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ORIGINAL ARTICLE

Outpatient versus inpatient management for superimposed preeclampsia without severe features: a retrospective, multicenter study*

Corina N. Schoen[a], Sindy C. Moreno[a], Gabriele Saccone[b], Nora M. Graham[a], Lauren C. Hand[a], Giuseppe M. Maruotti[b], Pasquale Martinelli[b], Vincenzo Berghella[a] and Amanda Roman[a]

[a]Division of Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, Sidney Kimmel Medical College of Thomas Jefferson University, Philadelphia, PA, USA; [b]Department of Neuroscience, Reproductive Sciences and Dentistry, School of Medicine, University of Naples Federico II, Naples, Italy

ABSTRACT

Purpose: To determine if women with preterm superimposed preeclampsia without severe features can be successfully and safely triaged to outpatient management.

Materials and methods: This was a multicenter, retrospective, cohort study of singleton pregnancies with superimposed preeclampsia without severe features diagnosed before 37 weeks managed outpatient versus inpatient at Thomas Jefferson University (Philadelphia, PA) and at University of Naples (Naples, Italy) from January 2008 to July 2015. The attending physician made the decision to manage outpatient or inpatient at his or her discretion. The primary outcome was composite maternal morbidity defined as development of at least one of the following: severe features, HELLP syndrome, placental abruption, eclampsia, postpartum hemorrhage, intensive care unit admission, or maternal death. Logistic regression, presented as adjusted odds ratio (aOR) with the 95% of confidence interval (CI) was performed.

Results: A total of 365 women with superimposed preeclampsia without severe features before 37 weeks were analyzed. 198 (54.2%) were managed outpatient, and 167 (45.8%) were managed inpatient. Women managed as outpatients had a similar rate of maternal morbidity compared to those managed as inpatients (36.4% versus 41.3%, aOR 0.82, 95%CI 0.55–1.17). Fetuses from women in the outpatient group had a significantly lower risk of small for gestational age (17.7% versus 29.3%; aOR 0.53, 95%CI 0.30–0.84), and lower risk of admission to neonatal intensive care unit (40.4% versus 47.9%; aOR 0.72, 95%CI 0.39–0.95) compared to women managed as inpatients.

Conclusions: Low risk women with superimposed preeclampsia without severe features can be triaged to outpatient management without increased maternal morbidity.

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Hypertension; management; outpatient; outcome; preeclampsia

Introduction

Hypertensive disorders during pregnancy, such as chronic hypertension (CHTN), gestational hypertension, and preeclampsia, occur in about 20% of pregnancies [1]. About 1–5% of pregnant women have preexisting CHTN [1,2]. Women with CHTN are at increased risk for adverse outcomes including superimposed preeclampsia with or without severe features (SF), eclampsia, HELLP syndrome, placental abruption as well as fetal and neonatal complications [2]. Superimposed preeclampsia occurs in up to 22–30% of women with CHTN [2].

Published data regarding the management of women with CHTN and superimposed preeclampsia diagnosed preterm are limited [3,4]. Prior to the publication of the Hypertension in Pregnancy Task Force by the American College of Obstetricians and Gynecologists (ACOG), women with superimposed preeclampsia were grouped under one diagnosis, without regard for severity of disease presentation [4]. This led to a higher rate of preterm deliveries in this group, as women may have been managed as severe preeclampsia patients, even if features of their disease were more similar to those with mild preeclampsia [3,4]. After the publication of ACOG hypertension guidelines, diagnosis of superimposed preeclampsia was clarified, allowing for tailored clinical management and a potential reduction in unnecessary preterm

CONTACT Corina N. Schoen Corina.SchoenMD@baystatehealth.org Department of Obstetrics and Gynecology, Division of Maternal-Fetal Medicine, University of Massachusetts-Baystate, 759 Chestnut Street, Springfield, MA 01199, USA

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deliveries. A qualified recommendation was made to manage women with superimposed preeclampsia without SF expectantly until 37 0/7 weeks if the mother and fetus were both stable [4]. There is limited evidence on expectant management in these cases, limited to patients managed in a hospital setting [3]. ACOG made no recommendation regarding whether these women should be managed in the hospital or can be safely managed in outpatient settings, and concluded that in women with gestational age of less than 37 weeks "there is a paucity of data to support outpatient management of superimposed preeclampsia" [4].

