DOI: https://doi.org/10.53350/pjmhs2023173401

ORIGINAL ARTICLE

Antiplatelet Therapy in High Risk Patients for Preeclampsia Prevention

ASIYA PARVEEN SHAIKH[1], FARHAN AHMED SHAIKH[2], TAHMINA MAHAR[3], SHAHNEELA MOOSA[4], SIDRAH[5], RUKHSANA SABOOR[6], KIRAN AAMIR[7], AAMIR RAMZAN[8]

[1]MCPS(Gyne/Obs)-DMJ, Senior Lecturer Forensic medicine department, Bilawal Medical college ,Liaquat university of medical and health sciences jamshoro Hyderabad.

[2]Lecturer, Consultant Haematologist, Pathology Department, Bilawal Medical College for boys,Liaquat university of medical and health sciences jamshoro Hyderabad

[3]Associate Professor OBGYN UNIT II, GMMMC Civil hospital Sukkur.

[4]Senior Registrar Gynaecology and Obstetrics department Unit 01, Ghulam Mohammad Maher medical college Sukker.

[5]Resident Histopathology , Lecturer at Bilawal Medical College for boys Liaquat university of medical and health sciences jamshoro Hyderabad.

[6]Assistant Professor, Pathology department, GMMMC Sukkur

[7]Associate Professor, Pathology Department, Liaquat university of medical and health sciences jamshoro Hyderabad.

[8]Lecturer, Pathology Department, Liaquat university of medical and health sciences jamshoro Hyderabad

Corresponding author: Asiya Parveen Shaikh, Email: asiyashahid56@gmail.com, Cell: 03142846865

ABSTRACT

Objective: The goal was to determine if antiplatelet medication was effective at preventing preeclampsia in high risk patients as well as its negative effects.

Study Design: Descriptive case series

Place and Duration: Gynaecology and obstetrics department LUMHS Jamshoro. Jan 2022-Dec 2022

Methods: Total 135 pregnant females of age 20-40 years were included in this study. The included patients were all high risk pregnancies with parity 5, gestational age 12 weeks, and hospital prenatal checkups. Aspirin (an antiplatelet medication) 120 mg/day was administered to all the females. They were monitored in the OPD up until the 36th week of pregnancy. Preeclampsia was diagnosed in females who had BP > 140/90 mmHg and proteinuria > 300 mg using the urine dipstick technique. All data were examined using SPSS 24.0.

Results: There were 95 (70.4%) cases had age <30 years and 40 (29.6%) females had age >30years. Mean parity of the females was 2.3±5.11. Mean BMI was 25.02±6.35 kg/m^2. There were 60 (44.4%) females were educated and 55 (40.75) females were from urban areas. History or preeclampsia found in 7 (5.2%) cases. There were 28 (20.7%) females were obese, chronic hypertension found in 9 (6.75) cases, gestational hypertension in 92 (68.1%) cases and gestational diabetes in 22 (16.3%) cases. Frequency of preeclampsia was found in 19 (14.1%) cases. Other complications were low platelet, acid peptic disease and Antepartum haemorrhage.

Conclusion: We observed that the occurrence of preeclampsia was extremely low among high-risk females who had 120mg of Aspirin (antiplatelet medication) in the first trimester, but that the negative effects of antiplatelet therapy increased with increasing doses.

Keywords: Pregnant females, Gestational Hypertension, Antiplatelet Therapy, Preecplampsia

INTRODUCTION

Every year, more than 500,000 women worldwide lose their lives due to complications with pregnancy, with low-resource nations accounting for 99% of these deaths [1,2]. Pregnancy-related hypertension problems are thought to be a contributing factor in 10–15% of these maternal fatalities [3].

Approximately one in ten pregnant women will experience high blood pressure at some time before giving birth, according to statistics [4]. Pregnancy outcomes are comparable to those for women with normal blood pressure in those who have elevated blood pressure but no additional problems. 2-8% of pregnancies are complicated by pre-eclampsia, a multi-system disease of pregnancy that is frequently accompanied by hypertension and proteinuria [5]. It can have an impact on the mother's organs, causing issues with the liver, kidneys, and brain as well as anomalies in the clotting system. There are more hazards for the newborn because the placenta is also implicated. Prematurity, caused either by the beginning of pre-term labor spontaneously or the requirement for an early, elective birth, and poor fetal development due to insufficient blood flow through the damaged placenta are the most frequent issues.

