Relationship between cannabis and psychosis: Reasons for use and associated clinical variables

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ARTICLE INFO

ABSTRACT

The mechanism underneath the relationship between cannabis and psychosis remains controversial, for which several hypotheses have been proposed, including cannabis as self-medication and cannabis as a risk for the development of psychosis. The aim of this work was to study the relationship between cannabis and psychosis in first-episode psychosis cannabis users and non-users, and non-psychotic cannabis users. The age at the first psychotic episode, duration of untreated psychosis, psychopathology and reasons for cannabis use were assessed. First-episode psychosis cannabis users showed an earlier age at psychosis onset than non-user patients. No significant differences in symptomatology were found. The distinguishing reasons to use cannabis for patients with first-episode psychosis with respect to non-psychotic users were to arrange their thoughts and deal with hallucinations and suspiciousness. These findings are in agreement with both hypotheses: self-medication and secondary psychosis hypothesis. However, longitudinal prospective cohort studies assessing reasons for cannabis use are needed to investigate both hypotheses and their complementarity.

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1. Introduction

Patients with psychosis have a higher prevalence of substance use, particularly cannabis use. In a meta-analysis, patients with psychosis presented a median lifetime cannabis use disorder rate of 27.1% (Koskinen et al., 2010), whereas in the general population lifetime rates are usually around 10% (Haberstick et al., 2014).

Importantly, in patients with psychosis, cannabis use has been related with poor adherence, more relapses and persistent positive symptoms (Grech et al., 2005; Linszen et al., 1994; Schimmelmann et al., 2012).

Various authors have tried to understand the relationship between substance use, including cannabis use, and psychosis. Several hypotheses have been developed for substance use in general, but they also apply to cannabis use. The two most studied are:

The hypothesis that proposes that psychosis is secondary to substance use, meaning that substance use increases the risk of developing psychosis (Semple et al., 2005). In the case of cannabis, this hypothesis is supported by numerous studies, including a

meta-analysis conducted on 35 longitudinal population studies, showing that patients with a history of cannabis use have an increased risk of developing psychosis (Andreasson et al., 1989; Moore et al., 2007). Furthermore, various studies have shown that patients with cannabis use have an earlier age of psychosis onset (Di Forti et al., 2014; Large et al., 2011). However, in this regard, some authors have proposed that an earlier age of psychosis onset in cannabis users is just secondary to a shorter Duration of Untreated Psychosis (DUP), as their symptoms may become more obvious more quickly (Compton et al., 2009). Nevertheless, there is no consensus on this matter, as some authors have found longer DUP in those first episode patients who had used cannabis, suggesting longer treatment delays in cannabis users (Broussard et al., 2013).

The hypothesis that proposes that substance use is secondary to the psychotic illness (Self-medication hypothesis), meaning that patients use cannabis (or other substances) to relieve particular symptoms (positive, negative) caused by psychosis (Khantzian, 1985). Substances are not chosen randomly, there exists psycho-pharmacological specifity. Self-medication of antipsychotic side effects has also been proposed (Schneier and Siris, 1987). A variation of the self-medication hypothesis has been developed: the alleviation of dysphoria model (Khantzian, 1997). It proposes that patients with psychosis use substances to alleviate unpleasant

Table 1
Overview of previous studies assessing reasons of substance use (including cannabis use) in psychotic patients.

Authors	Diagnosis	Cannabis use criteria	Reason of use assessment
Dixon et al. (1991)	Schizophrenia, Schizoaffective Disorder, Schizophreniform Disorder	CUD precious 6 moths	Dixon's questionnaire
Warner et al. (1994)	Schizophrenia, Schizoaffective Disorder , Bipolar Disorder	No substance use criteria	Semi-structured interview
Addington and Duchak (1997)	Schizophrenia, Schizoaffective Disorder	CUD	Adapted Dixon's questionnaire
Fowler et al. (1998)	Schizophrenia	Cannabis use	Open interview
Spencer et al. (2002)	Psychosis	Cannabis use	Adapted *Drinking Motives Questionnaire (DMQ)*
Goswami et al. (2004)	Schizophrenia	CUD previous moth	Adapted Dixon's questionnaire (*State Reasons Scale*),
Green et al. (2004)	Schizophrenia, Schizoaffective Disorder	Cannabis use	Open interview
Schofield et al. (2006)	Schizophrenia, Schizoaffective Disorder, Schizophreniform Disorder	Cannabis use	Adapted Dixon's questionnaire
Schaub et al. (2008)	Schizophrenia	CUD	15-item questionnaire
Saddichha et al. (2010)	Schizophrenia Bipolar disorder	CUD	Open interview
Archie et al. (2013)	First Episode Psychosis	No substance use criteria	Open interview
Kolliakou et al. (2015)	First Episode Psychosis	Cannabis use	Reasons for Use Scale (RFUS)

CUD. Cannabis use disorder.

states associated with psychosis, such as boredom or depression. In this case, it has been suggested that patients do not chose a specific substance to relieve their discomfort.