Thus, the aim of this study was to describe two centers experience with outpatient care and determine if women with preterm superimposed preeclampsia without SF managed can be safely triaged to outpatient care without an increase in maternal morbidity.

Materials and methods

This was a multicenter, retrospective, cohort study. Clinical records of all consecutive singleton pregnancies with CHTN diagnosed with superimposed preeclampsia without SF before 37 weeks, who were referred to the Division of Maternal Fetal Medicine, Thomas Jefferson University Hospital (Philadelphia, PA), and the Department of Reproductive Science, University of Naples Federico II (Naples, Italy) from January 2008 to July 2015 were collected in a dedicated merged database and were included in the study.

The clinical charts of women recorded in the database were carefully reviewed by two authors independently (CS, GS). All variables reported were collected on all of the subjects included in this study. Only singleton gestations who were diagnosed with superimposed preeclampsia without SF prior to 37 weeks were included, as patients diagnosed after this point were scheduled for delivery, according to ACOG recommendations [4]. Women with superimposed preeclampsia $\geq$37 weeks, and those with superimposed preeclampsia with SF or those with multiple gestations were excluded. Women were also excluded with known aneuploidy or severe congenital anomalies, if they elected termination, were delivered prior to 22 weeks, or left against medical advice.

Cases were identified by *International Classification of Diseases, 9th Revision* for hypertension and pregnancy at Thomas Jefferson University. Initial cases identified included all diagnoses of hypertension with an associated pregnancy diagnosis. These charts were individually reviewed to identify patients diagnosed with superimposed preeclampsia and cross-checked with a database of all deliveries occurring during the study period to ensure all cases were captured. In the Italian center, cases were electronically identified by using the Hospital general dataset in a prospective dedicated database for all women referred to the Department of Reproductive Science, University of Naples Federico II (Naples, Italy) [5].

In both sites, diagnosis of CHTN and superimposed preeclampsia were based on the ACOG guidelines [4]. CHTN was defined as either a history of hypertension preceding the pregnancy or a blood pressure (BP) $\geq$ 140/90 mmHg prior to 20 weeks. Superimposed preeclampsia without SF was defined as a sudden increase BP that was previously well-controlled or a need to increase anti-hypertensive requirements, new onset proteinuria ($\geq$300 mg per 24-h urine collection protein or $>$0.3 protein/creatinine ratio each measured as mg/dL), or a sudden increase in proteinuria in women who exhibit proteinuria before or early in pregnancy. Preeclampsia with SF was defined as preeclampsia with any of the following: BP $\geq$160/110 mmHg four hours apart on bed rest; platelets $<$100,000/μl; twice normal concentration of AST or ALT; creatinine $>$1.1 (or doubling of the serum creatinine concentration in absence of other renal disease); pulmonary edema; new-onset cerebral or visual disturbances [4].

The decision to manage outpatient or inpatient was at provider discretion. During the time period studied, outpatient management was left up to the individual attending managing the patient, and both outpatient care and inpatient care were utilized. In order to be a candidate for outpatient care, there needed to be an absence of severe features as described above. The patient also needed to be willing to present frequently for outpatient assessments and be considered someone likely to be compliant with her care. Maternal comorbidities and fetal growth restriction were not considered contraindications to outpatient management in the cohort studied, but were assessed on an individual basis. Prior to proteinuria being removed as a criterion for severe disease in 2013, patients with $\geq$5 g of proteinuria in 24 h were occasionally managed as inpatients for solely this reason. They were not delivered based on that indication alone. Indications for inpatient and outpatient management by provider did not change after the 2013 ACOG guidelines. These determinations were the same for both the Philadelphia and Naples cohorts.

