



Preliminary communication

Risk factors for suicide attempt in an Arab kindred

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ABSTRACT

Objective: This explorative study examines correlates of suicidal behavior in an extended Arab kindred selected because of a high rate of suicidal behavior.

Methods: Family members ($n = 468$) aged 15 through 55 were assessed using a comprehensive structured psychiatric interview, the Composite International Diagnostic Interview (CIDI), which covers a wide range of psychopathology, including a spectrum of suicidal thoughts and behaviors. In addition, self-reported depression, anxiety, hopelessness, impulsivity and hostility, early childhood adversity, and suicidal behavior in first- and second-degree relatives were assessed.

Results: Significant associations were found between suicidal thoughts and behavior, and the presence of family history of suicide, all forms of psychopathology and suicidal behaviors. In addition, impulsivity and hostility were also significantly associated with suicidality.

Limitation: The absence of similar assessments in comparison families, makes it difficult to assess why this family appears to be at higher risk for suicidal behavior.

Conclusion: Risk correlates of suicidal behavior in the Arab kindred are similar to those reported from other parts of the world. These findings suggest that effective means of suicide prevention used in European populations may be successfully adapted to prevent suicide in this ethnic group as well. Since all forms of suicidal behavior in this population as well as in other Arab populations are increasing rapidly (Karam et al., 2008), these results have important implications for suicide prevention as well as for the understanding of the genetics of suicide.

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1. Introduction

Suicidal behavior is known to aggregate in families. The first-degree relatives of suicide attempters or completers have around a 4-fold increased risk for suicidal behavior (see Brent and Mann, 2005). While mood disorder is a strong risk factor

for suicidal behavior, the familial transmission of suicidal behavior shows contributions above and beyond that of mood disorder. Additional explanatory factors for familial transmission of suicidal behavior include the transmission of liability to impulsive aggression and the intergenerational effects of abuse (Brent et al., 2002, 2004; Mann et al., 2005; Melhem et al., 2007). However, imitation does not appear to contribute strongly to the familial transmission of suicidal behavior, insofar as similar risks are found in family, twin, and adoption studies, the latter of which involve no contact between biological parent and child (Burke et al., 2010; Schulsinger et al., 1979; Statham et al., 1998).

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However, our understanding of the mechanisms by which suicidal behavior is transmitted is incomplete. Because suicidal behavior is a complex trait, it is likely that no single mechanism explains its transmission, and therefore the mechanism may be different in different families. In addition, cultural factors, which may vary from family to family, are likely to modify the expression of the familial liability to suicidal behavior (Clarke et al., 2008). Reports of the familial transmission of suicidal behavior in large, extended, presumably homogenous pedigrees can allow for the detection of such mechanisms, but thus far such reports have been limited to studies of the Old Order Amish (Egeland and Susser, 1985). While family history of suicidal behavior has been reported as a risk factor in diverse ethnic groups (Liu et al., 2009; Chen et al., 2000; Kar N., 2010; Nakagawa et al., 2009; Nojomi et al., 2007), the majority of the studies of the familial transmission of suicidal behavior have focused on populations of European origin (Brent and Mann, 2005).

Therefore, we wish to report on the risk factors for the familial transmission of suicidal behavior in large Arab kindred in Israel. Given the limitations of the literature noted above, this pedigree allows us to examine the familial transmission of suicidal behavior in a homogenous population of non-European origin. This family came to our attention since it had experienced more than the number of suicides than would be expected from other population estimates. For example, during the last 10 years, there have been 8 suicides in this family of 1200 people. This is an annualized rate of 67 suicides per 100,000, which is 10 times the rate of suicide in Israel (6.2/100,000), and vastly greater than reported rates in neighboring Syria and Egypt (0.1/100,000 and 0.05/100,000, respectively) (WHO, 2010). In this paper, we test the following hypotheses: (1) the rate of attempted suicide in this family will also be higher than relevant population estimates; (2) the risk factors for attempted suicide will include mood and anxiety disorders, substance abuse, impulsivity, aggression, trauma, and family history of suicidal behavior; and (3) suicidal behavior will be familially transmitted via an increased risk in mood disorder, impulsivity, aggression, and trauma. Such information is critical to the understanding of the familial and genetic contributions to suicidal behavior and to the development of appropriate preventive strategies that encompass more diverse populations.

