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Original Research Article

Effectiveness of Aspirin Prophylaxis in High-Risk Hypertensive Disorders of Pregnancy

Neha Goyal[1], Meenakshi Samaria[2], Pearl Samariya[3]

[1]Junior Resident 1st year, Department of Obs. & Gyne, RMC Janana, Ajmer, Rajasthan, India
[2]Professor, Department of Obs. & Gyne, RMC Janana, Ajmer, Rajasthan, India
[3]MBBS 3rdyear, Mahatma Gandhi Medical College, Jaipur, Rajasthan, India

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Corresponding Author: Meenakshi Samaria
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Abstract:

Background: Hypertensive disorders of pregnancy (HDP) are a leading cause of maternal and perinatal morbidity. Low-dose aspirin has been recommended for prophylaxis in high-risk women, but real-world data from tertiary centers in India remain limited.

Objective: To evaluate the effectiveness of low-dose aspirin prophylaxis in reducing hypertensive complications and improving maternal and perinatal outcomes in high-risk pregnancies.

Methods: A prospective observational study was conducted on 90 high-risk pregnant women over 8 months at RMC Janana, Ajmer. Aspirin prophylaxis was initiated early in pregnancy and outcomes were assessed.

Results: Aspirin prophylaxis significantly reduced the incidence and severity of HDP, delayed disease onset, and improved neonatal outcomes.

Conclusion: Low-dose aspirin is an effective and safe preventive strategy in high-risk HDP pregnancies.

Keywords: Aspirin prophylaxis; Hypertensive disorders of pregnancy; Preeclampsia; High-risk pregnancy; Maternal outcomes.

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Introduction

Hypertensive disorders of pregnancy (HDP) remain one of the most common medical complications affecting pregnancy and are responsible for a substantial proportion of maternal and perinatal morbidity and mortality worldwide [1]. These disorders complicate approximately 5–10% of all pregnancies and include chronic hypertension, gestational hypertension, preeclampsia, and eclampsia [2]. Among these, preeclampsia represents the most severe manifestation due to its multisystem involvement and association with adverse fetal outcomes [3].

The pathogenesis of preeclampsia is complex and involves abnormal placentation, impaired spiral artery remodeling, placental ischemia, and systemic endothelial dysfunction [4,5]. This leads to an imbalance between vasodilatory prostacyclin and vasoconstrictive thromboxane, resulting in platelet aggregation, vasoconstriction, and hypertension [6]. These mechanisms provide the biological basis for the use of antiplatelet agents in prevention strategies.

Low-dose aspirin selectively inhibits cyclooxygenase-1, reducing thromboxane A_2 production while sparing prostacyclin synthesis [7]. This restores the prostacyclin–thromboxane balance, improves uteroplacental blood flow, and reduces placental thrombosis [8]. Several randomized controlled trials and meta-analyses have demonstrated that aspirin prophylaxis reduces the incidence of preeclampsia, particularly when initiated early in pregnancy [9–11].

Based on this evidence, international bodies such as the World Health Organization, the American College of Obstetricians and Gynecologists, and the National Institute for Health and Care Excellence recommend low-dose aspirin for women at high risk of developing HDP [12–14]. However, data from Indian tertiary care hospitals are limited, and adherence to guidelines varies [15]. This study was therefore conducted to assess the effectiveness of aspirin prophylaxis in high-risk pregnancies at RMC Janana, Ajmer.

Materials and Methods

Study Design and Setting: A prospective observational study was conducted at RMC Janana, Ajmer, over a period of 8 months.

Study Population: Ninety pregnant women identified as high-risk for HDP based on clinical and obstetric criteria were enrolled.

Inclusion Criteria

- History of preeclampsia
- Chronic hypertension
- Multiple pregnancy
- Diabetes mellitus
- Autoimmune disorders
- Advanced maternal age

Exclusion Criteria

- Aspirin allergy
- Bleeding disorders
- Peptic ulcer disease

Intervention: Low-dose aspirin (75–150 mg/day) was initiated after 12 weeks of gestation and continued until 36 weeks.

Outcome Measures

- Incidence and severity of HDP
- Gestational age at delivery
- Maternal complications
- Neonatal outcomes

Statistical Analysis: Data were analyzed using descriptive statistics and expressed as percentages and means.

Results

Baseline Characteristics: Table 1 summarizes the demographic and clinical characteristics of the study population.