In cases when outpatient care was selected, frequent follow-up was employed, with a weekly visit

with a physician or high-risk nurse practitioner, twice weekly non-stress tests, and a fetal growth ultrasound every 3–4 weeks. Laboratory testing was provider dependent prior to 2013, but regularly employed weekly laboratory testing including complete blood count and a comprehensive metabolic panel after 2013. All patients were counseled on the symptoms of severe disease and were prescribed a blood pressure cuff for daily home monitoring of BP. Methyldopa, labetalol, and nifedipine were the primary agents chosen to control BP in both outpatient and inpatient groups. Rarely, amlodipine was used.

Inpatients were managed with twice or three times daily NST. Umbilical artery (UA) Doppler was performed 1–2 times weekly for intrauterine growth restriction (IUGR) patients. Indications for delivery included maternal symptoms or abnormal labs consistent with SF, inability to control BP in the mild range (SBP $<$160 mm Hg and DBP $<$110 mm Hg) with two medications, non-reassuring fetal testing, or gestational age of 37 weeks. These indications for delivery were employed for patients both prior to and after the 2013 ACOG guidelines. Routine delivery at 34 weeks for women with superimposed preeclampsia without severe features was not employed.

Women who were sent home at any point for outpatient management were included in the outpatient treated group (study group). Women in the inpatient group (comparison group) were all admitted, diagnosed with superimposed preeclampsia without SF, and delivered in one admission. For women included in the outpatient group who had another admission, total length of stay was calculated.

The primary outcome was composite maternal morbidity, defined as development of at least one of the following: severe features, HELLP (hemolysis, elevated liver enzymes, low platelets) syndrome, placental abruption, eclampsia, postpartum hemorrhage (defined as estimated blood loss $\geq$1000 ml for any delivery), intensive care unit (ICU) admission, or maternal death. Women with abnormal laboratory values consistent with severe features as outlined above, but not meeting full requirements for HELLP syndrome (e.g. only low platelets or only elevated liver enzymes) were classified as having severe features. Secondary outcomes were gestational age at delivery, latency (defined as time from diagnosis to delivery in weeks), mode of delivery, and neonatal outcomes including birth weight, small for gestational age (birth weight $<$10th percentile), 5-min Apgar $<$7, admission to neonatal ICU (NICU), length of stay in NICU, and stillbirth (i.e. fetal death $>$22 weeks). We assessed the mean difference in maternal length of stay. Indication for delivery was recorded, including gestational age $\geq$37 weeks, fetal indication (non-reassuring antenatal testing via NST or BPP, abnormal umbilical artery Doppler), lab abnormalities consistent with severe features, uncontrolled blood pressure, persistent maternal symptoms as detailed above, or onset of labor.

Statistical analysis was performed using Statistical Package for Social Sciences (SPSS) v. 19.0 (IBM Inc., Armonk, NY). Data are shown as means ± standard deviation (SD), or as medians (range), or as numbers (percentage). Univariate comparisons of dichotomous data were performed with the use of the chi-square or Fisher's exact test. Comparisons between groups were performed with the use of the Mann–Whitney U test, to test group medians with range; and with the use of the *t*-test or the One-way ANOVA to test group means with SD. Primary and secondary outcomes were estimated with multivariate analyses and also assessed by site.