Various authors have investigated reasons for cannabis use in patients with psychosis (Addington and Duchak, 1997; Archie et al., 2013; Dixon et al., 1991; Fowler et al., 1998; Goswami et al., 2004; Green et al., 2004; Kolliakou et al., 2015; Saddichha et al. 2010; Schaub et al., 2008; Schofield et al., 2006; Spencer et al., 2002; Warner et al., 1994) (see Table 1). However, methodological aspects limit the ability to draw appropriate conclusions. For instance, as you can see in Table 1, some studies include patients with cannabis use disorders, whereas others include just cannabis users. Moreover, most of previous studies include patients with different diagnoses (Schizophrenia, Bipolar Disorder) without specifying illness stage, and few studies have been carried out in first-episode psychosis patients (Archie et al., 2013; Kolliakou et al., 2015). Patients at different illness stages have different characteristics and therefore they may have different needs (Lewis and Lieberman, 2000). Furthermore, different instruments have been used to assess reasons of use (registry on a list, open interview). However, it is important to highlight that one instrument, or an adaptation of it, has been employed in various studies: Dixon's questionnaire. On the other hand, to our knowledge, only three studies have used a control group (cannabis users without psychosis) (Green et al., 2004; Saddichha et al. 2010; Schaub et al., 2008). We believe the best way to test the self-medication hypothesis is to determine whether individuals with psychosis use cannabis for differential reasons than control age- and gender-matched individuals without psychosis, to distinguish if psychosis patients have specific reasons not just related to using cannabis at their age.

Previous studies that have been performed with a control group (cannabis users without psychosis) have also used heterogeneous methodology. They point to differential reasons to use cannabis in people with psychosis but further research is needed to confirm these findings.

Finally, most of previous studies have been carried out to study both hypotheses separately, without considering them complementary, as some authors have proposed (Grech et al., 2005).

The aim of the present study is try to understand those factors influencing the relationship between cannabis and psychosis in first-episode psychosis patients, including self-medication and cannabis use as a psychosis risk factor, which may help to implement new and specific therapeutic approaches in the future. To this end, we will: 1) Examine the association between cannabis use, illness onset and psychopathology in a group of patients with first-episode psychosis 2) Compare reasons of cannabis use between those first-episode patients who use cannabis and a control group of non-psychotic cannabis users. We hypothesize that first-episode psychosis patients who use cannabis will have an earlier age at psychosis onset (after taking into account DUP and gender), and a specific psychopathological pattern (more positive symptoms). We also hypothesize that first-episode cannabis users will have differential reasons to use cannabis than non-psychotic users.

2. Methods

2.1. First-episode psychosis characteristics

A total of 119 consecutive first-episode psychotic patients who attended the First-episode Psychosis Program at Hospital del Mar between 2008 and June 2014 were included. Inclusion criteria for patients were as follows: i) 18–35 years of age; ii) Diagnostic and Statistical Manual of Mental Disorders-fourth edition (text revision) criteria for Brief Psychotic Disorder, Schizophreniform Disorder, Schizophrenia with less than one year of symptom evolution, or Unspecified Psychosis; iii) absence of any severe neurologic medical condition or severe cranioencephalic trauma in medical history; iv) estimated intelligence quotient above 80; v) absence of any substance abuse/dependence disorder except for cannabis and nicotine.

Patients were considered cannabis users if they used cannabis at least weekly previous six months.

Clinical and sociodemographic variables, including age at psychosis onset, gender, DUP, symptomatology, cannabis use (number of joints per week, age at cannabis use onset), and psychopathology with the Positive and Negative Syndromes Scale (PANSS) (Kay et al., 1990), were studied in two groups of patients with first-episode psychosis: cannabis users and non-users.

Age at psychosis onset was defined as the first time the patient went to a psychiatrist or was admitted to a hospital and was diagnosed with a first-episode of psychosis. We decided to use this criterion as it is an objective method, used in several of previous Schizophrenia studies (Barnes et al., 2006; Di Forti et al., 2014). DUP was considered the time from the first continuous psychotic symptom to the first time the patient went to a psychiatrist or was admitted to a hospital and was diagnosed with a first episode of psychosis. Data regarding DUP and age at psychosis onset was obtained from medical reports and information from patients and their relatives obtained by psychiatrists in charge of the patients, with large experience in treating Schizophrenia patients.