

Prevalence of Premenstrual Syndrome in Autism: a Prospective Observer-rated Study

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A systematic, prospective observer-rated study was carried out to determine the prevalence of late luteal phase dysphoric disorder (premenstrual syndrome) in women with autism. A group of women with autism and learning disability ($n = 26$) was compared with a group of women with a non-autism learning disability ($n = 36$) matched for age, in-patient status, intelligence, marital status, parity, behavioural problems and ethnicity. Observers rated DSM-IV symptoms of late luteal phase dysphoric disorder every day

from each subject over three consecutive menstrual cycles. Using a premenstrual increase in DSM-IV symptoms of $\geq 30\%$ as evidence of fulfilment of diagnostic criteria, the prevalence of late luteal phase dysphoric disorder was 92% in the autism group compared with 11% in the control group. This difference was highly statistically significant. The principal conclusion from this study is that there is a marked increase in premenstrual syndrome in women with autism compared with matched controls.

KEY WORDS: AUTISM; PREMENSTRUAL SYNDROME; LATE LUTEAL PHASE DYPHORIC DISORDER; PREVALENCE

Introduction

Most menstruating women experience some premenstrual symptoms; of these, around 20 – 40% consider them severe enough to seek medical help.¹ The nosological issue of whether premenstrual syndrome is a separate diagnostic entity is, however, controversial,² although three mood symptoms, namely anxiety, irritability and mood lability, have been found to be relatively stable across menstrual cycles.³

To date, there have been no systematic studies of the prevalence of late luteal phase dysphoric disorder (premenstrual syndrome) in women with autism; the few published

studies have essentially been limited to case reports.^{4,5} In this first study on premenstrual syndrome in autistic patients with learning disability, the prevalence of premenstrual syndrome in a group of female patients with a dual diagnosis of learning disability and autism is compared with the prevalence of this syndrome in an age- and intelligence-matched group of female patients with learning disability who do not have a diagnosis of autism.

Patients and methods

PATIENTS

The subjects were women diagnosed with learning disabilities, who resided in either

hospitals or homes for people with learning disability in the large catchment area of the Home Counties in the south of England, UK. A random sample of women was selected from those who fulfilled the following inclusion criteria: age 18 – 45 years; not pregnant; not using hormonal contraception; regular menstruation for at least the previous six menstrual cycles; no psychiatric disorder (other than premenstrual syndrome, learning disability or autism); normal physical examination; normal laboratory investigation results (such as thyroid function tests, liver function tests and serum electrolytes); no medication during the 4 weeks preceding commencement of the study; and an established psychiatric diagnosis of learning disability (DSM-IV mental retardation).⁶ The use of any of the following types of medication during the course of the study was an exclusion criterion: anxiolytics; diuretics; hormone treatment (including oral contraception); and antipsychotic medication. After a complete description of the study to the subjects and their next of kin or carers, assent from the patients and written informed consent from their next of kin or carers was obtained.

Those women who, in addition to having learning difficulties, were also diagnosed as having autism had a diagnosis of childhood autism documented in their medical files which was supported by a full psychological assessment confirming the diagnosis. They fulfilled the DSM-IV criteria for pervasive developmental disorder – autistic disorder.

RATING OBSERVATIONS

Behaviour and mood observations were carried out by the following staff: carers, in the case of homes for people with autism; carers, in the case of homes for people with learning disability; and nursing staff in the case of hospital in-patients. In all

homes/hospitals, the observers who were asked to carry out behaviour and mood ratings were blind to menstrual status and, in the second and third cases above, the staff chosen were also blind to autism status. Furthermore, none of these staff was knowledgeable about the study goals.

The diagnosis of premenstrual syndrome was made based on the DSM-IV criteria for late luteal phase dysphoric disorder, using a rating scale that took into account the nature of the disability and communication difficulties of the patients. In particular, the rating scale was observer-based rather than self-rating. Furthermore, the rating scale captured information regarding behavioural problems, such as soiling, accidents, self-harm, stereotypies or repetitive movements, aberrant sexual behaviour, and physical symptomatology such as vomiting and dermatological disorders. In line with the guidelines of the National Institute of Mental Health, USA, an increase in symptom severity $\geq 30\%$ was required in these items in order for them to count towards a diagnosis of premenstrual syndrome.⁷ Changes of $< 30\%$ were not recorded. Rating observations were carried out every day throughout the whole of three consecutive menstrual cycles.

STATISTICAL ANALYSIS

The two groups were compared statistically with respect to demographic data, clinical characteristics and frequency of symptoms related to premenstrual syndrome. The χ^2 test (one degree of freedom) and Fisher's exact probability test were used to analyse categorical variables. Continuous variables were analysed using the Student's *t*-test. Statistical analyses were performed using the Statistical Package for Social Science (SPSS®) for Windows®, version 12 (SPSS, Chicago, IL, USA). *P*-values < 0.05 were considered to be statistically significant.

Results

A total of 62 women were enrolled and their clinical and demographical characteristics show that the two groups (with and without autism) were well matched (Table 1). Of the control subjects (without autism), five had a diagnosis of Down's syndrome, three of brain damage and one of hydrocephalus; in the remaining women, the aetiology of the learning disability was unknown.