Logistic regression, presented as unadjusted odds ratio (crude OR) or adjusted odds ratio (aOR) with 95% of confidence interval (CI) [6], was performed. Adjusted analysis was performed to correct data for relevant baseline characteristics. Two adjusted analyses were performed, one in which covariates were included, if they statistically differed between the study groups, and one in which all potentially relevant baseline characteristics were added to the model as covariates. The latter analysis was performed to show the robustness of our results [7]. All results presented in the abstract and text refer to the first adjusted analysis. Relevant baseline characteristics to be considered as covariates were: age, BMI, smoking, ethnicity, gravidity, parity, prior preeclampsia, diabetes mellitus, prior medical condition, and IUGR (i.e. ultrasound estimated fetal weight $<$10th percentile).

We calculated two-sided p values. A p value $<$.05 was considered to indicate statistical significance. The study was approved by the institutional review board at Thomas Jefferson University Hospital and the University of Naples Federico II. Data were anonymized before analysis. This study was reported following the STROBE guidelines [8].

Results

A total of 365 singleton pregnancies with superimposed preeclampsia without SF before 37 weeks were analyzed. 198 (54.2%) were managed outpatient, and 167 (45.8%) as inpatients. The two groups were similar in terms of maternal demographics except for mean maternal age (28.4 ± 5.4 versus 32.4 ± 4.1; p = .04) and mean BMI (28.5 ± 6.8 versus 26.0 ± 6.1; p = .05). About

Table 1. Characteristics of the included women.

	Outpatient management $N = 198$ (54.2%)	Inpatient management $N = 167$ (45.0%)	p value
Age (years)	28.4 ± 5.4	32.4 ± 4.1	**.04**
>35 years old	60 (30.3%)	55 (32.9%)	.17
BMI (kg/m^2)	28.5 ± 6.8	26.0 ± 6.1	**.05**
>30 kg/m^2	68 (34.3%)	65 (38.9%)	.58
Smoking	60 (30.3%)	51 (30.5%)	.90
Ethnicity			
White	138 (69.0%)	110 (65.9%)	.81
Black	50 (25.0%)	44 (26.3%)	.77
Other[a]	10 (5.0%)	15 (9.0%)	.24
Gravidity	4.2 ± 1.8	3.9 ± 2.0	.76
Median (range)	4 (1–12)	4 (1–12)	
Parity	2.8 ± 0.7	2.4 ± 0.9	.64
Median (range)	2 (0–8)	2 (0–7)	
Prior preeclampsia	60 (30.3%)	49 (29.3%)	.74
Antihypertensive drug use			
Started before pregnancy	137 (69.2%)	110 (65.9%)	.80
Started during pregnancy	19 (9.8%)	18 (10.8%)	.77
None	42 (21.0%)	39 (23.3%)	.34
Diabetes mellitus	7 (3.5%)	6 (3.6%)	.95
GDM	10 (5.0%)	8 (4.8%)	.74
Renal disease	8 (4.0%)	7 (4.2%)	.79
Antiphospholipid syndrome	1 (0.5%)	0	.57
Other medical conditions[b]	12 (6.1%)	11 (6.6%)	.82
GA at diagnosis (weeks)	33.9 ± 4.5	34.9 ± 3.6	.13
IUGR	16 (9.6%)	18 (10.8%)	.33

Data are presented as number (percentage) or as mean difference ± standard deviation or as median (range). Boldface data, statistically significant. SD: standard deviation; GDM: gestational diabetes mellitus; GA: gestational age; IUGR: intrauterine growth restriction.
[a]Other, including Asian and Hispanic.
[b]Prior medical condition, including thyroid disorders, cardiomyopathy or valvular disease.

30% in both groups smoked during pregnancy. Most women in the cohort were white. 60 (30.3%) in the outpatient group and 49 (29.3%) in the inpatient group had history of preeclampsia. The mean length of stay from antepartum through postpartum course was longer in the inpatient group with a mean difference of 2.1 days (95%CI −3.7 to −1.6 days). There was no significant difference in the diagnosis of IUGR between outpatients and inpatients (9.6% versus 10.8%, $p = .33$) (Table 1).

