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Research report

Parental death and bipolar disorder: A robust association was found in early maternal suicide

Kenji J. Tsuchiya^{a,b,*}, Esben Agerbo^b, Preben B. Mortensen^b

^aDepartment of Psychiatry and Neurology, Hamamatsu University School of Medicine, Handayama 1, Hamamatsu 4313192, Japan

^bNational Centre for Register-based Research, University of Aarhus, Denmark

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Abstract

Background: Previous studies have suggested that early parental death may be associated with the emergence of bipolar disorder in later life. However, it remains unknown whether this association applies specifically to parental death due to suicide or only to early parental death. The present study aimed to explore whether suicide as well as the non-suicidal death of father, mother, or siblings are associated with an increased risk for bipolar disorder, and whether the possible association is modified by the age at which the subject experiences such a death in the family.

Methods: The subjects were born in 1960 or later and were first admitted to or had first contact with Danish psychiatric facilities between 1981 and 1998 with a diagnosis of bipolar disorder, and fifty age-matched controls per case were extracted. The effects of the deaths of relatives were estimated by means of a conditional logistic regression analysis.

Results: Among 947 subjects with bipolar disorder and 47,350 controls, those having experienced the parental suicide were significantly associated with an increased risk for BPD (incidence rate ratios: 1.83 [95% confidence interval: 1.07 to 3.12] for paternal suicide, 3.44 [1.97 to 6.00] for maternal suicide), whereas the non-suicidal death of parents showed no such association. Those having experienced maternal suicide at some point before reaching 10 years of age were seven times as likely to develop bipolar disorder.

Limitations: The cohort members were followed until, but not exceeding, the age of 38.

Conclusion: Early parental, particularly maternal, suicide increases the risk for bipolar disorder in the offspring. Possible explanations include a family history of mental disorders as well as psychosocial factors.

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Keywords: Bipolar disorder; Parents; Suicide; Risk factors; Epidemiologic methods; Denmark

1. Introduction

Studies have suggested that the early experience of the death of a parent may be a factor associated with a later occurrence of bipolar disorder (BPD) (Agid et

* Corresponding author. Department of Psychiatry and Neurology, Hamamatsu University School of Medicine, Handayama 1, Hamamatsu 4313192, Japan. Tel.: +81 5 34 35 22 95; fax: +81 5 34 35 36 21.

E-mail address: tsuchiya@zah.att.ne.jp (K.J. Tsuchiya).

al., 1999; Kessler et al., 1997; Lewinsohn et al., 1995). However, most prior studies have suffered from the lack of a control for a family history of psychiatric diagnosis or parental age, or from limited statistical power; all of these have been regarded as factors associated with the possible effect of parental death. Other studies have not found support for such an association (Alnæs and Torgersen, 1993; Furukawa et al., 1999; Wicki and Angst, 1991). This lack of consensus has been discussed in a review (Tsuchiya et al., 2003).

Recently, two Danish studies supported the association between BPD and parental suicide suggested in earlier studies. Of the two Danish studies, having corrected for the methodological drawbacks in previous studies (i.e., lack of a control for a family history or parental age, and limited statistical power), Mortensen et al. (2003) found that early parental death is associated with an increased risk for BPD among the children of parents who committed suicide. Although the study implied that this association could not be solely ascribed to risk-associated genes for mental disorders that are shared by deceased parents and their children, the association between parental death and a diagnosis of BPD among the offspring may be explained by parental suicide that resulted from the mental disorder of the parent, since suicide is a possible and an important outcome of mental disorders (Qin et al., 2003). Therefore, the subdivision of causes of parental death in relation to the suggested association remains to be addressed.

A more recent study by Kessing et al. (2004) indicated that an experience of maternal suicide was associated with a history of mania or mixed episode upon first admission to psychiatric hospitals. A significant effect of maternal suicide was observed, but no effect of maternal death due to a non-suicidal cause was found. The results therefore provided support for the possibility that BPD and suicide cluster within the same family. However, the authors failed to find a significant effect of paternal suicide. Since the subjects recruited in their study may be regarded as suffering from a more severe form of disease than those in other comparable studies, maternal versus paternal effects can be further explored in subjects with a history of a diagnosis of BPD that is in agreement with a broad range of bipolarity in the literature (Akiskal et al., 2000).

Of note is that some subjects examined in the two recent Danish studies are likely to overlap each other and our subject in interest, but the definition of data source and methods for analysis were varying. It remains worthy to address the following questions using a well-defined cohort based on the similar registers.

- 1) Is parental suicide in particular, and not parental death by a non-suicidal cause, associated with a later diagnosis of BPD?
- 2) Provided the effect of parental suicide is confirmed, then is the effect stronger when the child experiences the parental suicide at an earlier rather than at a later age?
- 3) Does magnitude of the effect differ between cases involving paternal or maternal suicide?

2. Methods

We conducted a nested case-control study using three Danish population-based registers. We describe it briefly since it has been described elsewhere (Tsuchiya et al., 2004).

2.1. Data source

We merged the Danish Psychiatric Central Register (Munk-Jørgensen and Mortensen, 1997), the Integrated Database for Longitudinal Labour Market Research (Danmarks Statistik, 1991), and the Danish Medical Register for vital statistics (Sundhedsstyrelsen, 2000) via a unique person identifier assigned to each individual born in or who had migrated to Denmark. Children are linked to biological mother owing to midwifery report, but some children have no registered link to father. Siblings of each subject in this study were defined as such: the same biological mother gave birth to a sibling who also gave birth to the subject. The registration of a maternal biological link had been non-randomly incomplete until the late 1950s, and thus we excluded subjects born before 1960.

The data source, an extract from a combination of the three registers, is a well-defined open cohort, and consists of individuals born in or after 1960 with a registered link to the biological mother.

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