American Journal of Obstetrics and Gynecology (2005) **192**, 522–6

ELSEVIER

AMERICAN JOURNAL of OBSTETRICS and GYNECOLOGY

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The onset of postpartum depression: Implications for clinical screening in obstetrical and primary care

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Received for publication March 2, 2004; revised June 30, 2004; accepted July 23, 2004

KEY WORDS
Pregnancy
Postpartum
Depression

Objective: Inconsistent diagnostic criteria fail to delineate guidelines for postpartum depression surveillance. This study evaluates the validity of commonly accepted postpartum onset criteria.
Study design: Consecutive referrals to the Emory Women's Mental Health Program for evaluation of postpartum depression fulfilling criteria for major depression and taking no psychotropic medication were included. Diagnostic interview, demographics, depression scales, and the time of illness onset were obtained. Descriptive analysis was conducted for 3 participant groups: pregnancy onset, early postpartum onset within 6 weeks of delivery, and late postpartum onset.
Results: Among participants, 11.5% reported prenatal onset, 22.0% late postpartum onset, and 66.5% early postpartum symptom onset. Those reporting pregnancy onset were more likely to be unmarried, and those with a late postpartum onset were less likely to report a past history of postpartum depression.
Conclusion: The perinatal vulnerability to depression begins before delivery and extends beyond 6 weeks postpartum. Depression surveillance is therefore warranted during prenatal visits, at the postnatal check up, and at pediatric visits during the initial 6 months of the first postnatal year.

The puerperium is recognized as a time of increased vulnerability to depression, but the diagnostic criteria for postpartum depression (PDD), particularly time of onset, has been frequently debated. The *DSM-IV*[1] applies the "postpartum onset" specifier when an episode begins within the first 4 weeks postpartum, whereas *ICD-10* criteria extend this window to 6 weeks after delivery.[2] The diagnostic criteria for PPD onset emphasize the importance of depression screening at postnatal follow-up visits, but these criteria were largely derived from postpartum psychosis data[3] and may not accurately reflect the clinical course of the more common nonpsychotic perinatal depressive illness.

Previous investigations utilized a variety of postpartum time criteria, often up to 6 months after delivery.[4] The inconsistency in defining time of onset across studies has hindered efforts at meta-analysis of the PPD data.[5]

Supported in part by an unrestricted grant from Pfizer, Inc., and a National Institutes of Health K23 Patient-Oriented Research Career Development Award (D.J.N.).

Dr Stowe is a member of the GlaxoSmithKline Advisory Board.

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doi:10.1016/j.ajog.2004.07.054

Despite these limitations, preliminary evidence indicates that women are vulnerable to depression prior to delivery and remain so later in the postpartum period. For example, several investigations demonstrated higher rates of depressive symptoms during pregnancy among women with PPD. O'Hara[7] reported that depressive symptoms during pregnancy were associated with continued complaints of depression in the postpartum[6] and that 17% (2/12) of women fulfilling criteria for major or minor depression during the first 9 weeks post partum were depressed during pregnancy. Similarly, Buesching et al[8] reported that 17.5% (10/57) of postpartum women with Zung Depression Scale scores indicative of mild to moderate depression at 6 weeks post partum had higher depression scores during gestation. Watson et al[9] reported that 33% (5/15) of women diagnosed with depression at 6 weeks post partum experienced the onset of illness prior to delivery, Gotlib et al[10] found that 50% (10/20) of women with PPD reported depressive symptoms during pregnancy, and Evans et al[11] reported that 51% (421/831) of those with scores indicative of depression on the Edinburgh Postnatal Depression Scale at 8 weeks post partum also had higher depression scores during pregnancy. There are similar examples of depression onset after the 6-week postnatal checkup. For example, Watson et al[9] found that 12% (15/128) of women met *ICD-9* criteria for depressive neurosis at 6 weeks post partum, but an additional 10% (13/128) became depressed later in the postpartum.

These studies raise important questions germane to clinical surveillance for maternal depression during pregnancy and after the initial postnatal checkup. Equally, these investigations raise important questions with respect to the *DSM-IV* (within 4 weeks) and *ICD-10* (within 6 weeks) onset criteria for PPD. The current study evaluated the timing of depression onset in a large sample of women referred with a presumptive diagnosis of PPD.

