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ORIGINAL ARTICLE

Obsessive-compulsive disorder in pregnancy and the postpartum period: course of illness and obstetrical outcome

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Abstract The study aimed to examine the course of obsessive-compulsive disorder (OCD) across pregnancy and its impact on obstetric and neonatal outcomes. Women enrolled prior to 20-week gestation in a prospective, observational study. The Structured Clinical Interview for DSM-IV was completed to obtain lifetime Axis I diagnoses. A total of 56 women with OCD were followed at 1 to 3-month intervals through 52 weeks postpartum. Each visit, the Yale-Brown Obsessive Compulsive Scale (YBOCS), clinical assessment, and medication/exposure tracking were performed. Obstetric and neonatal data were abstracted from the medical record. In subjects with OCD, associations between perinatal obsessive-compulsive symptoms (OCSs) and outcomes were examined. Additionally, outcomes were compared to 156 matched psychiatric patients without OCD. Maternal age inversely correlated with the YBOCS scores across the study period (β= −0.5161, p=.0378). Cesarean section was associated with increased OCSs in the postpartum period compared to vaginal delivery (β=5.3632, p=0.043). No associations were found between severity of perinatal obsessions or compulsions and any specific obstetric or neonatal complications. Subjects without OCD had higher frequency of fetal loss compared to mothers with OCD (χ^2=4.03, p=0.043). These novel prospective data fail to identify an association of OCSs with adverse outcomes. In contrast, there is an association of delivery method and younger maternal age with increased postnatal symptoms of OCD. Psychiatric subjects without OCD may have a higher risk of miscarriage and intrauterine fetal demise compared to subjects with OCD.

Keywords Obsessive-compulsive disorder · Course of illness · Neonatal outcomes · Obstetrical outcomes

Introduction

Psychopathology during pregnancy and the postpartum period is a relatively common occurrence, but anxiety disorders are often overlooked (Abramowitz et al. 2003). Obsessive-compulsive disorder (OCD) in pregnancy and the postpartum period is of particular concern but has received limited prospective investigation (Brandes et al. 2004; Miller et al. 2013). Historically, the lay literature has focused on maternal obsessions as fixations on the health of her offspring. OCD can result in severe disability and poor quality of life, comparable to many other psychiatric disorders and by some reports rivaling schizophrenia (Cassin et al. 2009). The negative consequences of maternal OCD may be further compounded and/or extended to future generations should OCD adversely influence obstetrical and neonatal outcomes.

While the impact of maternal depression in the perinatal period has undergone considerable scrutiny, the potential adverse consequences of maternal anxiety disorders have received less attention. Previous studies have reported poor neonatal outcomes including premature delivery and growth retardation in infants born to women with antepartum anxiety symptoms (Chung et al. 2001). These are key outcomes in the developmental health trajectory of the offspring based on the fetal programming models (Wadhwa 2005; Field 2011). In an investigation of 46 women with multiple psychopathologies,

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including mood and anxiety disorders, researchers concluded that maternal and anxiety and depression were related to poor infant outcome including "poor transient neonatal adaptation in the newborn period," independent of the presence of pharmacological therapy for maternal mental illness (Misri et al. 2004). However, the relationship between OCD and neonatal outcome in particular has received little rigorous examination. In a recent study, Uguz et al. (2015) reported a significant difference between birth weight and gestational age at delivery, with the infants of mothers with OCD being smaller and having shorter gestations compared to infants of mothers without OCD; however, this study was relatively small, including only 28 cases of OCD (Uguz et al. 2015). Additionally, parental OCD has been associated with increased risk of an anxiety disorder in the offspring (Black et al. 2003). Whether this effect is a consequence of genetic transmission, the developmental milieu, early child experiences and/or exposure, or some combination of these is not fully understood.

