



Alexithymia and low cooperativeness are associated with suicide attempts in male military personnel with adjustment disorder: A case–control study

Kyoung-Sae Na^a, Sei-Joong Oh^b, Han-Yong Jung^{a,*}, Soyoung Irene Lee^a, Yong-Ku Kim^c, Changsu Han^c, Young-Hoon Ko^c, Jong-Woo Paik^d, Shin-Gyeom Kim^a

^a Department of Psychiatry, College of Medicine, Soonchunhyang University Bucheon Hospital, Bucheon, Republic of Korea

^b Department of Psychiatry, The Armed Forces Daejeon Hospital, Daejeon, Republic of Korea

^c Department of Psychiatry, Korea University Ansan Hospital, Ansan, Republic of Korea

^d Department of Psychiatry, School of Medicine, Kyung Hee University, Seoul, Republic of Korea

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ABSTRACT

Subpopulations of patients with adjustment disorder are at increased risk for suicide. The current study investigated whether personality traits, including alexithymia, temperament, and character, are associated with an increased risk of suicide in individuals with adjustment disorder. Age- and sex-matched patients meeting the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria for adjustment disorder with ($n=92$) and without ($n=92$) a history of suicide attempts were recruited for the present study. Ninety-two healthy individuals who did not meet diagnostic criteria for Axis I or II diagnoses were used as controls. The Toronto Alexithymia Scale-20 (TAS-20) and the Temperament and Character Inventory (TCI) were used to assess personality traits. Significantly higher total and subscale scores on the TAS-20, including on the difficulty-identifying-feelings (DIF) and difficulty-describing-feelings (DDF) subscales, and lower scores on the TCI cooperativeness subscale were noted in adjustment-disorder patients with previous suicide attempts. In the multivariate regression analysis, high DDF and DIF and low cooperativeness increased the risk of suicide attempts in adjustment-disorder patients. A subsequent path analysis revealed that high DDF had a direct effect on suicide attempts, whereas high DIF had an indirect effect on suicide attempts via low cooperativeness.

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1. Introduction

Suicide is a major public health problem and one of the primary causes of death worldwide. Indeed, it is a leading cause of death among teenagers and adults under 35 years old (World Health Organization, 2006). In Korea, suicide is the most common cause of death in individuals aged 10–39 years and ranks fourth as a leading cause of death overall. In 2010, the suicide rate in Korea increased to 31.2 per 100,000 deaths, the highest rate among countries in the Organisation for Economic Co-operation and Development (OECD) (Organisation for Economic Co-operation and Development, 2011; Statistics Korea, 2011). Identification of high-risk populations is critical for the prevention of suicide attempts and suicide deaths (Mann et al., 2005). Many studies have focused on the increased risk of suicide in individuals with schizophrenia, bipolar disorder, and major depressive disorder (Bolton et al., 2010; Hawton et al., 2005a, 2005b; Novick et al., 2010; Pinikahana et al., 2003). The suicide risk

factors associated with adjustment disorder, however, are currently unknown.

An adjustment disorder is defined as psychological responses to an identifiable stressor that results in clinically significant emotional or behavioral symptoms (American Psychiatric Association, 1994). The prevalence of adjustment disorders has been estimated as 11–30% in psychiatric samples (Pelkonen et al., 2005; Shear et al., 2000) and as 14.5% in men and 19.2% in women (Bruffaerts et al., 2004) in an emergency psychiatric unit. Historically, adjustment disorder was considered a subclinical diagnosis with mild symptoms and a good prognosis (Kovacs et al., 1994). Several studies, however, have suggested that subpopulations of patients with adjustment disorder may be prone to suicidal behaviors (Polyakova et al., 1998; Portzky et al., 2005). Due to its high prevalence and suicide risk, adjustment disorder has been increasingly the focus of clinical attention. However, which personality traits are associated with suicide attempt in patients with adjustment disorder remains unknown.

Personality refers to the qualities, traits, characteristics, and behaviors that are specific to an individual (Allport, 1961). Personality traits are strongly associated with psychological responsiveness to stressful stimuli (Vollrath, 2001). Therefore, an investigation of personality traits in individuals with adjustment disorder who are at increased risk for suicide is critical.

