, i.e., is it globally associated with several indicators of severity of illness, or with more specific dimensions?

2. Methods

2.1. Sample

The sample is composed of 114 DSM-IV SZ (American Psychiatric Association, 1994) subjects under 50 years of age who had at least a 5 years of psychiatric follow-up. These subjects were recruited as a proband sample for an ongoing family study of SZ subtypes based on outcome and/or severity following the recommendations from our review of the literature on this topic (Roy et al., 2001). As previously described (Lehoux et al., 2003; Roy et al., 2003), these patients were randomly selected from exhaustive lists of inpatients and outpatients treated in psychiatric services from our catchment area according to two different strata defined based on level of functioning rated using the Social and Occupational Functioning Assessment Scale (SOFAS; American Psychiatric Association, 1994), which rates functioning on a 0 to 100 scale, lower scores meaning poorer functioning. The SOFAS is similar to the Global Assessment of Functioning (GAF) from which it is derived except for using ratings based exclusively on functioning and not on symptom severity.

The lower functioning subgroup included 57 patients living on institutionalized setting, i.e., long-term psychiatric wards or living in highly structured group housing facilities, and who had a SOFAS score of ≤ 40. To make sure that this poor level of autonomy was neither transient nor simply a direct consequence of insufficient treatment, we also required that this impairment had persisted over the last 5 years and despite the use of ≥ 2 antipsychotics from ≥ 2 different classes, for ≥ 2 months each, with a dosage of ≥ 800 mg in chlorpromazine equivalents and that compliance was achieved for $\geq 80\%$ of the time since onset. These latter criteria were inspired by Kane et al.'s (1988) criteria for treatment resistant SZ. The higher functioning subgroup included 57 patients living in the community with at most minimal supervision and who had a SOFAS of ≥ 50 for $\geq 90\%$ of the time over the last 5 years, i.e., patients with transient psychotic relapses over that period were not excluded but had to meet this level of functional recovery. The goal of this sampling strategy, which voluntarily oversampled low-functioning patients, was to ensure a sufficient number of people over the full spectrum of level of functioning, therefore giving more power to correlation studies and ensuring a sufficient proportion of PWI patients to perform meaningful comparisons with non-PWI patients.

We excluded subjects with primary mental retardation, or a medical course of disability because of the potential impact of those diagnoses on level of functioning. We also excluded subjects who had presented severe substance use disorders during more than 20% of the time since onset of psychosis to avoid sampling subjects whose poor outcome was caused by such continuous substance abuse.

2.2. Data collection

The treating psychiatrists introduced the research team to eligible subjects. After complete description of the study to the subjects or their legal representative, written informed consent was obtained. The project has been approved by the local ethics board.

We interviewed subjects using the Structured Clinical Interview for DSM-IV (Spitzer et al., 1992) to which we added sections of the Comprehensive Assessment of Symptoms and History (Andreasen et al., 1992) covering positive, negative, disorganisation and depressive symptoms. All medical records were sought and summarized into a comprehensive summary providing detailed information on contemporaneous observation of symptoms since onset of psychotic illness (mean duration = 18.2 years). All this information was forwarded to MAR, who reviewed the diagnostic information and included only patients meeting the DSM-IV SZ criteria for SZ at a definite level. Using a similar method in other projects, we achieved a very satisfactory agreement ($k = 0.91$) between independent psychiatrists for the diagnosis of SZ (Maziade et al., 1992; Roy et al., 1997).