After adjusting for statistically proven confounders, we found that there was no statistical difference in composite maternal morbidity between women managed as outpatients compared to women managed as inpatient (36.4% versus 41.3%, aOR 0.82, 95%CI 0.55–1.17). There were no eclamptic seizures, HELLP syndrome or maternal deaths in the cohort. Women who were managed outpatient had a significantly longer latency from diagnosis to delivery (mean difference 14.15 days, 95%CI 8.51–19.41) compared to those who were managed inpatient. Fetuses from women in the outpatient group had a significantly higher birth weight (mean difference 345.34 g, 95%CI 254.11–411.21) and lower risk of SGA (17.7% versus 29.3%; aOR 0.53, 95%CI 0.30–0.84) and of admission to NICU (40.4% versus 47.9%; aOR 0.72, 95%CI 0.39–0.95) compared to those from women managed inpatient. Neonates admitted to the NICU had a shorter length of stay in the outpatient group by about one week (mean difference −6.80 days, 95%CI −11.92 to −1.68) (Table 2). There were no neonatal deaths in the cohort.

The most common indication for delivery in both groups was reaching 37 weeks gestation. The second most common indication was uncontrolled BP, followed by fetal indications. Indications for delivery are detailed in Table 3.

There were two stillbirths in the study group (1.0%) and two in the comparison group (1.2%) (Supplemental Table). One patient with severe uncontrolled HTN throughout pregnancy strongly desired discharge instead of recommended inpatient management. She presented to care after one missed prenatal visit and one missed ultrasound with a stillbirth. A second woman managed as an outpatient had a stillbirth. She was a planned outpatient admission until reaching 24 weeks or an estimated fetal weight of 450–500 g prior to administering steroids and inpatient treatment. This was due to the poor prognosis of early onset preeclampsia and fetal growth restriction with abnormal umbilical artery Doppler and reversed a-wave in the ductus venosus. A stillbirth was diagnosed at 24 weeks. Two additional women were managed as inpatients and had stillbirths attributed to severe placental abruption. In both cases emergency cesarean delivery was performed, with a time from decision to incision <30 min. Both patients had no maternal morbidity from the event.

Discussion

In pregnant singleton gestations with superimposed preeclampsia without SF, outpatient management had similar rates of maternal morbidity, and selection of a low risk group did not lead to a detectable increase in adverse events. There was an associated longer latency from diagnosis to delivery and slight improvement in neonatal outcomes compared to inpatient management, likely indicating appropriate selection of a lower risk cohort. Neonates of women who were managed as outpatients were significantly less likely to be admitted to the NICU, though no causal relationship can be assumed and is presumably due to being an appropriately selected lower risk group.

Our study has several strengths. This is a large, high-quality, 7-year cohort study. The number of the included women is high. Women with high-risk co-

Table 2. Primary and secondary outcomes.

