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Characteristics and drinking patterns of veterans with alcohol dependence with and without post-traumatic stress disorder

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HIGHLIGHTS

- Veterans with AD were compared to those with AD + PTSD.
- Baseline demographic and clinical characteristics of the 2 groups were compared.
- Veterans with comorbidity had worse clinical outcomes across all domains.
- Veterans with AD+PTSD experienced more consequences from drinking than the AD group.

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ABSTRACT

Alcohol use disorders and post-traumatic stress disorder (PTSD) are highly prevalent and commonly co-occur, notably in veterans. We explored differences in the pre-treatment characteristics of veterans with alcohol dependence (AD) alone compared to those with co-occurring AD and PTSD. Veterans were recruited to participate in two different treatment studies and baseline characteristics were compared. Those with co-occurring illnesses demonstrated significantly higher pre-treatment pathology across all psychopathological domains. While those with AD alone averaged more days of drinking and had more heavy drinking days, those with co-occurring illnesses reported more drinking-related symptoms. The presence of a major depressive episode had no effect on drinking. Within the PTSD group, combat exposure was associated with increased drinking independent of the severity of PTSD symptoms. This study underscores the importance of screening for comorbidity in clinical treatment settings, and for collecting detailed drinking histories and assessing psychiatric symptoms across all domains of psychopathology.

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1. Introduction

Alcohol use disorders, including alcohol dependence (AD), are prevalent among military personnel, have a substantial medical, psychiatric, and economic impact and are increasing in incidence (Goetzel, Hawkins, Ozminkowski, & Wang, 2003; Roy-Byrne et al., 2000; Sanderson & Andrews, 2002; Stewart, Ricci, Chee, & Morganstein, 2003). A recent Institute of Medicine Report (2012) has highlighted the alarmingly high rate of substance abuse (particularly alcohol) among servicemen and women and how it undermines military readiness. Alcohol use disorders are among the most common psychiatric disorders in veterans presenting for treatment within the Veterans Health Administration (VHA) (Kerfoot, Petrakis, & Rosenheck, 2011).

Veterans who have experienced combat are at very high risk for the development of post- traumatic stress disorder (PTSD) (Hoge, Auchterlonie, & Milliken, 2006). Screening of returning veterans from the recent conflicts in Iraq and Afghanistan shows high rates of PTSD among that group (4.7–24.5%) (Hoge, Terhakopian, Castro, Messer, & Engel, 2007; Hoge et al., 2006, 2004; Milliken, Auchterlonie, & Hoge, 2007). At VHA, during fiscal year 2011, nearly 605,000 veterans were treated for PTSD, representing 10.6% of all veterans treated by VHA. This represents a 3-fold increase over the past 8 years (personal communication, Robert Rosenheck, MD).

There is a high rate of comorbidity between PTSD and alcohol use disorders, and co-occurring AD and PTSD are associated with worse treatment outcomes than either illness alone (reviewed in (McCarthy & Petrakis, 2010). The symptoms of PTSD in those with dual diagnoses tend to be more severe, and co-occurring illnesses are also associated with a higher rate of psychosocial and medical problems, higher utilization of health services, more functional deficits and significantly lower quality of life (Jacobsen, Southwick, & Kosten, 2001; Kalman et al., 2004; Riggs, Rukstalis, Volpicelli, Kalmanson, & Foa, 2003).

Despite the evidence that these disorders commonly co-occur, and that outcomes for veterans with co-occurring illnesses are worse, little is known about whether pre-treatment characteristics distinguish

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veterans with AD and co-occurring PTSD from veterans with AD alone. For example, it is unclear whether PTSD symptom severity or type of trauma is related to alcohol misuse, although at least one study has shown that combat exposure, specifically, was associated with alcohol misuse in women veterans (Hassija, Jakupcak, Maguen, & Shipherd, 2012). An understanding of pre-treatment characteristics might allow for earlier detection of problematic drinking among those with PTSD, and for more integrative and customized treatment for those with AD and PTSD. In this study we compared demographic, clinical and drinking characteristics of veterans who enrolled in one of two separate clinical trials designed to evaluate the efficacy of pharmacotherapy on alcohol consumption; one was a study of individuals with AD alone, the other a study of individuals with AD and comorbid PTSD. There was a high degree of overlap in the entry criteria and in much of the methodology, including the use of assessment tools in these two trials, making a comparison straightforward and clinically interesting.