Pregnancy, childbirth, and parenthood are clearly major life events that have been associated with an increased vulnerability for the development of "obsessional problems" (Paykel et al. 1971; Maina et al. 1999; Fairbrother and Abramowitz 2007). The most commonly cited concerns for obsessions in the perinatal period have been those associated with "postpartum well-being of the infant." For example, a case series of postpartum-onset OCD noted tendencies toward early onset of symptoms (average of 2.2 weeks), including fear of harm to the infant and avoidance of the infant (Sichel et al. 1993). The course of preexisting OCD and risk factors for postpartum exacerbation has received less rigorous examination. Previous studies of OCD in pregnancy have utilized case series, retrospective maternal recall, and limited prospective assessment. Most retrospective studies have focused on incidence and have reported that the rate of OCD onset during pregnancy ranges from 0 to 39 % (Neziroglu et al. 1992; Williams and Koran 1997; Forray et al. 2010). Williams and Koran (1997) found that 69 % of patients with OCD had no change in obsessive-compulsive symptoms (OCSs) during pregnancy, 17 % had worsening of symptoms, and 14 % demonstrated improvement in symptoms. However, retrospective recall in the postpartum period is suspected. Our group has reported that retrospective recall of depression in pregnancy has limited accuracy (Newport et al. 2007), but whether or not this is true of OCSs is unknown.

Prospective studies have focused on postpartum OCSs with limited assessment proximate to delivery. These studies have shown an incidence of postpartum OCD ranging from 4 to 11 % (Uguz et al. 2007; Miller et al. 2013). Uguz et al. (2007) reported an incidence of 4 % (n=302) of postpartum OCD in 302 obstetrical patients seen at postpartum day 1 and week 6; avoidant and obsessive-compulsive personality disorders predicted onset of symptoms in the postpartum period. Miller et al. (2013) found 11 % (n=461) of obstetrical patients screened positive for OCSs at 2 weeks after delivery, half of those who screened positive at 2 weeks for OCSs had continued symptoms at 6 months, and an additional 5.4 % developed new OCSs at 6 months postpartum (Miller et al. 2013). The role(s) of comorbid and/or preexisting psychiatric illness, if any, on the incidence of OCSs in the postpartum period remains obscure.

The literature, while mixed, suggests that the postpartum period represents a vulnerable window for women to experience OCSs. Factors associated with this potential symptom exacerbation warrant further attention, particularly the protective benefit, if any, of ongoing treatment during pregnancy and/or the postpartum period. Selective serotonin uptake inhibitors (SRIs) are considered first-line pharmacotherapies for OCD (Fineberg and Gale 2005) and may also be the most cost-effective option for those with limited resources, given the potential expense of psychotherapy. Scrutiny of the available reproductive safety data is warranted for individual risk/benefit discussions.

The objective of the current study was to test our hypothesis that preexisting OCD worsens during the perinatal period using prospectively collected data. Additionally, we rigorously interrogated the obstetrical and neonatal outcome data in search of any associations with maternal OCSs. Finally, potential differences in obstetric and neonatal outcomes were compared between mothers with OCD and matched mothers with Axis I disorders other than OCD.

Materials and methods

Pregnant women less than 20-week gestation presenting to the Emory Women's Mental Health Program, from community referrals by obstetric or psychiatric care providers, were enrolled in a prospective observational study of maternal stress during pregnancy. The study was approved by the Emory University Institutional Review Board. Pregnant women with any past or present history of mental illness were eligible for participation. Only those with acute suicidality or homicidality or active eating disorders were excluded from participation. Psychiatric treatment was not influenced by participation in the study and was performed by one of two board-certified psychiatrists with experience in pregnancy and postpartum women's mental health (ZNS or DJN). Written informed consent was obtained prior to study enrollment. During the original prospective longitudinal study, patients underwent an initial diagnostic assessment using the Structured Clinical Interview for DSM-IV-TR Axis I Disorders (SCID) (First et al. 2002) as well as numerous other psychometric scales including the Yale-Brown Obsessive Compulsive Scale, Beck Depression Inventory, State-Trait Anxiety Inventory, Edinburgh Postnatal Depression Scale, Mania Rating Scale, Hamilton Rating Scale for Depression,

Dyadic Adjustment Scale, Perceived Stress Scale, Social Support Inventory, and drug/toxin exposure monitoring.

