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Neuroticism and anxious attachment as potential vulnerability factors of repeat suicide attempts

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ABSTRACT

The recurrence risk of suicide attempts can reach 50% in the first year, each attempt increasing suicide-risk by 32%. No screening tool efficiently identifies potential repeat suicide attempters who are too often regarded as borderline personality. Our aim was to identify individual and interpersonal psychopathological dimensions that could represent a vulnerability to repeat suicide attempts. Sixty first-time and repeat suicide attempters consecutively admitted in emergency rooms were compared for fundamental dimensions of personality, patterns of attachment, personality and mental disorders using standardized questionnaires. Confounding and significantly different factors were evaluated using univariate and multivariate logistic regressions. Repeat suicide attempters differed from first-attempters by higher neuroticism and anxious attachment. Combined in an 11-item measure, these two parameters identified a 3.99 times higher risk of repeat suicide attempt. These traits associated with the other two best predictors (non-suicidal self-injury history, current psychotropic drugs) provide a vulnerability model with better screening performance compared to each factor individually. Repeat suicide attempters have more psychological features impairing emotional stability and social interactions than first attempters. Cross-sectional study design, sample size, lack of independent sample and of fearful-avoidant attachment evaluation are the main limitations. The model needs to be validated in a prospective and controlled study.

1. Introduction

Around 2200 suicides occur daily (World Health Organization, 2018), with 10 to 40 suicide attempts for each life lost (Hawton and van Heeringen, 2009). After a suicide attempt, the risk of repetition is up to 50% within the first year (Bille-Brahe et al., 1997; Mendez-Bustos et al., 2013) and of completed suicide reaches 10% in the next five years (Mendez-Bustos et al., 2013). Each attempt increases the probability of completion by 32% (Leon et al., 1990; Monnin et al., 2012), whatever the method and intentionality of the previous suicide attempt (Andover and Gibb, 2010). Repeat suicide attempters are 66 times more likely to die by suicide than people without suicide attempt history (Ostamo and Lönnqvist, 2001; Forman et al., 2004; Borges et al., 2010).

Some predictors have been identified (demographic, psychiatric, medical, life events) and questionnaires have been suggested. However their relevance and usability, especially in an emergency department (ED), are limited as they include too many items for rapid clinical assessment.

There is growing evidence of a vulnerability to suicidal behaviors independently of Axis I Mental disorders (DSM–IV–TR) (American Psychiatric Association, 2000; Courtet et al., 2001; Misson et al., 2010). As shown in the diathesis-stress model, this vulnerability may result from psychopathological and neurobiological factors including genetics (Mann et al., 1999; Mann, 2003). Borderline personality disorder (BPD) is often associated with repeated self-aggression and is a major risk factor of suicide attempt (Paris, 2002; Greenfield et al., 2015). However other personality disorders are also associated with repeat suicide attempts (Lopez-Castroman and Blasco-Fontecilla, 2016).

Suicide attempt-patients constitute a heterogeneous population with different psychopathological characteristics and two main categories: i) non or low-repeater patients whose first suicide attempt is fatal or at high risk of subsequent completed suicide, showing a high intentionality and lethality (Bjornaas et al., 2009; Runeson et al., 2010); ii) patients who repeat non-violent suicide attempts (Asberg et al., 1976) and self-harms (Monnin et al., 2012; NICE, 2012; Beghi et al., 2013) as a communication or adaptation strategy (Mendez-Bustos et al., 2013). Repeat suicide attempt-patients may have a more severe and complex psychopathology (Forman et al., 2004; Laget et al., 2006), as patients with at least 3 suicide attempts share common personality traits, stereotypical methods (self-poisoning, self-injury) and history of

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addiction (Laget et al., 2003; Pennel et al., 2015).

In clinical practice, identification of these repeat suicide attempt vulnerability factors such as individual and interpersonal psychopathological dimensions could help improve patient care (Suominen et al., 2004; Larkin et al., 2014) and prognosis (Quinlivan et al., 2014). Therefore, the aim of the study was (i) to find personality features including the fundamental dimensions of personality and attachment styles that could differentiate repeat from first suicide attempt-patients, and (ii) use these factors to propose a vulnerability profile that could help detect patients at risk of repeat suicide attempt in ED.

2. Method

2.1. Study design and recruitment

We carried out a cross-sectional study on a population of suicide attempters consecutively admitted in ED of three French hospitals between May and August 2010. Considering a repeat suicide attempt prevalence of 50% and a minimum sensitivity of 80%, at least 56 subjects needed to be included (Flahault et al., 2005). Included patients were 18–75 year-old and have given an informed consent. Under 18 and over 75 year-old were not included because of psychopathological and sociodemographic specificities (Chau et al., 2014; Conwell, 2014). The evaluations were carried out at least 48 hours after the suicide attempt (period of somatic care) and up to 10 days later, to develop a post-crisis assessment tool usable in ED. Practices in ED influence treatment decisions as only 25% of suicide attempts are transferred to a Psychiatry unit (Suominen and Lönnqvist, 2006) and slightly more than half are referred for psychiatric consultation (Suominen et al., 2004). The study meets the ethical standards of the Institutional Review Board (IRB #5921).