	Outpatient management $N = 198$ (54.2%)	Inpatient management $N = 167$ (45.8%)	**MD (95%CI)[b]**	Crude OR (95%CI)	**aOR (95%CI)[a]**	**aOR (95%CI)[b]**
Composite maternal morbidity[c]	72 (36.4%)	69 (41.3%)	–	0.79 (0.63 to 1.21)	0.82 (0.55 to 1.17)	0.82 (0.54 to 1.26)
Severe features at delivery	64 (32.3%)	59 (35.3%)	–	**0.85 (0.57 to 0.95)**	0.88 (0.50 to 1.10)	0.88 (0.44 to 1.39)
HELLP syndrome	0	0	–	–	–	–
Placental abruption	10 (5.0%)	8 (4.8%)	–	1.05 (0.40 to 2.71)	1.04 (0.35 to 2.79)	1.04 (0.30 to 2.81)
Postpartum hemorrhage	28 (14.0%)	23 (13.8%)	–	1.02 (0.56 to 1.85)	1.02 (0.54 to 1.88)	1.01 (0.50 to 1.90)
Maternal ICU	17 (8.5%)	14 (8.4%)	–	1.02 (0.48 to 2.13)	1.01 (0.40 to 2.16)	1.04 (0.35 to 3.69)
Latency (days)	18.9 ± 14.3	4.8 ± 9.4	**14.15 days (8.51 to 19.41)**	–	–	–
Gestational age at delivery (weeks)	35.9 ± 3.1	35.1 ± 2.9	0.82 week (−0.51 to 2.71)	–	–	–
Mode of delivery						
SVD	138 (69.0%)	110 (65.9%)	–	1.15 (0.74 to 1.79)	1.14 (0.74 to 1.80)	1.14 (0.74 to 1.84)
OVD	5 (2.5%)	7 (4.2%)		0.59 (0.18 to 1.88)	0.59 (0.17 to 1.90)	0.60 (0.13 to 1.95)
CD	55 (27.8%)	50 (29.9%)		0.94 (0.39 to 1.27)	0.94 (0.57 to 1.62)	0.94 (0.50 to 1.69)
Stillbirth	2 (1.0%)	2 (1.2%)	–	1.67 (0.30 to 9.35)	1.71 (0.25 to 9.88)	1.84 (0.24 to 18.47)
Maternal LOS (days)	2.7 ± 4.3	4.8 ± 9.4	**−2.1 days (−3.7 to −1.6)**	–	–	–
Birth weight (g)	2764 ± 1021	2419 ± 837	**345.34 g (254.11 to 411.21)**	–	–	–
SGA	35 (17.7%)	49 (29.3%)	–	**0.50 (0.30 to 0.85)**	**0.53 (0.30 to 0.84)**	**0.53 (0.25 to 0.96)**
5-minute APGAR ≤7	12 (6.1%)	9 (5.4%)	–	1.12 (0.51 to 2.73)	1.12 (0.45 to 2.73)	1.06 (0.40 to 3.38)
NICU	80 (40.4%)	80 (47.9%)	–	**0.71 (0.48 to 0.95)**	**0.72 (0.39 to 0.95)**	**0.79 (0.35 to 0.98)**
NICU LOS (days)	22.4 ± 31.4	29.2 ± 17.8	**−6.80 days (−11.92 to −1.68)**	–	–	–

Data are presented as number (percentage) or as mean difference ± standard deviation.
Boldface data, statistically significant.
SD: standard deviation; SVD: spontaneous vaginal delivery; OVD: operative vaginal delivery; CD: cesarean delivery; ICU: intensive care unit; SGA: small for gestational age (birthweight <10th percentile); NICU: neonatal intensive care unit; OR: odds ratio; aOR: adjusted odds ratio; CI: confidence interval; MD: mean difference; LOS: length of stay.
[a]Adjusted for age and BMI (Table 1).
[b]Adjusted for all variables reported in Table 1.
[c]There were no cases of HELLP syndrome, eclampsia or maternal death as part of the composite outcome. Postpartum hemorrhage was considered any estimated blood loss >1000 ml regardless of mode of delivery.

Table 3. Indication for delivery.

	Outpatient management $N = 198$ (54.2%)	Inpatient management $N = 167$ (45.8%)	p value
37 weeks	65 (32.8%)	50 (29.9%)	.60
Fetal indication[a]	33 (16.7%)	33 (19.8%)	.27
Lab abnormalities[b]	16 (8.1%)	20 (12.0%)	.09
Uncontrolled BP	38 (19.2%)	34 (20.4%)	.74
Persistent maternal symptoms[c]	11 (5.6%)	5 (3.0%)	.25
Onset of labor	35 (17.7%)	25 (14.9%)	.51

Data are presented as number (percentage).
[a]Fetal indications included non-reassuring features on non-stress test or continuous monitoring or abnormal umbilical artery Doppler.
[b]Platelets <100,000/μl; twice normal concentration of AST or ALT; creatinine >1.1 (or doubling of the serum creatinine concentration in absence of other renal disease).
[c]Persistent new-onset cerebral or visual disturbances (e.g. headache, scotomata), nausea or vomiting, abdominal pain, pulmonary edema.

morbidities were not excluded from this cohort. Diabetes and obesity are frequent co-morbidities encountered in a population of women with superimposed preeclampsia. Finally, the multicenter nature of this study makes our results generalizable.

