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Sleep architecture in homicidal women with antisocial personality disorder — a preliminary study

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Abstract

The aim of the present study was to characterize sleep in severely violent women with antisocial personality disorder (ASP) as the primary diagnosis. Participants for this preliminary study were three drug-free female offenders ordered to undergo a forensic mental examination in a maximum security state mental hospital after committing homicide or attempted homicide. Ten healthy age- and gender-matched controls consisted of hospital staff with no history of physical violence. The most striking finding was the increased amount of slow wave sleep, particularly the deepest sleep stage, S4, in women with ASP. This finding is in agreement with previously reported results in habitually violent male criminals with ASP. Severe female aggression seems to be associated with profound changes in sleep architecture. Whether this reflects specific brain pathology, or a delay in the normal development of sleep patterns in the course of aging, needs to be clarified. From the perspective of sleep research, the biological correlates of severe impulsive violence seem to be similar in both sexes.

Keywords: Antisocial personality disorder; Women; Homicide; Sleep; Polysomnography

1. Introduction

Female violent behavior has been less studied than that of men. This is partly because women commit fewer crimes than men (Harvey et al., 1992; Steffensmeier and Allan, 1996; Eisner, 2003), but also because female aggression is typically carried out in private and domestic areas (Rogde et al., 2000). It has also been postulated that the idealization of motherhood, the social taboo of female violence and the consequent denial thereof have possibly minimized concern with the phenomenon (Motz, 2001).

As a symptom, female aggression overlaps with a number of psychiatric disorders, but it is commonly associated with personality disorders, in particular antisocial (ASP) and borderline personality disorders (BPD), and substance abuse (Arseneault et al., 2000; Putkonen et al., 2001; Nestor, 2002). Pooled data indicate that one in five female prisoners has ASP (Fazel and Danesh, 2002) and the risk for homicide has been reported to be exceptionally high in women with ASP

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(Eronen et al., 1996). During the last decade there has been growing evidence of central nervous system dysfunction in severe aggressive behavior (Virkkunen et al., 1994; Soderstrom et al., 2000), but it is still unclear whether aggression in women is affected by the same biological mechanisms as in men.

Human sleep consists of two main components: rapid eye movement (REM) and non-REM sleep, the latter is divided into stages 1–4 (S1–S4). Stage 3 sleep (S3) and stage 4 sleep (S4) in non-REM sleep are defined as slow wave sleep (SWS), also called delta or deep sleep. In normal sleep, REM and non-REM periods alternate cyclically. Although the exact functions of the different sleep stages are not known, it is generally accepted that SWS is the physiologically significant, refreshing part of sleep. Feelings of unwellness, either somatic or psychiatric, are frequently associated with decreased SWS. On the contrary, habitually violent, homicidal male offenders with ASP have been reported to show increased amounts of SWS, particularly S4 sleep, as compared with age-matched healthy men (Lindberg et al., 2003a). Furthermore, offenders with severe conduct disorder had higher amounts of S4 sleep than did men with only mild or moderate conduct disorder (Lindberg et al., 2003b). It is still unclear, whether the impulsive, aggressive behavior in women is affected by the same biological mechanisms as in men. From the perspective of sleep research, an interesting question is whether the exceptional deep sleep phenomenon reported in men with ASP can be seen also in antisocial women. The aim of the present study was to characterize the sleep architecture of highly violent women with ASP as compared with healthy female controls.

2. Methods

2.1. Participants

The participants for the study were three female offenders ordered to have a pretrial forensic mental examination by the Finnish National Board of Medico-Legal Affairs for committing homicide or attempted homicide. The examination lasted a maximum of 2 months and took place in Vanha Vaasa Hospital — a maximum security state mental hospital. The trial records and all available background information, including medical, family, school and criminal history from childhood and adolescence to adulthood, were reviewed. Diagnoses were made by senior forensic psychiatrists using the structured clinical interviews for DSM-IV, SCID I and II (First et al., 1996, 1997). Offenders with psychiatric disorders known to affect sleep, including psychosis, dementia or severe depression, were excluded. The women had no somatic disorders. Neither waking EEG nor brain MRI (1.5 T) disclosed any abnormality. They did not have a history of major brain injuries. As a part of the forensic mental examination, the WAIS-R IQ was evaluated, and all scored within the range of normal intelligence. Urine screening for illicit drugs was performed just before the sleep examination and was negative in all cases. None of the ASP women had been using regular psychiatric medication, although during detoxification periods in previous years, some temporary medication was prescribed. During the past 2 months prior to sleep recordings, all women were completely free of medication.

Participant 1 was a 34-year-old woman charged with attempted manslaughter. The victim was her husband and she was intoxicated with alcohol during the index crime. Her parents were both alcoholics and she had been taken into protective custody as a child due to her father's violent behavior. She had finished high school, but had no vocational education and had not held any permanent work positions. She has three children, all taken into protective custody. She had no previous psychiatric treatments, but had several contacts for care for alcohol and drug abuser. Her misuse of alcohol started at age 13. Her criminal record revealed that she had been given a conditional prison sentence for two assaults before the index crime. The DSM-IV diagnoses were alcohol dependence and ASP with features of BPD (American Psychiatric Association, 1994). The Beck Depression Inventory (BDI) score was 6/63 (Beck et al., 1961). She had abstained from alcohol for approximately 7 months prior to the sleep examination. The body mass index (BMI) was 22.0 kg/m^2.

Participant 2 was a 33-year-old woman charged with manslaughter. The victim was her husband and she had been intoxicated by anxiolytics during the index crime. Both of her parents were alcoholic. She was sexually abused as a child and taken into protective custody. She had not finished high school and had no vocational education. Her four children have been taken into protective custody. One of the children has fetal alcohol syndrome (FAS). During the last 9 years, she had been sent to a psychiatric hospital 23 times due to alcoholism and impulsive behavior. She has had several referral to care for alcohol and drug abusers. Her misuse of alcohol started at the age of 9. She had no previous criminal record. The DSM-IV diagnoses were alcohol dependence, anxiolytic dependence, ASP