Preeclampsia is a pregnancy-related multisystem illness that is often identified by proteinuria and hypertension once the pregnancy has progressed past 20 weeks. Pregnancy-related hypertension is defined as systolic blood pressure of 140 mmHg or higher and diastolic blood pressure of 90 mmHg or higher in two independent measures taken at least 4-6 hours apart. To diagnose hypertension, however, blood pressure must be accurately measured [6]. Ambulatory blood pressure monitoring is presently not used in a standardized way to diagnose hypertensive pregnancy problems. Particularly in people with chronic conditions linked to hypertension or proteinuria, preeclampsia may be challenging to identify. Preeclampsia can cause coagulation system problems, eclampsia (seizures), liver and renal dysfunction, and seizures [7]. Preeclampsia can now be diagnosed as hypertension in conjunction with recent onset of thrombocytopenia, compromised liver function, kidney failure, pulmonary edema, or sudden cerebral or visual disturbances in the absence of proteinuria, according to a review of the conventional definition that was conducted in 2013. Preeclampsia is now diagnosed in clinical practice with increased ambiguity due to this broad terminology. Preeclampsia affects 1-8% of expecting mothers, a prevalence that varies by nation due to regional differences in the risk factors for pregnancies. Preeclampsia affects 1.5% of nulliparas in Europe and 1% of the general population [8]. Preeclampsia, while having a low frequency, is one of the five main causes of maternal death in affluent countries [10] and causes significant maternal and perinatal morbidity. It is also the second highest cause of maternal mortality globally [9]. Preeclampsia has no effective therapy other than delivery, making its primary and secondary prevention a significant public health concern.

The goal of this study is to determine how frequently preeclampsia develops in high-risk females who get antiplatelet medication at a higher dose before the 12-week mark. The effectiveness of 120 mg antiplatelet treatment is unclear according to the literature. Furthermore, no local investigation has been presented in this context. The purpose of this study was to determine the effectiveness and adverse effects of 120 mg antiplatelet treatment in high-risk females for the prevention of preeclampsia. Our present practice of pre-eclampsia prophylaxis with 75mg Antiplatelet medication may alter as a result of the results, which will assist in updating local recommendations.

MATERIAL AND METHODS

This study was conducted at Gynaecology and obstetrics department LUMHS Jamshoro and comprised of 135 pregnant

females. After obtaining informed written consent, the demographics for all patients were recorded. Patients in the study ranged in age from 20 to 40 years old. All of the included cases had parity >5 and were 12 weeks pregnant when they went to the hospital for a prenatal appointment for a high risk pregnancy. Women who have broader issues Deranged LFTs, for example (ALT>40IU, AST>40IU, bilirubin>5IU/L), RFTs in females who are disturbed (creatinine > 1.2 mmol/l), Those who are female and have heart issues (with abnormal ECG and medical records), women who already have a placenta previa, as well as pregnant women who have fibroid uteri on ultrasound.

Aspirin 120 mg/day was administered to all females as antiplatelet treatment. All participants were monitored for the development of high blood pressure, proteinuria, or aspirin side effects every month until 30 weeks of pregnancy, and then every two weeks until 36 weeks. Preeclampsia was designated if the female acquired BP140/90mmHg and proteinuria>+1 using the dipstick technique.This data was entered into a Performa that had already been created. Preeclampsia-affected females were treated according to hospital policy. Antepartum hemorrhage, acid peptic illness, and low platelets were among the complications of antiplatelet medication that were noted. Any patient experiencing adverse effects was effectively addressed according to protocol.

SPSS version 24 was used for data entry and analysis. For age, BMI, and gestational age, mean and SD were determined. Pre-eclampsia incidence and prevalence rates were computed. Frequency was used to represent parity. Data were stratified by age, gestational age, parity, underlying disease type, and BMI. The chi-square test was applied after stratification, with a P-value of 0.05 being considered significant.

RESULTS

There were 95 (70.4%) cases had age <30 years and 40 (29.6%) females had age >30years. Mean parity of the females was 2.3±5.11. Mean BMI was 25.02±6.35 kg/m^2. There were 60 (44.4%) females were educated and 55 (40.7%) females were from urban areas.(table 1)

Table 1: Baseline information of the enrolled females

Variables	Frequency	Percentage
Age		
<30 years	95	70.4
>30 years	40	29.6
Mean parity	2.3±5.11	
Mean BMI (kg/m^2)	25.02±6.35	
Education status		
Educated	60	44.4
Non-educated	75	55.6
Place of Living		
Rural	55	40.7
Urban	80	49.3

Table-2: Frequency of comorbidities among enrolled cases

Variables	Frequency	Percentage
History or preeclampsia		
Yes	7	5.2
No	128	94.8
Obese Patients		
Yes	28	20.7
No	107	79.3
Chronic hypertension		
Yes	9	6.7
No	126	93.3
Gestational hypertension		
Yes	92	68.1
No	43	31.9
Gestational diabetes		
Yes	22	16.3
No	113	83.6

History or preeclampsia found in 7 (5.2%) cases. There were 28 (20.7%) females were obese, chronic hypertension found in 9 (6.7%) cases, gestational hypertension in 92 (68.1%) cases and gestational diabetes in 22 (16.3%) cases.(table 2)