Individuals included in the present study were those who (1) met *DSM-IV* criteria for OCD and (2) underwent at least three Yale-Brown Obsessive Compulsive Scale (YBOCS) assessments, with at least one assessment occurring during pregnancy and one occurring during the postpartum period. Symptoms of OCD were assessed at 1 to 3-month intervals until postpartum week 52 using the YBOCS by trained evaluators (Goodman et al. 1989). Quarterly inter-rater reliability assessments were conducted to ensure maintenance of kappa statistics ≥0.8 on all clinician-administered instruments. By convention, for patients with multiple pregnancies in the research program, only the first pregnancy was included in the present analysis.

For the examination of obstetrical and neonatal outcomes, 52 of the 127 OCD cases that had complete neonatal and obstetrical outcome data were studied in comparison to 156 controls. Each case of OCD was matched by race, parity when pregnant (exact), education (±2 years), and maternal age at delivery (±2 years) against three controls who did not have a lifetime diagnosis of OCD. Controls were women presenting to the Emory Women's Mental Health Program from community referrals by obstetric or psychiatric care providers. These participants were also enrolled in the maternal stress study after informed consent under the purview of the Emory University Institutional Review Board; after consent, the controls underwent SCID, but they did not have a lifetime diagnosis of OCD. Because of the rare occurrence of OCD among the research population and the few participants who had complete obstetric and neonatal outcome data, three controls were chosen per OCD case in order to increase statistical confidence in any findings. Data on obstetric and neonatal outcomes were gathered from the medical record, a study-specific delivery information sheet completed by the subject, and a patient interview after delivery. Figure 1 shows the summary of patient inclusion.

Statistical analysis

OCSs were measured at each trimester and during the postpartum period. Multiple YBOCS scores within a trimester or postpartum period were averaged to derive one score for each trimester and one score for each postpartum interval. The postpartum intervals were defined as early (weeks 0–6), mid (weeks 7–24), and extended (weeks 25–52). The average number of visits per individual with lifetime diagnosis of OCD via SCID was as follows: first trimester=1.375, second trimester=2.25, third trimester=1.80, early postpartum=1.04, middle postpartum=2.34, and late postpartum=2.54. Because of the varying numbers of measurements for each participant during each epoch, the measurements for each interval were averaged, yielding a single YBOCS score for each interval used in modeling. Bivariate analyses, using total YBOCS, compulsions, and obsessions scores as dependent measures, were performed with each interval data. Generalized linear mixed models were then used to estimate changes in total YBOCS, compulsions, and obsessions scores as a function of visit numbers over time. We fitted the generalized linear mixed model for a repeated-measures design and examined various variance-covariance structures including Compound Symmetry (CS), Auto-Regressive (AR), Unstructured (UN), and Spatial-Power. Based on results of the bivariate analyses, we included maternal age at delivery, parity, and delivery method in the generalized linear mixed model to examine their influence upon OCD symptom scores over time. For all models, we controlled demographic variables as variables of no interest. Using Akaike information criteria (AIC), we selected the most parsimonious model for each YBOCS score. The final regression model was chosen based on maximum value of R^2.

Chi-square analyses were performed comparing the occurrences of spontaneous abortion (SAB) versus no SAB, stillbirth versus no stillbirth, and SAB or stillbirth versus neither between the OCD and non-OCD groups. Chi-square analyses were also performed comparing the occurrences of Caesarian