Methods

Subjects

Three hundred fifteen consecutive referrals to the Emory Women's Mental Health Program for evaluation of PPD were screened for study inclusion. Women were included if they presented during the first postpartum year, fulfilled *DSM-IV* criteria for major depression, had received no psychotropic medication during the current episode, and were able to describe a clear point of the onset of illness.

Procedures

At initial presentation, participants completed the Edinburgh Postnatal Depression Scale,[12] Beck Depression Inventory (BDI),[13] and an intake questionnaire reporting the time of illness onset, personal and family psychiatric history, and demographic information. The time of illness onset was defined as the beginning of the current major depressive episode. Transient nonsyndromal mood disturbances, such as the postpartum blues, which had resolved before the depressive episode, were not identified as the time of illness onset unless such symptoms were continuous with the depressive episode itself. The Emory University School of Medicine Institutional Review Board approved the study protocol.

Data analysis

Participants were divided into 3 groups based on reported time of illness onset: pregnancy onset, illness onset during pregnancy; early postpartum onset, illness onset within the first 6 weeks post partum; and late postpartum onset, illness onset after 6 weeks post partum. Frequencies and percentages of the number of participants in each group were tabulated. Descriptive analyses of demographic and clinical data were conducted using frequency tests for categorical data and analysis of variance with *post hoc* Tukey-Kramer multiple pairwise comparison tests for continuous data.

Results

Of 315 women screened for participation, 209 fulfilled inclusion criteria. Prospective participants were excluded for taking psychotropic medication (n = 49), primary diagnosis other than major depressive disorder (n = 29), or inability to recall with specificity the time of the onset of this episode of illness (n = 28). The Figure illustrates that of the 209 women included in the study, 24 (11.5%) reported pregnancy onset (mean onset 21.8 $\pm$ 12.7 weeks' gestation), 46 (22.0%) reported late postpartum onset (13.3 $\pm$ 6.7 weeks), and 139 (66.5%) reported early postpartum onset (2.2 $\pm$ 1.7 weeks).

Statistical analyses of clinical depression rating scale scores and demographic data are summarized in the Table. Significant differences between the onset groups were limited. Women with depression onset during pregnancy were more likely to be unmarried at time of conception and had higher BDI scores at initial presentation than those with late postpartum onset. Those with a late postpartum onset were less likely to report a past history of depression. A stratified analysis demonstrated that those in the late onset group were less likely to have reported a history of postpartum depression but were not less likely to have reported a history of nonpuerperal depression.