* Correspondence to: Department of Psychiatry, Soonchunhyang University Bucheon Hospital, 1174 Jung-dong, Wonmi-gu, Bucheon-si, Gyeonggi-do 420-767, South Korea. Tel.: +82 32 621 5232; fax: +82 32 621 6950.

E-mail addresses: metasein@hanmail.net, hanyjung@schmc.ac.kr (H.-Y. Jung).

According to Cloninger's psychobiological model (Cloninger, 1994), the Temperament and Character Inventory (TCI) enables us to quantitatively rate personality traits in terms of temperament and character. Temperament, which consists of four dimensions (novelty seeking, harm avoidance, reward dependence, and persistence), is defined as the heritable and automatic responses to emotional stimuli that are maintained over a lifetime (Goldsmith et al., 1987). Previous studies have demonstrated significant associations between temperament and biological markers including neurotransmitter levels and gene expression (Aoki et al., 2010; Schosser et al., 2010). Character, which comprises cooperativeness, self-directedness, and self-transcendence, is defined as an individual's intentional and conscious self-concept, goals, and values that develop through experience. As character is associated with flexibility and adaptive behavior, an investigation of the character traits involved in adjustment disorder is warranted. Hence, the classification of personality into temperament and character is helpful for investigating whether an inherent or an acquired personality construct is associated with adjustment problems. Additionally, although the TCI was developed to investigate personality disorders and individual differences in normal development (Cloninger et al., 1993), the use of this instrument has been extended to various psychiatric conditions including suicidality (Conrad et al., 2009; Evren and Evren, 2006; Giegling et al., 2009; Joyce et al., 2010). Widespread use of the TCI makes it possible to examine suicidality in patients with an adjustment disorder in relation to previous results regarding other psychiatric disorders.

Alexithymia is a personality trait that involves difficulty identifying and describing feelings, difficulty distinguishing between feelings and the bodily sensations of emotional arousal, and an externally oriented cognitive style (Sifneos, 1973; Taylor, 1984). Given the lack of introspection and difficulty in expressing emotions to others experienced by individuals with this condition, the close association between alexithymia and certain psychosomatic (Tselebis et al., 2010) and psychiatric conditions, including major depression, delinquent and impulsive behaviors, eating disorders, and substance abuse disorders, is not surprising (Taylor and Bagby, 2004). A recent study conducted by Chen et al. suggested that alexithymia directly affects and is a major predictor of adjustment disorder (Chen et al., 2011). The concept of alexithymia has been quantitatively measured by the Toronto Alexithymia Scale-20 (TAS-20) (Bagby et al., 1994), which is the most widely used alexithymia scale and was employed in the aforementioned studies.

Few studies have explored the relationship between personality traits and adjustment disorder and, to our knowledge, the current study is the first to focus on suicidal behavior in patients with adjustment disorder. We hypothesized that several subcomponents of alexithymia and psychobiological personality traits are risk factors associated with suicide attempts in individuals with adjustment disorder.

2. Methods

2.1. Subjects

This study was conducted from May 2010 to April 2011. Patients with adjustment disorder were consecutively recruited from the psychiatric clinic at the Armed Forces Hospital. An Axis I diagnosis was determined by a board-certified psychiatrist according to the Diagnostic and Statistical Manual for Mental Disorders (DSM-IV) (American Psychiatric Association, 1994) using the Korean version of the Mini-International Neuropsychiatric Interview (MINI) (Sheehan et al., 1998; Youu et al., 2006). Patients with a diagnosis of adjustment disorder and a previous referral following an attempted suicide were included in the suicide group. Patients with a diagnosis of adjustment disorder without history of suicide were included in the non-suicide adjustment-disorder group. To ensure that patients with adjustment disorder were euthymic during the administration of the TCI and TAS-20, only patients with a score of ≤ 7 on the Hamilton Rating Scale for Depression (HRSD) (Hamilton, 1980; Yi et al., 2005) were included.

A suicide attempt was defined according to the World Health Organization (WHO) as "an act with a nonfatal outcome, in which an individual deliberately initiates a non-habitual behavior that, without intervention from others, will cause self-harm, or deliberately ingests a substance in excess of the prescribed or generally recognized therapeutic dose, and which is aimed at realizing changes which the subject desired via actual or expected physical consequences" (Bille-Brahe et al., 1995). Because we believed that suicide attempts made before conscription would reflect past or current major psychiatric conditions, such as depressive disorder or borderline personality disorder, which might interfere with diagnosing an adjustment disorder, patients who attempted suicide prior to enrollment in the armed forces were excluded from the present study.