The mean of the assessments from each of three consecutive menstrual cycles were calculated for each patient and used to provide frequencies for each rating scale item. The frequencies showing $\geq 30\%$ increase in symptom severity over the study duration for each of the rating scale items were used to determine fulfilment of the DSM-IV criteria for late luteal phase dysphoric disorder (Table 2). Changes of $\geq 30\%$ were evident up to 9 days before the start of the next menstrual period.

Of the 26 women with autism, 24 (92%) fulfilled the DSM-IV criteria for late luteal phase dysphoric disorder, compared with four (11%) of the 36 women in the control (without autism) group. This difference was highly statistically significant ($P < 0.000001$).

Discussion

This is the first systematic study of late luteal phase dysphoric disorder (premenstrual syndrome) in women with autism and has demonstrated that its prevalence in autism (92%) is significantly higher than in a matched control population (11%). The symptoms which showed a particularly marked increase in prevalence in the autistic group were: affective lability; anger or irritability; clumsiness; anxiety or tension; depressed mood; impairment of work performance, social activities or relationships; social withdrawal, isolation and decreased interest in usual activities; decreased concentration; temper tantrums; physical aggression; self harm; stereotypies or repetitive movements; destructive behaviour; hypersomnia; insomnia; a change in appetite or a specific food craving; and headache.

A higher rate of premenstrual syndrome in autism might point to a higher level of hormonal fluctuations in this population. This possibility needs to be studied directly. Recently, it has been suggested that premenstrual syndrome is part of a broader set of infectious illnesses that are exacerbated by cyclic changes in

TABLE 1:
Clinical and demographical characteristics for 62 women with learning difficulties who resided in homes for people with autism or learning disability, or in hospital

Variable	Autism (n = 26)	No autism (n = 36)	Significance
Age (years)	26.0 $\pm$ 4.3	28.3 $\pm$ 5.1	NS
In-patient status	12 (46%)	15 (42%)	NS
Intelligence quotient	39.8 $\pm$ 8.3	42.1 $\pm$ 8.9	NS
Single marital status	26 (100%)	36 (100%)	NS
Nulliparous	26 (100%)	36 (100%)	NS
Epileptic	7 (27%)	9 (25%)	NS
Behavioural problems	6 (23%)	8 (22%)	NS
Ethnic background (white Caucasian: Asian: Afro-Caribbean)	21:1:4 (81%:4%:15%)	27:3:6 (75%:8%:17%)	NS

Data show means $\pm$ SD or number (%).

NS, not statistically significant ($P > 0.05$).

TABLE 2:

Number (%) of women showing $\geq 30\%$ increase in symptom severity for each of the rating scale items used to determine fulfilment of the DSM-IV criteria for late luteal phase dysphoric disorder

Rating scale item	Autism (<i>n</i> = 26)	No autism (<i>n</i> = 36)	Significance
Affective lability	26 (100%)	0	$P < 0.000\ 001$
Anger or irritability	26 (100%)	0	$P < 0.000\ 001$
Clumsiness	23 (88%)	0	$P < 0.000\ 001$
Anxiety or tension	26 (100%)	0	$P < 0.000\ 001$
Depressed mood, feeling sad or hopeless	26 (100%)	0	$P < 0.000\ 001$
Impaired work performance, social activities or relationships with others	22 (85%)	0	$P < 0.000\ 001$
Social withdrawal, isolation and decreased interest in usual activities	23 (88%)	0	$P < 0.000\ 001$
Easily fatigued or lack of energy	0	0	NS
Decreased concentration	14 (54%)	4 (11%)	$P < 0.001$
Temper tantrums	24 (92%)	4 (11%)	$P < 0.000\ 001$
Physical aggression or attacks	13 (50%)	0	$P < 0.000\ 001$
Self harm	20 (77%)	4 (11%)	$P < 0.000\ 001$
Stereotypies or repetitive movements	19 (73%)	0	$P < 0.000\ 001$
Destructive behaviour	21 (81%)	3 (8%)	$P < 0.000\ 001$
Aberrant sexual behaviour	1 (4%)	0	NS
Any other behavioural or psychological problem	0	0	NS
Physical symptoms			
Hypersomnia	8 (31%)	0	$P < 0.000\ 5$
Insomnia	15 (58%)	0	$P < 0.000\ 001$
Change in appetite, overeating or specific food craving	17 (65%)	9 (25%)	$P < 0.005$
Weight gain	0	0	NS
Breast tenderness or swelling	0	0	NS
Headache	10 (38%)	0	$P < 0.0000\ 05$
Joint or muscle pains	0	0	NS
Sensation of being bloated or swollen	0	0	NS
Feeling sick or vomiting	0	0	NS
Skin disorder	0	0	NS
Swollen ankles	0	0	NS

NS, not statistically significant ($P > 0.05$).

immunosuppression which, in turn, are induced by cyclic changes in oestrogen and progesterone.⁸ Study of the relationship between this hypothesis to the aetiology and course of the disorder may prove fruitful.

Finally, we note that, given that the

present research was observer-rated, recall bias was not an issue.

Conflicts of interest

The authors have no conflicts of interest to declare in relation to this article.

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