



Full length article

Heavy tobacco dependence in suicide attempters making recurrent and medically serious attempts



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ABSTRACT

Aims: Tobacco dependence and suicidal behaviors have been repeatedly associated in several studies but their relationship is still unclear. We aim to investigate, specifically, the association between the level of tobacco dependence and the severity of suicidal outcomes among suicide attempters, as well as the relationship of impulsivity with both conditions.

Methods: We examined a cross-sectional sample of 542 adult suicide attempters to compare the characteristics of the attempts depending on the level of tobacco dependence, which was assessed with the Fagerstrom test.

Results: Smokers with heavy dependence (Fagerstrom ≥ 7) made more attempts and reached higher medical lethality compared to non-smokers. Smokers with moderate dependence were not associated with features of severity in the suicide attempts. The combination of high impulsivity and heavy tobacco dependence showed an additive effect on the number of suicide attempts.

Conclusions: A high or very high level of tobacco dependence could indicate a specific vulnerability leading to more severe suicide attempts. Impulsive attempters with heavy tobacco dependence were particularly at risk.

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1. Introduction

Smoking and suicidal behavior are two major public health problems that have been repeatedly, and surprisingly, associated in epidemiological and clinical studies. Indeed, tobacco use has been associated with suicidal ideation, suicide attempts, and suicide deaths (Breslau et al., 2005). The force of this association could be particularly important for patients with mood disorders or schizophrenia, and seems to depend on the regular dose or intensity of the tobacco addiction (Hooman et al., 2013). Thus, it has been suggested that the severity of suicidal behaviors could be correlated to the level of tobacco dependence (Li et al., 2012), but to date no study has examined the particular features of tobacco-dependent suicide attempters.

Several mechanisms have been proposed to explain the nature of the association between smoking and suicidal behavior, both conditions sharing many common risk factors (for review see Hughes, 2008). Mental disorders are present in a large majority of suicide attempters and are also overrepresented among tobacco smokers (Talati et al., 2013). Indeed, suicidal patients might use the effects of smoking to regulate symptoms related to their psychiatric disorder since nicotine may improve mood and cognitive performance (Hughes, 2008). Smoking induces the metabolism of psychotropic drugs and thus contributes to decrease treatment response, which in turn might facilitate more suicidal ideation and attempts in treatment samples (Courtet et al., 2014). Yet, the link between suicidal behavior and smoking persists after adjusting for mental disorders (Breslau et al., 2005) and common vulnerability factors include personality traits or genetic variants. For instance, impulsivity (Ostacher et al., 2009), cognitive hostility (Lemogne et al., 2010) and anxiety (Capron et al., 2014) traits could mediate suicidal outcomes in smokers. Impulsivity in particular has been frequently associated with suicidal behavior and nicotine addiction, although the underlying mechanisms in both cases

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remain unclear (Dakwar et al., 2011; Lopez-Castroman et al., 2014). Finally, a modification of the serotonergic activity or neurotoxicity caused by tobacco use could also increase the suicidal risk (Hughes, 2008).

In this context, we aim to describe the suicidal behaviors of a large sample of suicide attempters as a function of their tobacco dependence. We hypothesize that high levels of dependence will be associated with more severe suicidal behaviors independently of demographic or clinical factors. The severity of the suicide attempts will be characterized with different indices, such as the number of attempts, the age at onset of the first attempt, the suicidal intent and the medical lethality or violence of the attempt. Secondly, we aim to study if impulsivity levels could be one of the vulnerability traits associated both with tobacco dependence and suicidal behavior. We have used a self-reported measure of impulsivity that likely reflects long-term patterns of behavior (Moeller et al., 2001). Following this hypothesis, we expect to find that high impulsivity and high tobacco dependence will show an additive effect in the severity of reported suicidal behaviors.

2. Methods

2.1. Sample

We examined retrospectively a sample of 542 adult patients voluntarily hospitalized in a specialized unit for affective disorders and suicidal behavior at Lapeyronie Hospital (Montpellier, France) between January, 2001 and October, 2013. The main reason for admission in the unit is a suicidal crisis; mean length of stay is 8 days. Smoking is not permitted in the unit, but patients have the liberty to walk outside the hospital. All participants had made a suicide attempt in the previous two years, but not necessarily before hospitalization, and thus fulfilled the criteria for a suicidal behavior disorder according to section III of DSM-5 (American Psychiatric Association, 2013). This category is meant for research and not yet accepted as a clinical disorder. A suicide attempt was defined as a self-destructive act with some degree of intent to end one's own life, which is the definition used by the National Institute of Mental Health (Pearson et al., 2001). Violent suicide attempts were classified using Asberg's criteria (Åsberg et al., 1976). According to these criteria, a suicide attempt was defined as violent when the method of suicide attempt was hanging, use of firearms, jumping from heights, several deep cuts, car crash, burning, gas poisoning, drowning, electrocution, or jumping under a train. Overdoses requiring hospitalization in an intensive care unit were coded as serious suicide attempts. Patients with a history of at least three suicide attempts were considered recurrent attempters following the criteria of Beck's Suicidal Ideation Scale and previous research (Beck et al., 1979; López-Castromán et al., 2011).