2. Methods

2.1. Sample

The study assessed 468 participants between 15 and 55 years of age which is around 40% of this extended Arab kindred that consists of five generations with a single paternal founder. The rate of consanguineous marriages in this kindred is 29.7%, of which 38.3% are marriages between third-degree relatives, 15% between fourth- and fifth-degree relatives, and 46.7% between distant relatives (>5th degree). First and second degree relatives of suicide attempter and completers and their spouses and offspring were prioritized to be included in the sample. The rate of refusal was low (less than 10%). Subjects voluntarily participated in the study after signing a consent form. In the case of adolescents under 18 years, they participated after we received their parent's or

legal guardian's written consent and their informed assent. Subjects were directly interviewed by a trained Arab-speaking clinical psychologist. The study was approved by the Helsinki Committee of the Ministry of Health of Israel, the IRB in Schneider Children's Medical Center of Israel, and the IRB of the University of Pittsburgh.

2.2. Assessment

The presence of DSM-IV psychiatric disorders were assessed using the Arabic-language version of the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI) (American Psychiatric Association, 1994; 33; 31). We obtained the Arabic version from the Institute for Development, Research, and Applied Care (IDRAC) in Lebanon, the official training site for the Arabic versions of the WMH-CIDI and its parent version, the WHO-CIDI. Clinical calibration studies of DSM-IV diagnoses obtained from the WMH-CIDI in comparison to the Structured Clinical Interview for DSM-IV (SCID) resulted in good concordance for mood, anxiety, and substance use disorders with kappa ranging from 0.33 to 0.70 (Kessler et al., 2004, 2005). The Arabic WHO-CIDI has been validated in a clinical sample (Karam et al., 1996) and has been used in a national epidemiological survey of mental disorders in Lebanon (Karam et al., 2006). The prevalence, precipitants, medical severity, and intent of all lifetime suicide attempts were assessed using the Suicide History Form as Formal Part of the CIDI. A suicide attempt was defined as "self-destructive behavior" with explicit or inferred intent to die (O'Carroll et al., 1996). Self-reported depression, anxiety, and hopelessness were obtained using the Beck Depression, Anxiety, and Hopelessness scales, respectively (Beck et al., 1988; (Beck and Steer, 1990; Beck et al., 1974)). Impulsivity and tendency to impulsive aggression were assessed with the Barratt Impulsivity Scale (BIS) and the Buss–Perry Scale for Aggression, respectively (Barratt, 1965; Buss and Perry, 1992; Buss and Warren, 2000). The occurrence of sexual and physical abuse before and after the age of 16 years by someone who was at least five years older than the participant was assessed using a self-report measure, the Childhood Experiences Questionnaire (CEQ) (Wagner and Linehan, 1994).

2.3. Data analysis

The analyses were conducted using the Statistical Package for the Social Sciences (SPSS), Version 18. Participants with and without suicide attempts were compared on socio demographic and clinical characteristics using *t*-tests and chi-square or Fisher's exact tests as appropriate. Except where otherwise noted, degrees of freedom = 1 for chi-square tests. Logistic regression, with the backward stepwise approach, was used to select the most parsimonious set of correlates of suicide attempt. Hosmer–Lemeshow test for goodness-of-fit was used to assess the fit of the model to the data. There were missing data for some of the correlates: 49.5% of the sample had no missing data for any variable, 47.5% had missing data for 1 or 2 variables, 2.5% had missing data for 3 or 4 variables, and 0.5% had missing data for more than 4 variables. We applied Multiple Imputation by Chained Equations (MICE) (Royston, 2010; Van Buuren et al., 1999), technique using STATA. This approach is based on each

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