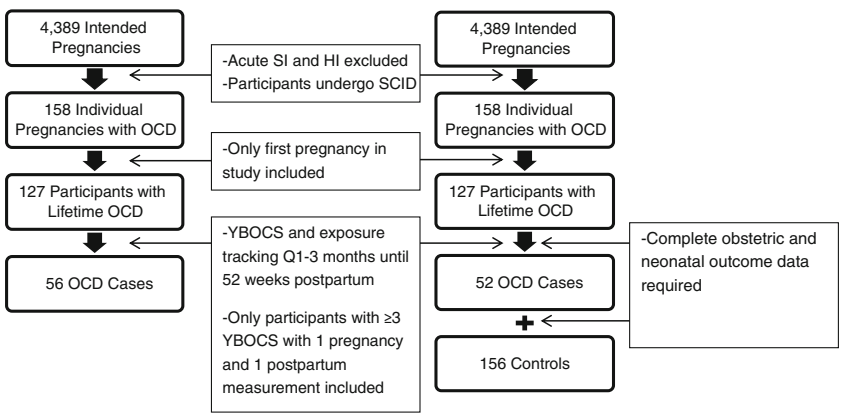

Fig. 1 Diagram of patient study design and patient inclusion criteria

delivery versus vaginal delivery, frequency of NICU admissions, frequency of special nursery admissions, maternal education level, frequency of preconception enrollment, and maternal parity when pregnant between the OCD and non-OCD groups. A z test was performed comparing the proportions of preconception enrollments between the OCD and non-OCD groups, and z tests were performed comparing the frequencies of comorbid diagnoses between the two groups, including mood disorders, anxiety disorders, psychotic disorders, substance use disorders, and eating disorders. A Fisher's exact test was performed comparing race between the OCD and non-OCD groups. A Student's t test was performed comparing baby length, weight, estimated gestational age (EGA) at delivery, EGA at study enrollment, and maternal age at delivery between groups.

Results

Of the 4389 intended pregnancies included in the original stress in pregnancy study, 158 individual pregnancies were found to have a lifetime diagnosis of OCD. Inclusion of only the first pregnancy enrolled in the study for each mother with a lifetime diagnosis of OCD yielded 127 individual participants. Of these participants, 56 met full inclusion criteria based on the necessity of longitudinal measurements of severity of OCSs, which was the primary reason for exclusion of data. Demographical information is shown in Table 1. Over the course of pregnancy and the postpartum period, the mean total YBOCS scores were 10.94 (SD=8.86), 8.40 (SD=9.29), and 9.03 (SD=8.33) for the first, second, and third trimesters, respectively. For early, mid, and extended postpartum intervals, mean total YBOCS scores were 10.25 (SD=10.11), 10.14 (SD=8.60), and 9.63 (SD=7.58), respectively. Mother's age at delivery was significantly correlated with compulsion scores ($r=-0.247$, $p<0.0001$), obsession scores ($r=-0.20$, $p=0.0016$), and total YBOCS scores ($r=-0.24$, $p<0.0001$) measured over time. This relationship was strongest in the third trimester data. Other variables that could influence the course of illness were investigated including maternal race, maternal education, maternal marital status, EGA at delivery, preterm delivery, delivery method, parity, and NICU admission. None of these variables significantly influenced OCD symptoms. However, method of delivery was associated with OCD symptoms during the postpartum period. Based on the generalized linear mixed model, there was no significant change of OCSs over time.

The total YBOCS score was significantly associated over time by maternal age at delivery ($\beta=-0.52$, $p=0.0378$) and delivery method ($\beta=5.36$, $p=0.0430$). Maternal age was determined to be normally distributed via Shapiro-Wilk test ($p>0.05$), and increased age was associated with decreased YBOCS scores, while those who chose C-section had an increase in total YBOCS scores over time. Analyses of YBOCS subscales for compulsions and obsessions demonstrated that only compulsion scores over time were significantly influenced by maternal age and delivery method.

Table 1 Demographic profiles of study populations

Course of Illness (total $n=56$)		
	n	%
Race		
Caucasian	48	85.7
African-American	1	1.8
Asian	4	7.1
Other	3	5.4
Married	52	92.9
Education (>16 years)	22	39.3
Planned pregnancy	37	68.5
	Mean	St Dev
Maternal age at delivery (years)	33.0	4.50
Parity when pregnant	.084	1.00
Obstetric and neonatal outcomes (total $n=52$)		
	n	%
Race		
Caucasian	51	98.7
African-American	1	1.9
Married	45	86.5
Education (>16 years)	20	38.5
Planned pregnancy	37	71.2
	Mean	St Dev
Maternal Age at delivery	33.2	4.24
Parity	0.60	0.63

