Schizophrenia Research 126 (2011) 81–86

Contents lists available at ScienceDirect

Schizophrenia Research

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

Pre-morbid Conduct Disorder symptoms are associated with cannabis use among individuals with a first episode of psychosis

Charlotte P. Malcolm [a,e,*], Marco M. Picchioni [a,b], Marta DiForti [c,e], Gisela Sugranyes [d], Elizabeth Cooke [c,e], Candice Joseph [c,e], Grant McQueen [c,e], Alessandra Paparelli [c,e], Simona Stilo [c,e], Jennifer O'Connor [c,e], Craig Morgan [c,e], Robin M. Murray [c,e], Sheilagh Hodgins [a,e]

[a] King's College London, Department of Forensic and Neurodevelopmental Sciences (Box P023), Institute of Psychiatry, King's Health Partners, De Crespigny Park, London SE5 8AF, United Kingdom
[b] St. Andrew's Academic Centre, Northampton, NN1 5BG, United Kingdom
[c] King's College London, Department of Psychosis Studies (Box P063), Institute of Psychiatry, King's Health Partners, De Crespigny Park, London SE5 8AF, United Kingdom
[d] King's College London, Department of Child and Adolescent Psychiatry (Box P085), Institute of Psychiatry, King's Health Partners, De Crespigny Park, London SE5 8AF, United Kingdom
[e] NIHR Biomedical Research Centre, Institute of Psychiatry, Kings College, London, United Kingdom

ARTICLE INFO

Article history:
Received 5 August 2010
Received in revised form 14 November 2010
Accepted 29 November 2010
Available online 24 December 2010

Keywords:
Cannabis
Conduct Disorder
Neurodevelopment
Psychosis
Schizophrenia

ABSTRACT

Background: Early cannabis use has consistently been associated with an increased risk for the later development of psychosis. Studies suggest that Conduct Disorder (CD) is more common amongst young people who later go on to develop psychosis. CD has been associated with greater and earlier cannabis use in general population samples. Based on this evidence, we hypothesised that among patients experiencing their first episode of psychosis, the presence of CD symptoms prior to age 15 would be associated with cannabis use.
Method: 102 patients experiencing a first episode of psychosis were interviewed to assess CD symptoms prior to age 15 and use of cannabis and other substances.
Results: The number of CD symptoms was significantly associated with lifetime cannabis use (odds ratio = 5.41 (1.76–16.57), $p = 0.03$) and with first use of cannabis before age 14 (odds ratio = 1.46 (1.12–1.92), $p = 0.006$), after controlling for stimulant/hallucinogen use and level of education.
Conclusions: Among patients experiencing a first episode of psychosis, CD symptoms were significantly associated with use of cannabis and with use by age 14. Among individuals vulnerable for psychosis, CD symptoms may independently increase the likelihood of cannabis use which in turn increases the risk of psychosis.

1. Introduction

1.1. Cannabis use and psychosis

Methodologically disparate studies and meta-analyses consistently suggest that cannabis use is associated with the subsequent development of non-affective psychotic disorders and psychotic symptoms (Hambrecht and Häfner, 2000; Semple et al., 2005; Smit et al., 2004). The frequency and quantity of cannabis use affects the strength of the association with both psychotic disorders and symptoms (Arsenault et al., 2004; Di Forti et al., 2009; Henquet et al., 2005; Moore et al., 2007; Zammit et al., 2002). The use of cannabis in early adolescence, defined as before age 12 (Schubart et al., 2010), 14 (Konings et al., 2008), and 15 years old (Stefanis et al., 2004), is reported to be more strongly associated with the subsequent development of non-affective psychotic disorders (Arseneault et al., 2002; McGrath et al., 2010) and psychotic

* Corresponding author. Department of Forensic and Neurodevelopmental Sciences (Box P023), Institute of Psychiatry, King's College London, De Crespigny Park, London SE5 8AF, United Kingdom. Tel.: +44 20 7848 0776; fax: +44 20 7848 0754.
E-mail address: charlotte.malcolm@kcl.ac.uk (C.P. Malcolm).

0920-9964/$ – see front matter © 2010 Elsevier B.V. All rights reserved.
doi:10.1016/j.schres.2010.11.025

symptoms (Konings et al., 2008; Schubart et al., 2010; Stefanis et al., 2004) than later use. In Europe, there has been an increase in the use of cannabis by adolescents (Monshouwer et al., 2005) at an age when brain development is particularly vulnerable to the deleterious effects of cannabis (Schneider, 2008). Taken together, these findings suggest the need to further understand the factors that influence cannabis use among individuals who develop psychosis.