Frequency of preeclampsia was found in 19 (14.1%) cases.(figure 1)

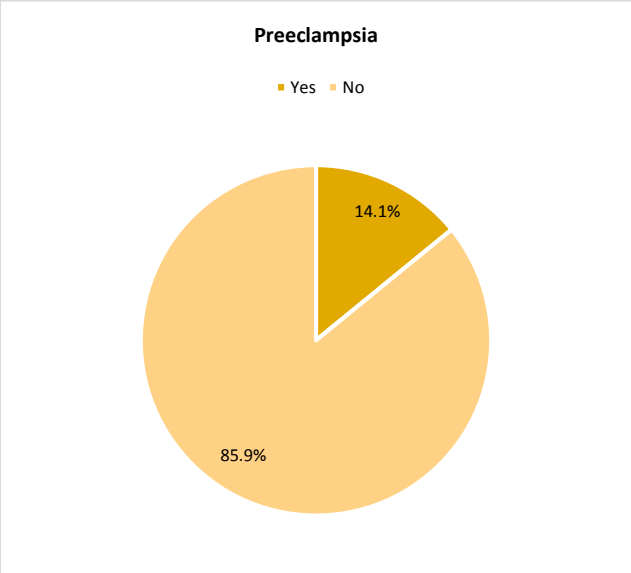

Figure-1: Association of preeclampsia after antiplatelet therapy among all cases

Other complications were low platelet, acid peptic disease and Antepartum haemorrhage among all cases.(table 3)

Table-3: Complications among all cases

Variables	Frequency (135)	Percentage
Complications		
Low platelet	13	9.6
Peptic disease	40	29.6
Antepartum haemorrhage	50	37.04

DISCUSSION

Pre-eclampsia is defined as the onset of hypertension and proteinuria after 20 weeks of gestation and is linked to a higher risk of long-term cardiovascular death for both the mother and the baby.[11] The World Health Organization advises starting low-dose aspirin therapy (75 mg/day) during 48, a time when it is both convenient and practical. According to international recommendations, aspirin should be given to pregnant women who are more likely to develop preeclampsia. However, there are different recommendations on the best times to begin the therapy, ranging from before or at 12 weeks of gestation to before 16 or 20 weeks. While it is still debatable, it is believed that starting therapy earlier in pregnancy offers larger advantages.[12]

In current study 135 pregnant females were presented. There were 95 (70.4%) cases had age <30 years and 40 (29.6%) females had age >30years. Mean parity of the females was 2.3±5.11. Mean BMI was 25.02±6.35 kg/m^2. There were 60 (44.4%) females were educated and 55 (40.75) females were from urban areas. These findings were comparable to the previous studies.[13,14]

Recently a meta-analysis study was conducted and demonstrated that there was significant reduction in overall risk ratio (RR) of preeclampsia regardless of the time of delivery, when compared with placebo or no treatment. It was concluded that when low dose aspirin was commenced at ≤16 weeks of gestation in women at increased risk of preeclampsia was associated with a reduction in overall risk of preterm preeclampsia, [15] and of adverse maternal and neonatal outcomes. Another meta-analysis concluded that there was no significant difference in the effects of

antiplatelet therapy for women randomized before 16 weeks gestation compared with those randomized at or after 16 weeks. Antiplatelet therapy should be offered to women at increased risk of preeclampsia, regardless of whether they are first seen before or after 16 weeks gestation.[16]

In current study frequency of preeclampsia was found in 19 (14.1%) cases. Other complications were low platelet, acid peptic disease and Antepartum haemorrhage among all cases. Our results were in line with previous study.[17] Although 10% of aspirin-taking individuals report experiencing gastrointestinal problems, the risk of hemorrhage or placental abruption does not rise [18]. Aspirin medication at low doses is not associated in any way, according to the literature, with either premature arterial canal closure or neonatal hemorrhage [19,20]. The strength of these research, however, was insufficient to demonstrate the possible negative consequences of frequent and heavy prescription use. Large trials were required to demonstrate the dangers of low-dose aspirin, including hemorrhagic, aside from pregnancy.

The findings of a different study demonstrated how aspirin dose affects fetal growth restriction, severe preeclampsia, and avoidance of preeclampsia. They said that aspirin started at >16 weeks did not lower risk or have a dose-response impact for fetal growth restriction and severe preeclampsia. When low dosage aspirin is started at a gestational age more than 16 weeks, there is little to no effect on the risk of preeclampsia, severe preeclampsia, and fetal growth limitation. Early in pregnancy, it is important to identify women who are at high risk for adverse consequences.[21]

CONCLUSION

We observed that the occurrence of preeclampsia was extremely low among high-risk females who had 120mg of Aspirin (antiplatelet medication) in the first trimester, but that the negative effects of antiplatelet therapy increased with increasing doses.