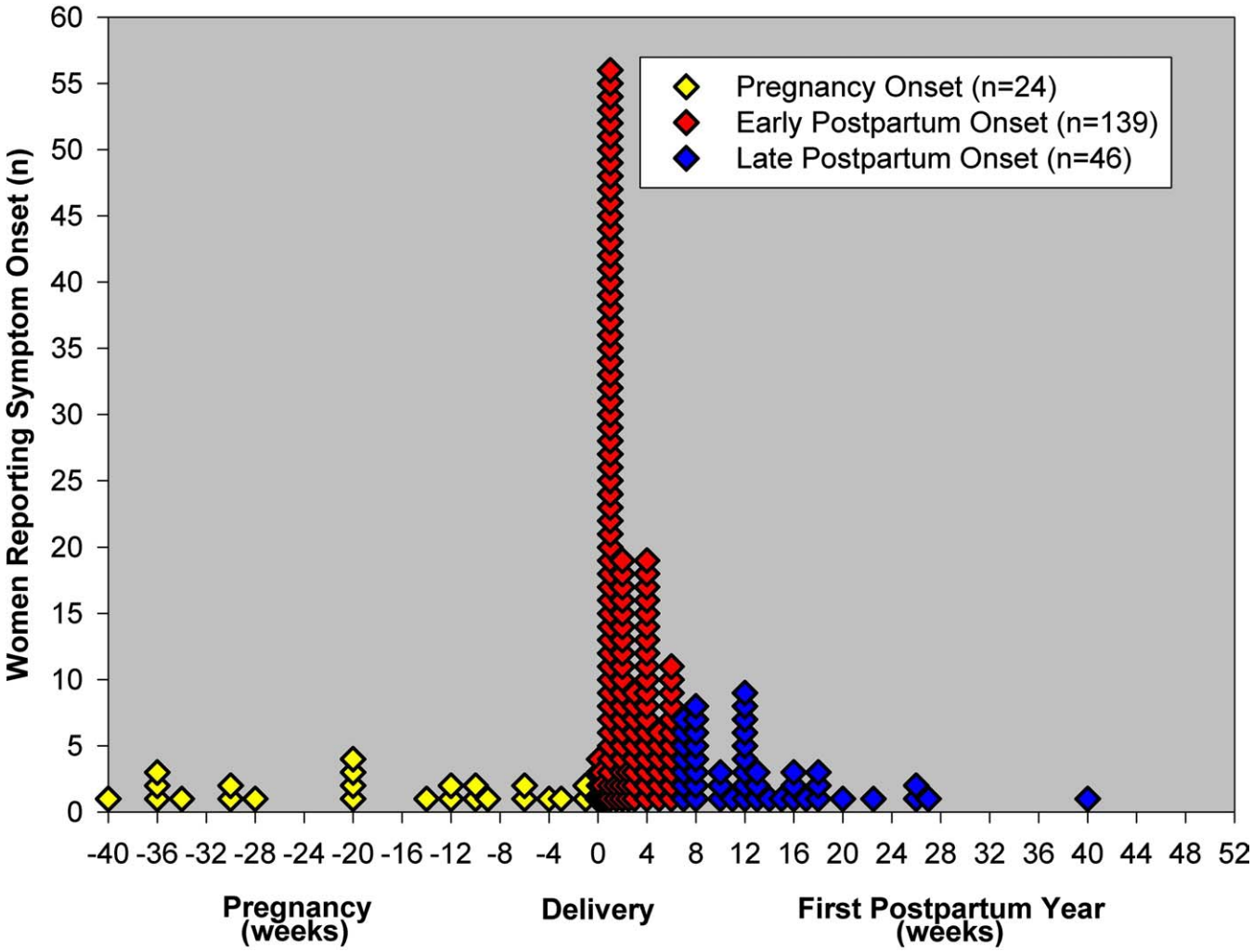

Figure Results of a scatterplot of the frequency of the onset of illness for women presenting for evaluation of postpartum depression across pregnancy and the first postpartum year.

Comment

All of the participants in this study fulfilled diagnostic criteria for major depression during the first postpartum year; however, one-third did not experience the onset of illness within the first 6 postpartum weeks. The results of the current study are consistent with previous reports of perinatal depression beginning during pregnancy or later than 6 weeks post partum.[6-11]

Similarly, the higher rate of single mothers in the pregnancy onset group is consistent with previous data regarding the greater association of psychosocial stress with depression during pregnancy relative to postpartum onset.[14,15] The statistically higher BDI scores in this group may also reflect such stressors, although the small absolute difference in scores is unlikely to be clinically meaningful.

The study's data regarding past psychiatric history include two important findings. First, although nearly 90% of the pregnancy onset group had a past history of depression with over half reporting a history of PPD, these women were not referred for psychiatric evaluation until after delivery. Potential explanations for this delay from illness onset to treatment include: (1) women and their clinicians mistake the symptoms of antenatal depression for those of pregnancy; (2) they recognize the depression but purposely postpone treatment to avoid fetal antidepressant exposure; or (3) antenatal screening for maternal depression, even in a high-risk group with previous PPD, is not routinely conducted. The absence of a comparator group comprised of women referred antenatally for treatment of depression precludes any definitive conclusion. Second, the late postpartum onset group was less likely to report a past history of PPD, although not nonpuerperal depression, than those with an earlier onset. This may reflect that perinatal depression arising in pregnancy and the early postpartum is a distinct syndrome from that occurring in the late