1.2. Conduct Disorder symptoms and cannabis use

Conduct Disorder (CD) reflects a pattern of persistent antisocial behaviour prior to the age of 15, including the violation of societal and familial rules and the rights of others, and impaired social, academic and/or occupational functioning O'Reilly (2005). Aggressive symptoms include: bullies, threatens or intimidates others; initiates physical fights; used a weapon that can cause serious physical harm to others; has been physically cruel to people; has been physically cruel to animals; has stolen while confronting a victim; has forced someone into sexual activity; deliberately engaged in fire setting with the intention of causing serious damage; deliberately destroyed others' property. Non-aggressive symptoms include: has broken into someone else's house, building or car; often lies to obtain goods or favors or to avoid obligations; has stolen items of nontrivial value without confronting the victim; often stays out at night despite parental prohibitions, beginning before age 13 years; has run away from home overnight at least twice while living in a parental or parental surrogate home (or once without returning for a lengthy period);is often truant from school, beginning before age 13 years.

CD symptoms before the age of 15 are robustly associated with an increased risk of lifetime cannabis use (Shelton et al., 2007), an earlier age at first cannabis use (Pedersen et al., 2001), as well as increased rates of abuse and dependence of other substances (Fergusson and Horwood, 1997; Elkins et al., 2007). Notably, substance use is not one of the diagnostic symptoms of CD.

1.3. CD and psychosis

While 7.5% of boys and 3.9% of girls in the UK are estimated to present with CD (Green et al., 2004), some studies of adult clinical samples suggest that at least 20% of both men and women with psychosis presented with CD prior to age 15 years (Hodgins, 2008). Kim-Cohen et al. (2003) used a prospective longitudinal design to assess sequential co-morbidity of mental health problems. Among those who met criteria for schizophreniform disorder at age 26, 40% presented with CD by age 15. The number of CD symptoms present before age 15 is positively and linearly related to the risk of developing psychosis (Robins, 1993).

1.4. Conclusion

The evidence suggests that cannabis use in adolescence increases the risk of developing psychosis, that CD symptoms are associated with an increased use of cannabis at a young age, and that a significant proportion of individuals who develop psychosis presented CD prior to age 15. Taken together this evidence suggests that among individuals with psychosis, CD symptoms in adolescence may increase the likelihood of early cannabis use, suggesting a possible aetiological link between the two disorders.

1.5. Aims of the current study

The present study examined a representative sample of individuals contacting mental health services for a first episode of psychosis. The aims were to measure the association between CD symptoms prior to age 15 with lifetime cannabis use and age of first use of cannabis. We hypothesised that CD symptoms prior to age 15 would be associated with increased lifetime cannabis use and with cannabis use before age 14. According to the stage-sequence framework of substance-use (Kandel, 2002), cannabis use is an important stage in socialising individuals to the use of other recreational substances (Pedersen and Scrondel, 1999); therefore the use of other recreational substances was assessed, particularly in light of their known association with psychosis (Barkus and Murray, 2010).

2. Materials and methods

The present study analysed a sample of patients participating in the Genes and Psychosis (GAP) study, an investigation of all patients experiencing a first episode psychosis within a geographic catchment area in South London (see Di Forti et al., 2009 for further details of the sample and recruitment).

2.1. Participants

The sample consisted of 38 women and 64 men presenting with a first episode of psychosis to adult mental health services in the catchment area between December 2007 and April 2010. Based on clinical notes and an interview using the Schedules for Clinical Assessment in Neuropsychiatry (SCAN), a consensus diagnosis was made for each participant. All patients between 18 and 65 years old who met ICD-10 criteria for psychosis (F20–F29: Schizophrenia, Schizotypal and Delusional Disorders; and F30–F33: Manic Episode, Bipolar Affective Disorder, Depressive Episode and Recurrent Depressive Disorder) for the first time were invited to participate in the study. Patients with an organic psychosis were excluded. The South London and Maudsley NHS Trust and Institute of Psychiatry (IOP) research ethics committee approved the study. All participants provided written informed consent, and were then interviewed either in hospital or at the IOP.

2.2. Measures and assessment

Socio-demographic data, age, sex, self-rated ethnicity, and level of education were collected from patients and from medical files. Symptoms of psychosis were assessed at the time of interview using the Positive and Negative Syndrome Scale (PANSS; Kay et al., 2000). The PANSS was subdivided into five subscales, for positive, negative, disorganised, excited and depressed/anxious symptoms, based on previous factor analyses (Emsley et al., 2003; Van den Oord et al.,