REFERENCES

1 Rosenfield A, Maine D. Maternal mortality - a neglected tragedy. Where is the M in MCH? Lancet. 1985;2:83–85. doi: 10.1016/S0140-6736(85)90188-6. [PubMed] [CrossRef] [Google Scholar]

2 Mahler H. The safe motherhood initiative: a call to action. Lancet. 1987;1:668–670. doi: 10.1016/S0140-6736(87)90423-5. [PubMed] [CrossRef] [Google Scholar]

3 Duley L. Maternal mortality associated with hypertensive disorders of pregnancy in Africa, Asia, Latin America and the Caribbean. Br J Obstet Gynaecol. 1992;99:547–553. [PubMed] [Google Scholar]

4 Centre for Epidemiology Research . NSW Public Health Bulletin. Vol. 13. Sydney, NSW Department of Health; 2002. Mothers and Babies Report 2001; pp. S–4. [Google Scholar]

5 World Health Organisation International Collaborative Study of Hypertensive Disorders of Pregnancy Geographic variation in the incidence of hypertension in pregnancy. Am J Obstet Gynecol. 1988;158:80–83.

6 Kattah AG, Garovic VD. The management of hypertension in pregnancy. Adv Chronic Kidney Dis. 2013;20:229–39.

7 Askie LM, Duley L, Henderson-Smart DJ, Stewart LA. Antiplatelet agents for prevention of pre-eclampsia: a meta-analysis of individual patient data. The Lancet. 2007;369:1791–8.

8 Duley L. The global impact of pre-eclampsia and eclampsia. Semin Perinatol. 2009;33:130–7.

9 Say L, Chou D, Gemmill A, Tunçalp Ö, Moller A-B, Daniels J, et al. Global causes of maternal death: a WHO systematic analysis. Lancet Glob Health. 2014;2:e323–33.

10 Botting RM. Vane's discovery of the mechanism of action of aspirin changed our understanding of its clinical pharmacology. Pharmacol Rep PR. 2010;62:518–25.

11 Tooher J, Thornton C, Makris A, Ogle R, Korda A, Horvath J, et al. Hypertension in pregnancy and longterm cardiovascular mortality: a retrospective cohort study. Am J Obstet Gynecol. 2016;214(6):722. e1-. e6.

12 Organization WH. WHO recommendations for prevention and treatment of pre-eclampsia and eclampsia: summary of recommendations. World Health Organization, 2011.

13 Duley L, Meher S, Hunter KE, Seidler AL, Askie LM. Antiplatelet agents for preventing pre-eclampsia and its complications. Cochrane Database Syst Rev. 2019 Oct 30;2019(10):CD004659.

14 The Perinatal Antiplatelet Review of International Studies (PARIS) Collaboration Steering Group on behalf of the PARIS Collaboration; The PARIS Collaboration. Antiplatelet agents for prevention of pre-eclampsia and its consequences: a systematic review and individual patient data meta-analysis. BMC Pregnancy Childbirth. 2005 Mar 18;5(1):7.

15 Cui Y, Zhu B, Zheng F. Low-dose aspirin at £16 weeks of gestation for preventing preeclampsia and its maternal and neonatal adverse outcomes: A systematic review and meta-analysis. Exp Ther Med. 2018; 15(5):4361-9

16 Meher S, Duley L, Hunter K, Askie L. Antiplatelet therapy before or after 16 weeks'gestation for preventing preeclampsia: an individual participant data metaanalysis. Am J Obstet Gynecol. 2017;216(2):121-8. e2.

17 Munir. I. S., Anum S., Sayyed B.Role of Antiplatelet Therapy For Prevention of Preeclampsia in High Risk Patients. Esculapio 2021;17(03):251-254

18 Bujold E, Roberge S, Lacasse Y, Bureau M, Audibert F, Marcoux S, et al. Prevention of preeclampsia and intrauterine growth restriction with aspirin started in early pregnancy: a meta-analysis. Obstet Gynecol. 2010;116:402–14.

19 Schiessl B, Schneider KT, Zimmermann A, Kainer F, Friese K, Oberhoffer R. Prenatal constriction of the fetal ductus arteriosus–related to maternal pain medication? Z Geburtshilfe Neonatol. 2005;209:65–8.

20 Di Sessa TG, Moretti ML, Khoury A, Pulliam DA, Arheart KL, Sibai BM. Cardiac function in fetuses and newborns exposed to low-dose aspirin during pregnancy. Am J Obstet Gynecol. 1994;171:892–900.

21 Roberge S, Nicolaides K, Demers S, Hyett J, Chaillet N, Bujold E. The role of aspirin dose on the prevention of preeclampsia and fetal growth restriction: systematic review andmeta-analysis.AmJ Obstet Gynecol. 2017; 216(2):110-20. e6