Table Demographic and clinical characteristics of study groups

Variables	Study groups			Statistic
	Pregnancy onset	Early postpartum onset (0-6 wk)	Late postpartum onset (>6 wk)	
Number	24 (11.5%)	139 (66.5%)	46 (22.0%)	
Demographic variables				
Age, y (mean ± SD)	30.8 ± 5.8	31.0 ± 5.5	31.7 ± 3.8	$F(2) = 0.33$, $P < .73$
Race (n, %)				
White	22 (91.7%)	120 (86.3%)	44 (95.7%)	Fisher's exact, $P < .32$
Black	2 (8.3%)	10 (7.2%)	2 (4.4%)	
Other	0 (0.0%)	9 (6.5%)	0 (0.0%)	
Marital status (n,%)				
Never married	3 (12.5%)	6 (4.3%)	2 (4.4%)	Fisher's exact, $P < .03$
Married	17 (70.8%)	129 (92.8%)	41 (89.1%)	
No longer married	4 (16.7%)	4 (2.9%)	3 (6.5%)	
Education, y (mean ± SD)	14.8 ± 2.3	15.5 ± 2.5	15.4 ± 2.4	$F(2) = 0.89$, $P < .41$
Clinical variables				
Past history of major depression (n,%)				
Any past depression	21 (87.5%)	97 (69.8%)	25 (54.4%)	$\chi^2(2) = 8.38$, $P < .02$
Past postpartum depression	14 (58.3%)	65 (46.7%)	10 (21.7%)	$\chi^2(2) = 11.60$, $P < .003$
Past nonpuerperal depression	14 (58.3%)	58 (41.7%)	17 (37.0%)	$\chi^2(2) = 3.07$, $P < .22$
Family history of major depression (n,%)	14 (58.3%)	80 (57.6%)	21 (45.7%)	$\chi^2(2) = 2.10$, $P < .36$
Beck depression inventory (mean ± SD)	31.3 ± 9.0	26.0 ± 9.1	23.4 ± 8.6	$F(2) = 5.58$, $P < .005$
Edinburgh postnatal depression scale (mean ± SD)	19.8 ± 5.0	19.0 ± 4.7	17.9 ± 4.9	$F(2) = 1.19$, $P < .31$

postpartum or outside the puerperium altogether, although there is little evidence to support such a distinction, or those with a history of PPD are particularly vigilant for signs and symptoms indicative of relapse and thus recognize illness onset earlier.

The importance of clarifying the onset of an illness generally heralded as a postpartum event is not without clinical precedent. For example, recent data regarding postpartum autoimmune thyroiditis, historically considered a strictly postpartum phenomenon, have demonstrated that up to 50% have positive titers for thyroperoxidase autoantibodies during pregnancy.[16,17] The ready identification of thyroperoxidase antibodies during pregnancy coupled with increasing evidence of their adverse impact upon obstetrical outcome and fetal neurodevelopment has led to new recommendations to conduct "prenatal" screening for "postpartum" thyroiditis.[18]

Substantial clinical and preclinical data indicate that maternal depression and stress during the peripartum also have an untoward impact on obstetrical outcome and infant development.[19,20] Furthermore, puerperal depression is one of the most commonly cited complications of childbirth[6,9,10,21-23] and represents an eminently treatable condition[24-31] that is readily identifiable in the primary care setting with minimal time investment.[32] The mounting data that maternal depression and stress during the peripartum may adversely affect both obstetrical outcome and infant well-being[19,20,33] underscore the need to clarify the windows for heightened monitoring of maternal mood, but the onus of identification cannot lie solely in postnatal obstetrical clinics because 11.5% of the current subjects had onset prior to delivery, and 22.0% experienced the onset of illness after the conventional 6-week postpartum follow-up visit. These findings indicate that clinical guidelines regarding the monitoring of puerperal depressive illness should be revised to include prenatal obstetrical visits and pediatric visits during the initial 6 months of the first postnatal year.

From a research perspective, investigations of obstetrical outcome and the impact of maternal depression on infant well-being must consider maternal mood prior to delivery as a potentially important variable. In addition, the limited success of previous studies endeavoring to clarify the role of gonadal steroids, psychosocial stressors, and other variables in the pathogenesis of PPD or to resolve the controversy as to whether PPD is neurobiologically distinct from nonpuerperal depression may in part be a consequence of examining heterogeneous

samples of women with the onset of illness over a broad time period.

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