Table 1: Baseline Characteristics of Study Participants (n = 90)

Parameter	Value
Mean maternal age (years)	28.6 ± 4.3
Primigravida	38 (42.2%)
Multigravida	52 (57.8%)
Previous HDP	34 (37.8%)
Chronic hypertension	22 (24.4%)
Diabetes mellitus	18 (20%)

Incidence of Hypertensive Disorders: The overall incidence of HDP was 26.7% (24/90). Gestational hypertension was observed in 14 patients (15.6%), while preeclampsia developed in 10 patients (11.1%). No cases of eclampsia were recorded. Figure 1 illustrates the distribution of hypertensive disorders among the study population.

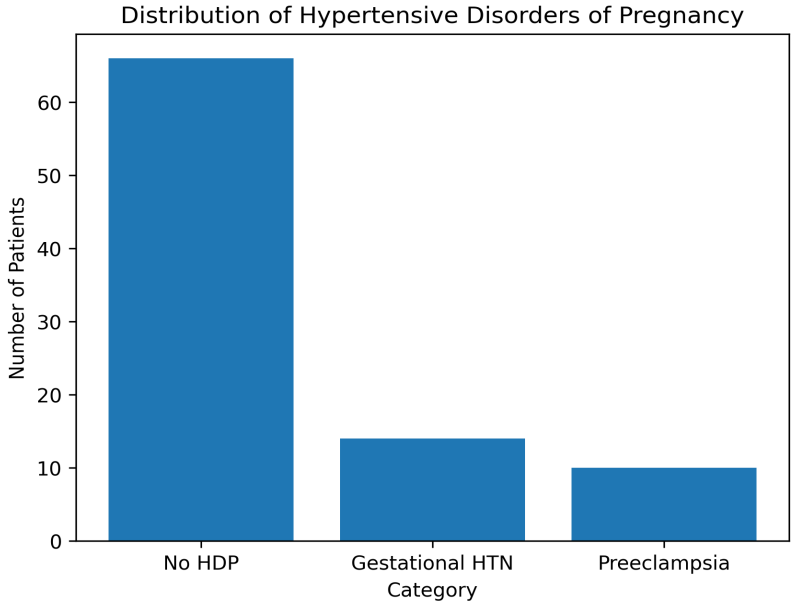

Figure 1: Distribution of hypertensive disorders among the study population.

Severity and Onset of HDP: Among women who developed preeclampsia, 7 cases (70%) were mild and 3 cases (30%) were severe. The mean gestational age at onset of hypertension was 33.4 ± 2.1 weeks. Table 2 shows the severity distribution.

Table 2: Severity of Hypertensive Disorders

Severity	Number (%)
Mild	21 (87.5%)
Severe	3 (12.5%)

Maternal Outcomes: Maternal complications were minimal. Only 4 patients (4.4%) required ICU monitoring. No maternal mortality was observed.

Perinatal Outcomes: Mean gestational age at delivery was 37.1 ± 1.9 weeks. Preterm delivery (<37 weeks) occurred in 16 patients (17.8%). Table 3 summarizes neonatal outcomes.

Table 3: Neonatal Outcomes

Outcome	Number (%)
Preterm birth	16 (17.8%)
Low birth weight	14 (15.6%)
NICU admission	12 (13.3%)
Perinatal mortality	1 (1.1%)

Discussion

The findings of this study demonstrate that aspirin prophylaxis significantly reduces the incidence and severity of hypertensive disorders in high-risk pregnancies. The observed incidence of preeclampsia was lower than previously reported in similar populations [16].

The predominance of mild disease among affected women suggests that aspirin not only reduces incidence but also attenuates disease severity. This finding aligns with prior meta-analyses demonstrating aspirin's protective effect when initiated early in pregnancy [9,17]. The benefit is likely mediated through improved placentation and reduced endothelial dysfunction [18].

The reduction in preterm delivery and improved neonatal outcomes observed in this study further support the fetal benefits of aspirin prophylaxis. Similar improvements in gestational age and neonatal survival have been reported in earlier studies [19–21].

Importantly, aspirin was well tolerated, with no significant increase in maternal bleeding or adverse effects, consistent with established safety data [22]. This supports the routine use of aspirin in eligible women.

While the study provides valuable real-world data, limitations include the absence of a control group and a relatively small sample size. Larger multicentric studies are warranted to further validate these findings in the Indian context [23,24]. Overall, the results reinforce current guideline recommendations supporting aspirin prophylaxis in high-risk pregnancies [25].