Trained psychiatrists interviewed the patients with a semi-structured clinical interview once they were clinically stable, a few days before discharge, to avoid influence of current depressive symptoms. Lifetime history of suicide attempts was characterized by the method of the attempts and the medical damage caused by them.

Patients with any missing data were excluded from the study. There were no significant differences between included ($n = 542$) and excluded patients ($n = 796$) in sex, age, mental disorders, impulsivity, or the characteristics of suicide attempts (number and seriousness of suicide attempts). However, excluded patients were less likely to live in couple ($p = 0.02$), and more likely to be current or past smokers than included patients ($p < 0.0001$).

All patients gave oral and written informed consent after a full explanation of the nature of the procedures. The local research ethics committee approved this study (CPP Sud Méditerranée IV, CHU Montpellier, France).

2.2. Assessment

Tobacco dependence was evaluated first with a screening question about tobacco use with three possible answers: current smoker, past smoker or never smoker. The level of tobacco dependence was then established among current smokers using a validated version of the Fagerstrom test in French language (Etter et al., 1999). The Fagerstrom test includes 6 questions. The ratings range from 0 to 10: 0 to 2, no dependence; 3 to 4, light dependence; 5 to 6, medium dependence; 7 to 8, heavy dependence requiring professional advice and treatment for withdrawal; and, 9 to 10, very heavy dependence requiring professional advice, treatment and regular follow-up for withdrawal. For this study, patients were divided in three groups according to the levels of tobacco dependence: (i) non-smokers; (ii) smokers with light-moderate dependence (moderate smokers, Fagerstrom < 7); and (iii) smokers with heavy dependence (heavy smokers, Fagerstrom ≥ 7). These cut-offs are those proposed by the French Health Administration and regularly used in France (Etter et al., 1999; Underner et al., 2012). To simplify the exposition, hereon we will use the terms moderate and heavy smokers as a reflection of tobacco dependence rather than the amount of cigarettes smoked.

Patients were interviewed by trained psychiatrists or psychologists using the Mini International Neuropsychiatric Interview (Sheehan et al., 1998). Current and lifetime DSM-IV diagnoses were assessed by the interviewer and then blindly rated by an independent psychiatrist according to medical case notes and MINI and, when available, information from relatives. At least two psychiatrists, including the interviewer and another psychiatrist blind to the research procedure, consensually assessed current and lifetime diagnoses according to the MINI. Any further information available from relatives of the patient or medical records was used to confirm lifetime diagnoses.

Suicide attempts were characterized on the basis of clinical assessment and personal history of suicidal behavior. To evaluate the lethality and intent of the suicide attempts, we used the French versions of two scales: the Risk Rescue Rating Scale (RRRS; Weisman and Worden, 1972), and the Suicidal Intent Scale (SIS; Beck et al., 1974a,b). Both scales have shown good psychometric properties and internal consistency scores. The French versions of these scales have been previously validated, and internal consistency coefficients were found to be 0.80 for the SIS and 0.65 for the RRRS in a similar population (Misson et al., 2010). The RRRS measures the medical danger of the attempt (risk factors) and the probabilities of being discovered and rescued (rescue factors) and summarizes them in a compound ratio. This ratio is related with the lethality, or probability of inflicting irreversible damage, of the attempt. The SIS is a 15-item ordinal scale that is rated summing up the scores on each item (varying from 0 to 2). The SIS measures specifically the intent to die of any suicide attempt. Two subscales of the SIS were considered: expected lethality and planning (Brezo et al., 2008). The highest tertile of each dimension (SIS, RRRS) was used as a cutoff to categorize the severity of the suicidal behavior. Age at first suicide attempt was defined as the age at which the patient first made a suicide attempt and was assessed by the interviewer and then blindly rated by an independent psychiatrist according to medical charts. Cut-off for early age at first suicide attempt was set according to a previous study by our group (> 26 or ≤ 26 years of age; Slama et al., 2009).

Impulsivity traits were assessed using the 10th version of the Barrat Impulsivity Scale (BIS; Patton et al., 1995). The BIS-10 is a 34-item self-administered questionnaire that provides an assessment of impulsiveness understood as a personality trait. Participants were separated into a high and low impulsive group using the highest tertile of the BIS-10 distribution in the whole sample (score ≥ 69). Internal consistency coefficients for the BIS-10 total

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