To examine obstetric and neonatal outcomes, the medical records of the 127 OCD patients were scrutinized. Of these patients, only 52 had complete obstetric and neonatal outcome data, which included delivery outcome (stillbirth, spontaneous abortion, and live delivery), delivery type (C-section or vaginal), EGA at delivery, birth weight, birth length, presence of malformations, special nursery admission, and NICU admission. These 52 individuals were each matched by race, parity when pregnant (exact), education (±2 years), and maternal age at delivery (±2 years) with three controls who did not have a lifetime diagnosis of OCD via SCID, resulting in 156 control patients. The chi-square analyses of maternal demographics including education and parity when pregnant showed no significant differences, and t test of maternal age at delivery showed no significant difference. The Fischer's exact test performed on maternal race also showed no significant difference. Results of maternal demographic analyses are summarized in Table 2.

Chi-square analyses of obstetric and neonatal outcomes showed only one significant difference: Any type of pregnancy

Table 2 Demographical profiles and obstetric and neonatal outcome comparisons of subjects with OCD and matched subjects without OCD

	OCD group (n=52)	Non-OCD group (N=156)
Education (>16 years)		
n	20	57
%	38.5	36.5
χ^2	0.619	
p	.804	
Parity=0		
n	25	75
%	48.1	48.1
χ^2	0.00	
p	1.00	
Parity=1		
n	23	69
%	44.2	44.2
χ^2	0.00	
p	1.00	
Parity=2		
n	4	12
%	7.69	7.69
χ^2	0.00	
p	1.00	
Race		
Caucasian (%)	51 (98.1)	153 (98.1)
African-American (%)	1 (1.9)	3 (1.9)
p	1.00	
Maternal age at delivery (years)		
Mean	33.2	33.2
St. Dev.	4.21	4.24
t	−0.11	
p	0.91	
Spontaneous abortion		
n	11	52
%	21.2	33.3
χ^2	2.74	
p	0.098	
Stillbirth		
n	1	8
%	1.92	5.13
χ^2	0.968	
p	0.325	
Spontaneous abortion or stillbirth		
n	12	60
%	23.1	38.5
χ^2	4.08	
p	0.043	
Cesarean section[a]		
n	19	56
%	37.5	36.1
χ^2	0.003	
p	0.958	
Estimated gestational age at delivery (weeks)		
Mean	38.3	38.6
St. Dev.	1.86	1.65
t	0.930	
p	0.355	
Baby weight (kg)		
Mean	3.24	3.31
St. Dev.	0.502	0.455
t	0.850	
p	0.398	
Baby length (cm)		
Mean	49.6	50.1
St. Dev.	2.96	2.95
t	1.09	
p	0.277	
Special nursery admissions		
n	8	21
%	15.4	13.5
χ^2	0.109	
p	0.741	
NICU admissions		
n	6	17
%	11.5	10.9
χ^2	0.016	
p	0.898	

[a] Data on type of delivery for one control patient were unknown

[b] The presence/absence of malformation was too low in either group to compare

loss in the control group occurred more frequently than in the OCD group (χ^2=4.08, p=.0434). There was no difference in preterm delivery rates, birth weights, special nursery admission rates, or NICU admission rates. Because of the potential influence of gestational age at the time of study enrollment on the frequency of spontaneous abortion, a t test of estimated gestational age at enrollment comparing the OCD group to the non-OCD controls was done, and it did not show a significant difference between groups (p=0.899). Additionally, a z test comparing proportions of preconception study enrollment was performed, which was not significant (p=0.741). t tests of the baby length, weight, and EGA at delivery showed no significant differences between groups. Results of obstetric and neonatal outcomes are summarized in Table 2. Finally, since comorbid diagnoses may also influence neonatal outcomes, z tests were performed comparing the frequencies of multiple comorbid diagnoses including bipolar disorder types I and II, major

depressive disorder, dysthymia, depression NOS, schizophrenia, schizophreniform disorder, schizoaffective disorder, panic disorder, posttraumatic stress disorder, social anxiety disorder, generalized anxiety disorder, anxiety disorder NOS, and multiple substance use disorders. The proportion of panic disorder (z=2.89, p=0.004) and social anxiety disorder (z=2.88, p=.004) were higher in the OCD group. There were no other significant differences in frequencies of psychiatric diagnoses between groups. Of note, the rate of stillbirth, defined as intrauterine fetal demise after 20-week gestational age, in all 208 psychiatric patients (cases and controls combined) was 4.33 %.