The most important limitation of our study is that this is a retrospective, non-randomized comparison. *A priori* power analysis could not be assessed due to its retrospective nature [6]; however, the confidence intervals of the odds ratios are quite narrow. The confidence intervals are more statistically useful than post-hoc power calculations [6]. We acknowledge that some outcomes were underpowered, particularly placenta abruption, stillbirth, and maternal death.

This data does not necessarily advise a change to current management practices, especially where inpatient management is already routine. However, for institutions where outpatient management is already in practice, this data can serve as a comparison for expected outcomes. When considering outpatient management, there must be a motivated, well-selected patient to be a partner in care in order to avoid serious complications, especially stillbirth. Certainly, one of the stillbirths in the outpatient group was complicated by patient non-adherence to an outpatient surveillance plan, but we were unable to determine if the recommended surveillance could have prevented that death. All hypertensive disorders of pregnancy are on a continuum of severity, and only close surveillance by both physician and patient can adequately detect and treat severe disease. The stillbirth rate among all 365 women in the cohort was 1.1% and there were no neonatal deaths. In a previous cohort that compared superimposed preeclampsia patients with women who had preeclampsia without SF, there was a 7% risk of perinatal death in women with superimposed preeclampsia [9]. The two stillbirths occurred at 24 weeks in fetuses with IUGR and the neonatal deaths occurred in extremely premature births of <26 weeks. Due to the increased risk in IUGR pregnancies affected by superimposed preeclampsia, this is likely not an optimal group for outpatient management once viability is reached. Additionally, in that cohort 57% were delivered for uncontrolled BP and 18% were delivered for non-reassuring antenatal testing, which is supported by this study [9]. These are both indications that can be monitored in an outpatient setting through home BP monitoring and twice weekly antenatal testing.

The limitations of the study for detecting rare outcomes notwithstanding, if close, vigilant outpatient care is employed in a well selected population, this could significantly impact the cost of providing care to these women.

Conclusions

Due to the retrospective nature of this study, practice changes should be employed with caution. However, for those who may already be practicing outpatient management for superimposed preeclampsia patients without SF, this does provide data on potential benefits that may be experienced in addition to the risks. By examining in detail each stillbirth case, some preconditions can be suggested to ensure that only the most appropriate candidates are offered this type of care. Patients must have absence of SF as described above, ideally proved over a prolonged period of monitoring (24 h). An initial evaluation in a hospital setting is recommended by the ACOG Taskforce on Hypertension in Pregnancy [4]. If initial evaluation of the patient and fetus are normal, outpatient management can be considered if the patient (a) accepts the frequent visits necessary to monitor for disease progression and can perform home monitoring of BP and symptoms, (b) has the ability to present quickly for care in the event of disease progression (such as new maternal symptoms), and (c) lacks significant co-existing disease in the mother and/or fetus that may predispose to worse outcomes such as placental abruption or stillbirth. This would include women who need further titration of antihypertensive medications, uncontrolled diabetics, or fetuses with severe growth restriction or abnormal antenatal testing. Women who lack the social support for frequent visits or who live in geographic areas remote from tertiary care centers should strongly be considered to remain inpatient until delivery.

In summary, women with CHTN and superimposed preeclampsia without SF may be considered as candidates for outpatient care, with the expectation to achieve similar outcomes to women managed as inpatients. Further study in the form of prospective cohorts or randomized trials is warranted before large shifts in clinical practice can be advised.

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The authors declare that they have nothing to disclose. This study had no funding source.

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