An Axis II diagnosis was determined with the Korean version of the Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II) (First et al., 1997; Kim, 2005). Because patients with the specific personality disorders defined in the DSM-IV have characteristic temperamental and characterological traits (Basoglu et al., 2011; Calvo et al., 2009; Fossati et al., 2001), they were excluded from this study. Healthy volunteers were assessed with the MINI for Axis I and the SCID-II for Axis II. Only individuals who were determined to be free of psychiatric illness were recruited.

Written informed consent was obtained from all of the participants prior to enrollment in the study. The Institutional Review Board (IRB) of the Armed Forces Medical Command approved this study. This study was carried out in accordance with the Declaration of Helsinki as revised in 1989.

2.2. Instruments

2.2.1. TAS-20

The TAS-20 consists of 20 items, each of which is scored on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Total scores range from 20 to 100, with a higher score indicating a higher level of alexithymia. The TAS-20 includes three subscales: difficulty identifying feelings (DIF), difficulty describing feelings (DDF), and externally oriented thinking (EOT). Higher scores on each subscale are also indicative of a higher level of alexithymia. The internal consistency of the Korean version of the TAS-20 (Cronbach's α) is 0.76 (Chung et al., 2003; Lee et al., 1996). According to the developers' recommendation (Bagby and Taylor, 1997) and previous studies (Mattila et al., 2006; Spitzer et al., 2005; Vanheule et al., 2007a), a score of 61 or greater is indicative of alexithymia.

2.2.2. TCI

The TCI was used to evaluate temperament and character traits in the participants. The TCI is a self-administered questionnaire based on Cloninger's Psychobiological Model that consists of 240 items (Cloninger, 1994). The TCI measures four dimensions of temperament and three dimensions of character. Temperament dimensions consist of novelty seeking, harm avoidance, reward dependence, and persistence. The character dimensions consist of self-directedness, cooperativeness, and self-transcendence. In the present study, a version of the TCI that was translated into Korean was used. The internal consistency (Cronbach's α) of the Korean version of the TCI ranged from 0.60 to 0.85 (novelty seeking 0.78, harm avoidance 0.85, reward dependence 0.68, persistence 0.60, self-directedness 0.87, cooperativeness 0.82, and self-transcendence 0.85) (Sung et al., 2002).

2.3. Statistical analysis

Based on a previous report of an association between suicidal ideation and TAS-20 scores in the general population (Hintikka et al., 2004), we assumed a mean total score of 43 (S.D. = 11.0) in the non-suicide adjustment-disorder group and 49 (S.D. = 13.5) in the suicide group. Applying a type I error of 0.05 with 90% power, a sample size of 90 in each group was determined to be sufficient for detecting significant differences. The estimated effect size was $d=0.487$. Continuous demographic variables were compared in the three groups using analysis of variance (ANOVA), and nominal variables were analyzed with chi-square tests. Participants were divided into two groups (alexithymic and non-alexithymic) based on a TAS cut-off score of 60. Chi-square tests were used to determine the prevalence of alexithymia in the suicide and non-suicide groups of adjustment-disorder patients and in healthy controls. We compared the TCI and TAS-20 subscale scores of the three groups via analysis of covariance (ANCOVA) using the HRSD as a covariate. Pairwise comparisons among the three groups were conducted with the Bonferroni method for multiple comparisons. To further avoid type I error, the significance level of the Bonferroni-corrected p -value was set at 0.007 (0.05/7) for the TCI and 0.0013 (0.05/4) for the TAS-20.

Multivariate logistic regression analysis was conducted to assess the predictive role of personality traits in relation to suicide attempts. No relationship has been established between psychopathological variables and suicide attempts in individuals with adjustment disorder in a previous study. Here, we included variables that were significantly different in adjustment-disorder patients with and without suicide attempts. To examine the personality traits that predict suicide attempts, we included the variables that distinguished between suicide and non-suicide adjustment-disorder groups at a level of statistical significance according to the ANCOVA in the logistic regression analysis using suicide attempts as the dependent variable. Subsequently, an exploratory analysis was conducted

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