Discussion and conclusion

Course of illness

This investigation is a comparatively large prospective study of women with preexisting OCD during pregnancy and postpartum period. Overall, there was no significant change in OCS severity across pregnancy and the postpartum period in women followed at a tertiary center. These data are consistent with the retrospective pregnancy results of Williams and Koran (1997) as well as studies in non-puerperal populations demonstrating that adult OCD symptoms are relatively stable across time, despite the low probability of complete remission with SRIs (Eisen et al. 1999; Mataix-Cols et al. 2002; Catapano et al. 2006; Eisen et al. 2010). All participants were followed clinically throughout the study, and their care was not predicated or influenced by the study. All available treatment data indicated that every participant was treated with some pharmacological agent during pregnancy and/or the postpartum period. This raises an important observation regarding the stability of OCSs during pregnancy and the postpartum period. In our population, active treatment attenuated the potential effects of pregnancy and the postpartum period on preexisting OCD.

Overall, symptomatology was remarkably stable, and only two predictors of severity of illness were found upon more complex statistical modeling: maternal age at delivery and delivery method. Increased maternal age at delivery was associated with lower YBOCS scores (β=−0.5161, p=.0378). Notably, no relationship between parity and symptom severity was identified. It is feasible that increased maternal age could be related to decreased severity secondary to longer illness and treatment duration. Studies in non-puerperal samples have demonstrated a relationship between duration and severity of illness varies, with some studies suggesting that OCD improves after several decades (Skoog and Skoog 1999) and others reporting that OCD tends to worsen as age increases (Farrell et al. 2006). Unfortunately, neither age of illness onset was captured in the current study population nor was the duration of treatment prior to conception. Method of delivery was also a predictor of symptom severity. Mothers who delivered via C-section tended to have higher YBOCS scores compared to mothers who delivered vaginally, largely in the postpartum (β=5.3632, p=.0430). These results are discordant with previous investigations reporting no association with delivery method (Abramowitz et al. 2007).

These results could be explained by greater anxiety associated with C-section or more stressful and lengthy recovery times of C-section deliveries compared to vaginal delivery. Arguably, this could represent a loss of control, a result of separation from baby, or fear of exposure during the C-section.

Obstetric and neonatal outcomes

Given the body of literature suggesting poor neonatal outcomes in women with various psychopathologies, the question of severity of OCD and its relationship to neonatal outcome arises. In the above analyses, no significant relationship was found between severity of OCD and obstetrical complications, including preterm delivery, birth weight, special nursery admission, and NICU admission. Similarly, neonatal outcomes did not have a significant relationship with illness severity in the postpartum period. When compared to a control group matched for age, race, education, and parity when pregnant, it appears that patients with OCD experience either spontaneous abortion or intrauterine fetal demise less frequently than patients without OCD (χ^2=4.08, p=0.043). This finding could be explained by more diligent monitoring of perinatal symptoms in the OCD group. This result may be influenced by comorbid psychiatric illness, most notably depression; however, only panic disorder and social anxiety disorder were significantly more frequent in the OCD cases than in the non-OCD controls. Additionally, the rate of spontaneous abortion may be influenced by the timing of enrollment, but no difference in date of study enrollment was found between the two groups.

Interestingly, the rate of stillborn infants in this sample of 208 patients with Axis I disorders is 4.33 %, much higher than the stillbirth rate in the general population, which is reported by the American Congress of Obstetricians and Gynecologists as 1 in 160 or 0.625 % (ACOG 2009). Similarly, the spontaneous abortion rate in this sample is also high at 30.3 % compared to the general population, whose reported rate is 8–20 % (Wang et al. 2003). Some have suggested that exposure to SRIs is a risk factor for pregnancy loss (Pastuszak et al. 1993; Diav-Citrin et al. 2002). This finding has, however, been heavily disputed (Chambers et al. 1996; Kulin et al. 1998; Sivojelezova et al. 2005). Additionally, other exposure in some psychiatric patients, such as comorbid substance use disorders, may play a role in increased pregnancy loss. Further investigations are warranted to determine if this relationship holds true in controlled studies.