2. Methods and materials

2.1. Participants

Study participants were veterans who responded to an advertisement to participate in one of two ongoing clinical trials. Both studies are randomized, placebo-controlled, 12-week treatment studies designed to evaluate a pharmacotherapy for the treatment of AD. Study #1 (NIAAA RO1AA016834) is evaluating the efficacy of the nicotinic antagonist mecamylamine in reducing alcohol use in alcohol dependent individuals. Study #2 is evaluating the efficacy of the alpha-adrenergic medication prazosin in reducing alcohol use *and* symptoms of PTSD among veterans with AD and current PTSD. Common inclusion criteria are: (1) men and women, (2) current DSM-IV-TR diagnosis of AD using Structured Clinical Interview for DSM-IV (SCID) (First, Spitzer, Gibbon, & Williams, 1996), (3) medically healthy by history, physical and laboratory examination, (4) not excluded for current cocaine or marijuana dependence, and (5) for females, not pregnant and using adequate contraception. Both studies exclude: (1) participants with a history of bipolar disorder, schizophrenia and schizophrenia-type disorders, and (2) those receiving medications for AD. There are differences in the inclusion/exclusion criteria between the two studies: (1) the age range for Study #1 is 18–70, and 21–65 for Study #2, (2) in Study #1 individuals are included if they drink at least 14 drinks (women) or 21 drinks (men) per week, with at least 2 heavy drinking episodes ($\geq$5 drinks for men and $\geq$4 drinks for women) in the last 30 days; in Study #2 individuals are included if they have one recent episode of heavy drinking during the past 14 days, (3) all participants in Study #2 are also diagnosed with current PTSD; current major depressive episode (MDE) is also allowed in Study #2, but not in Study #1, (4) participants in Study #2, but not Study #1 are allowed other psychotropic medications, (5) medical exclusion criteria differ slightly and are specific to the medication under study (e.g. hypersensitivity to the study medication), (6) participants in Study #2 are veterans, while Study #1 recruits both veterans and non-veterans (though only the veterans are included in the analyses), and (7) Study #1 is conducted at the West Haven, CT VA only; Study #2 is a multi-site study conducted at West Haven, CT and Bedford, MA VA Medical Centers. Both studies have IRB approval at the West Haven, CT VA and Yale University; Study #2 also has IRB approval at the Bedford, MA VA.

2.2. Outcome measures

All participants were screened using the SCID, and had a routine medical evaluation. All participants completed the following: (1) Alcohol Dependence Scale (ADS) (Skinner & Horn, 1984), (2) Timeline Follow-Back Method (TLFB) (Sobell & Sobell, 1992), (3) Obsessive Compulsive Drinking Scale (OCDS) (Kranzler, Mulgrew, Modesto-Lowe, & Burleson, 1999), (4) Brief Symptom Inventory (BSI) (Derogatis & Melisaratos, 1983), (5) Hamilton Depression Scale (HAM-D) (Hamilton, 1960), (6) Neuroticism–Extroversion–Openness Personality Inventory (NEO-PI) (Costa & McCrae, 1992b), and (7) Clinician Administered PTSD Scale (CAPS for PTSD + AD sample only)(Blake et al., 1995).

2.3. Statistical analyses

Outcome variables were measured at baseline within each study group, and included measures of alcohol consumption (TLFB) and craving (OCDS), psychiatric distress (BSI), depression (HAM-D), personality characteristics (NEO-PI), and severity of PTSD symptoms (CAPS). All analyses were performed using SPSS Version 19.0. Demographic variables were compared using ANOVA for continuous variables and χ^2 for categorical variables. All other data were analyzed using ANOVA and by adjusting the p-value within each test category of the statistical tests and applying a Bonferroni correction. The model included group as one between-subject factor (Study #1 = AD alone vs. Study #2 = AD and PTSD). In order to evaluate the effect of combat and severity of PTSD symptoms on drinking in the comorbid group (Study #2), we conducted a post-hoc analysis. This analysis used the TLFB as the main outcome measure and included combat (combat related PTSD vs. non- combat related PTSD), and separately, severity of PTSD (severe PTSD symptoms (>60 on the CAPS) vs. mild/moderate PTSD symptoms (<60 on the CAPS) as a between subject factor. Also, we used a Pearson product-moment correlation coefficient to ascertain the relationship between drinking and severity of PTSD symptoms. In order to determine whether the presence or absence of a major depressive disorder had an effect on drinking severity, we used the TLFB as the main outcome measure and diagnostic categories (AD alone, PTSD alone, and MDE + PTSD) as a between subjects factor in the analysis.

3. Results

3.1. Demographic characteristics

One hundred and fifteen veterans participated in this study; n =51 were enrolled in Study #1 and n = 64 were enrolled in Study #2. As shown in Table 1, there were significant differences in age and ethnicity between the studies, but no other differences in demographic characteristics.

As expected, there were differences in the rates of psychiatric comorbidity between the groups (Table 2). There were significant differences in rates of PTSD (100% vs. 0), and in major depressive episode (MDE: 14.8% vs. 0). There were no significant differences in the other Axis I diagnoses, including rates of cocaine dependence, marijuana dependence and other anxiety disorders.

There were no significant differences in neuroticism between the groups based on the NEO-PI scores. However, there were significant differences in each of the other personality characteristics as measured by the NEO-PI. Specifically, the AD group was significantly more extroverted, open, agreeable and conscientious than the comorbid group.

3.2. Drinking and clinical characteristics

Both groups reported high levels of alcohol consumption prior to enrollment in the study. As shown in Table 2, there was a significant difference between the groups, in the number of reported drinking days, where the veterans with AD alone reported more drinking days (over the previous 3 months) than the comorbid group (59.1 vs. 40.1 respectively, $F_{1,114} = 15.1$, $p = .000$), heavy drinking days over the previous 3 months (53.6 vs. 35.1 respectively, $F_{1,114} = 14.3$, $p = .000$) and average number of drinks per week (12.7 vs. 86 respectively, $F_{1,114} = 5.4$, $p = .02$). There were significant differences in ADS scores, where the comorbid group reported significantly higher ADS scores than the AD alone group. No significant differences were reported in overall levels of craving, as measured by the OCDS, or in any of the subscales.