2.2. Data collection and measures

A single investigating psychiatrist collected socio-demographic and psychiatric information (previous suicide attempts, family history of suicide, previous non-suicidal self-injury (NSSI: cutting, burning), alcohol intake during the suicide attempt, current treatment (psychotherapy and/or psychotropic drug prescriptions)) in the three centers. Psychiatric history and current diagnosis including substance abuse and dependence (tobacco, alcohol, prescribed and illicit drugs) were assessed through a semi-structured interview as per the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) (American Psychiatric Association, 2000). Suicide attempt was defined according to the National Institute of Mental Health: “self-inflicted potentially injurious behavior with a nonfatal outcome for which there is evidence (either explicit or implicit) of trying to die” (Silverman et al., 2007). Patients were considered as repeat suicide attempt from the second attempt. The number of previous attempts was determined according to the medical record and the interview of DSM-IV-TR. Suicidal method was characterized using Asberg's criteria: non-violent (self-poisoning, phlebotomy), or violent (hanging, drowning, defenestration, firearms, blades) (Asberg et al., 1976). Traumatic events, either physical, sexual, psychological or resulting from an accident, were a turning-point or emotional pain affecting one or more aspects of the patient's life.

Suicidal intention was assessed using the Beck Suicidal Intent Scale (SIS) and lethality with the Risk-Rescue Rating Scale (RRRS) (Misson et al., 2010). Anxiety and depression were quantified using the Hamilton Rating Scales (HAM-A (Hamilton, 1959; Bandelow et al., 2006) and HAM-D (Hamilton, 1967; Bech, 1988)). Six variables in the HAM-D score differentiate minor and major depression. The fundamental dimensions of personality (Extraversion, Neuroticism, Psychoticism and Lie) were analyzed with the Eysenck Personality Questionnaire Revised-Abbreviated version (EPQR-A) (Francis et al., 1992). The Relationship Scales Questionnaire (RSQ) was used to explore the secure, avoidant and anxious patterns of attachment (Guédeney et al., 2010). The Barratt Impulsiveness Scale (BIS-11) (Patton et al., 1995) and the Buss–Perry's Aggression Questionnaire (BPAQ) (Buss and Perry, 1992) evaluated impulsivity and aggressiveness.

2.3. Statistical analyses

Quantitative variables are expressed as the mean with standard deviation (SD) or median and 25th–75th percentiles, respectively for normally and not-normally distributed data. Categorical parameters are expressed as numbers and percentages.

First and repeat suicide attempt-patients were compared for socio-demographic, psychiatric and psychometric parameters. Continuous variables were analyzed using the Student's *t*-test in case of normally distributed values and homoscedasticity, otherwise by the Mann–Whitney *U*-test. Qualitative variables were analyzed using the chi-square test or Fisher's exact test if necessary. The correlation analysis of the various psychometric scales was performed using the Pearson or Spearman test according to normality and homoscedasticity.

Because repeat and first suicide attempt-patients exhibited different levels of neuroticism (EPQR-AN) and anxious attachment (RSQ-A), univariate logistic regressions were used to evaluate the role of these subscales and the factors significantly different on the comparison between first and repeat suicide attempts to detect repeat suicide attempt vulnerability. A multivariate risk model was constructed using a backward stepwise logistic regression strategy (model entry: $p < 0.05$; model retention: $p < 0.15$). The goodness for fit of the logistic model was checked separately for each covariate by Hosmer–Lemeshow test after performing the regression analysis. From the multivariate analysis, a model including 3 significantly predictive factors for repeat suicide attempt (NSSI history, 2-subscale measure (EPQR-AN, RSQ-A), current psychotropic drugs) was constructed, and the threshold was selected for a sensitivity greater than 80%. The results were presented using the odds ratio (OR) with a confidence interval (CI) of 95%. The various scales for detecting repeat suicide attempt-patients were evaluated using the area under the Receiver Operating Characteristic (ROC) curve with a CI of 95%, and various cut-offs were tested. To highlight the relevance of the 3-factor model compared with each of the 3 factors, their areas under the ROC curves were compared. Using McNemar's tests (Kim and Lee, 2014), the 3-factor model and the best predictor NSSI were compared for sensitivity in repeat suicide attempt-patients, and specificity in first suicide attempt-patients. The level of significance was set at $p < 0.05$. Statistics were conducted with STATA-13.1 software (StataCorp, College Station, TX).

3. Results

3.1. Characteristics of the whole population

Of the 64 admitted patients, 4 were not included (3 refused, 1 presented with acute psychotic symptoms). Females predominated and were younger than the males (Table 1, Supplementary Table 1). Half of the patients were employed and most were single. The most frequent psychiatric disorders were mood, anxiety, personality disorders, substance abuse and dependence, affecting men and women similarly except for BPD (predominantly in women). Most patients were undergoing treatment. Psychological trauma affected 55% of subjects, followed by sexual abuse in women or accidental traumas in men. NSSI and previous suicide attempts concerned 38% and 52% of patients respectively. Almost half of patients had a family history of suicide. Suicide attempts often occurred under the influence of alcohol, mainly in men, and were mostly non-violent.

3.2. Comparisons between first and repeat suicide attempts

Repeat suicide attempt-patients were as frequent as first suicide