No significant differences were found between rate of C-section delivery, EGA at delivery, birth weight, birth length, admission rates to the NICU, or admission rates to the special nursery. This finding suggests that in a population of psychiatric patients, actively treated OCD poses no additional threat to delivery outcome. The potential adverse effects of non-treated maternal OCD remain essentially unknown, and the current data do not indicate a significant hazard by continuing pharmacological treatment.

Treatment implications

In the current study, no increased risk to the newborn was found in patients with OCD compared to those without OCD in an adequately treated psychiatric population in regard to EGA at delivery, birth weight, birth length, or admission to NICU/special nursery. These results suggest that risk of treatment to the neonate is minimal. It has been reported that maternal stress increases the likelihood of poor neonatal outcomes (Chung et al. 2001). Many patients have adequate response to SRI monotherapy, with resultant decrease in severity of illness (Fineberg and Gale 2005) and likely maternal stress. However, it should be noted that the above population had a much higher rate of pregnancy loss than in the general population. Whether this is due to fetal exposure, maternal stress, or a combination of these factors is unknown. Further investigations are warranted to investigate this finding. Given the current body of evidence, it appears that the risk of maternal treatment to the newborn is likely outweighed by the impact of uncontrolled OCD symptoms.

Limitations

Several limitations of this study exist. First, the sample size is relatively small. However, the prevalence of 2–3 % of a lifetime diagnosis of OCD is consistent with other larger studies (Ruscio et al. 2010). Second, patients with comorbid psychiatric illness were not excluded, though the rate of comorbidity in our samples was 94.6 % and is similar to rates in the National Comorbidity Study Replication (Ruscio et al. 2010). A third limitation of this study is the lack of a control arm. Identification of a healthy control group, such as one without symptoms or any diagnoses based on individual interview, negates the potential contribution of familial factors. For example, would a family history of OCD be exclusion to the control group? Similarly, the identification of a control group without symptoms assumes that a group that has not developed the symptoms will remain healthy. The current matching design attempts to isolate the impact of OCD symptoms and maternal OCD diagnosis on outcome, and our comparison to a clinical sample with a high rate of SRI exposure is a reasonable initial step at examining OCD diathesis contributions. Because of this lack of control, it cannot be concluded that non-treated women with OCD have worse neonatal outcomes. However, in light of the literature regarding the safety of SRIs during pregnancy, the risks of treatment are low. Additionally, non-treatment of severe psychopathology could be considered unethical. Another possible limitation lies in the lack of analysis of the effect of treatment on the outcomes. However, the ability to obtain these data would be difficult given that this is not a randomized controlled trial; it is a prospective observational study with treatment independent of study participation. Also, any findings of treatment influence would be difficult to interpret given the small sample size. Finally, the sample population is largely Caucasian and well educated, which may limit the generalizability of the above findings.

Summary

The current study shows that the severity OCD remains largely unchanged across pregnancy and the postpartum period, which is unlike similar studies of other psychopathologies. However, predictors of severity of OCSs included younger maternal age at delivery and delivery method. These predictors could lead to increased surveillance of illness severity during pregnancy and the postpartum period in younger women with OCD. Additionally, increased surveillance during the postpartum period of women with OCD who deliver via C-section may be indicated. There is no difference in frequency of neonatal outcomes including birth weight, birth length, estimated gestational age at delivery, or NICU/special nursery admissions between patients with OCD and those without OCD, and neonatal outcomes were not influenced by OCS severity in women who were adequately treated with pharmacotherapy, suggesting that neither disease nor treatment of OCD during pregnancy poses a direct risk to the neonate. Future studies include the rates of pregnancy loss in psychiatric populations versus the general population, given the high rates of stillbirth and spontaneous abortion in the above populations. Furthermore, longitudinal studies of other anxiety disorders including panic and posttraumatic stress disorder during the peripartum are warranted.

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