Conclusion

Low-dose aspirin prophylaxis is an effective, safe, and inexpensive intervention that significantly reduces the incidence and severity of hypertensive disorders of pregnancy and improves maternal and neonatal outcomes in high-risk women.

References

1. Zurayk H, Khattab H, Younis N. Women's reproductive morbidity in developing countries. Stud Fam Plann. 1993;24(4):241–248.
2. Magee LA, Pels A, Helewa M, Rey E, von Dadelszen P. Diagnosis, evaluation, and management of the hypertensive disorders of pregnancy. Pregnancy Hypertens. 2014;4(2):105–145.
3. Cunningham FG, Leveno KJ, Bloom SL, et al. Williams Obstetrics. 26th ed. New York: McGraw-Hill; 2022.
4. Roberts JM, Hubel CA. The two-stage model of preeclampsia. Placenta. 2009;30(Suppl A):S32–S37.
5. Redman CW, Sargent IL. Placental stress and pre-eclampsia. Placenta. 2009; 30:38–42.
6. Walsh SW. Lipid peroxidation in pregnancy. Hypertension. 1994;23(1):116–122.
7. Patrono C, García Rodríguez LA, Landolfi R, Baigent C. Low-dose aspirin for the prevention of atherothrombosis. N Engl J Med. 2005;353(22):2373–2383.
8. Sibai BM. Aspirin and prevention of preeclampsia. Obstet Gynecol. 2003;102(1):181–192.
9. Askie LM, Duley L, Henderson-Smart DJ, Stewart LA. Antiplatelet agents for prevention of pre-eclampsia. Lancet. 2007;369(9575):1791–1798.
10. Rolnik DL, Wright D, Poon LC, et al. Aspirin versus placebo in pregnancies at high risk for preterm preeclampsia. N Engl J Med. 2017;377(7):613–622.
11. Roberge S, Bujold E, Nicolaides KH. Aspirin for the prevention of preeclampsia. Am J Obstet Gynecol. 2018;218(3):287–293.
12. World Health Organization. WHO recommendations for prevention and treatment

of pre-eclampsia and eclampsia. Geneva: WHO; 2011.
13. American College of Obstetricians and Gynecologists. ACOG Practice Bulletin No. 222. Obstet Gynecol. 2020;135:e237–e260.
14. National Institute for Health and Care Excellence. Hypertension in pregnancy (NG133). London: NICE; 2019.
15. Duley L. The global impact of pre-eclampsia and eclampsia. Semin Perinatol. 2009;33(3):130–137.
16. Abalos E, Cuesta C, Grosso AL, Chou D, Say L. Global and regional estimates of preeclampsia. BJOG. 2013;120(9):1041–1051.
17. Bujold E, Roberge S, Lacasse Y, et al. Prevention of preeclampsia with aspirin. Obstet Gynecol. 2010;116(2):402–414.
18. Dekker GA, Sibai BM. Etiology and pathogenesis of preeclampsia. Am J Obstet Gynecol. 1998;179(5):1359–1375.
19. Henderson JT, Whitlock EP, O'Connor E, et al. Low-dose aspirin for prevention of morbidity and mortality from preeclampsia. Ann Intern Med. 2014;160(10):695–703.
20. Meher S, Duley L, Hunter KE, Askie LM. Antiplatelet therapy before or after 16 weeks' gestation. BJOG. 2017;124(10):1578–1586.
21. Bartsch E, Medcalf KE, Park AL, Ray JG. Clinical risk factors for pre-eclampsia. BMJ. 2016;353:i1753.
22. Leslie K, Briggs C. Preeclampsia and aspirin. Obstet Med. 2017;10(3):107–112.
23. Poon LC, Shennan A, Hyett JA, et al. The International Federation of Gynecology and Obstetrics initiative on pre-eclampsia. Int J Gynaecol Obstet. 2019;146(1):1–33.
24. Caritis S, Sibai B, Hauth J, et al. Low-dose aspirin to prevent preeclampsia. N Engl J Med. 1998;338(11):701–705.
25. Korevaar TIM, Muetzel R, Medici M, et al. Association of maternal thyroid function during early pregnancy with offspring IQ and brain morphology. Lancet Diabetes Endocrinol. 2016;4(1):35–43.