



MATERNAL SEPSIS; THROMBOCYTOPENIA AMONG SEPTIC MOTHERS AND ITS ASSOCIATION WITH MATERNAL MORBIDITY AND MORTALITY.

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ABSTRACT... Objectives: To determine the thrombocytopenia as marker of maternal sepsis and its related maternal morbidity and mortality at tertiary care Hospital. **Study Design:** Cross-sectional study. **Setting:** Obstetrics and Gynaecology department of Liaquat University Hospital, Hyderabad. **Period:** 6 months from March 2017 to August 2017. **Material and Methods:** All the pregnant females with diagnosis of sepsis were enrolled in the study. All the females with chronic hepatitis were excluded. After complete clinical examination every women underwent 5cc blood sample for complete blood picture. Thrombocytopenia was characterized as a platelet count below 150,000/mm³. Data regarding maternal mortality and maternal complications was filled in the proforma. **Results:** Total 120 septic mothers were included in the study, 70 patients had thrombocytopenia and 50 were with normal platelets. Most of the women 71.7% were with age groups of 20-30 years. Out of total women 65.0% were un-booked. According to the maternal morbidity, septic shock was most common 36.7%, multi-organ failure was in 08.3%, prolonged Hospital stay was in 16.7%, ICU admission occurred in 18.3% patients, while renal failure, respiratory failure, hepatic failure, coagulopathy and metabolic acidosis were found with percentage of 09.2%, 02.5%, 10.8%, 10.8% and 03.3% respectively. Mortality rate was found among 8.3% out of total cases. Almost all complications were higher among women with thrombocytopenia as compared to women with normal platelets level, while statistically p-value was quite insignificant. Mortality was significantly high among patients with thrombocytopenia, p-value 0.032. **Conclusion:** It was concluded that thrombocytopenia is a good marker for adverse outcome among septic mothers. Maternal morbidity and mortality was higher among septic women with thrombocytopenia.

Key words: Morbidity, Mortality Pregnancy, Sepsis, Thrombocytopenia.

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INTRODUCTION

Maternal sepsis is a fatal disorder that takes place when the response of a body towards an infection causes injury to its own organs and tissues. If it occurs in the course of pregnancy, following or during childbirth, or following an abortion, it is termed as maternal sepsis.¹ Worldwide, pregnancy-associated infections are the 3rd most common direct factors of maternal mortality, representing around 11% of all maternal fatalities.^{1,2} Pregnancy-associated infections play a significant role in several deaths credited to further conditions.³ The maternal deaths' burden directly correlated with infection is greater in middle- and low-income countries (MLIC) (10.7%), with the highest burden within

Southern Asian region (13.7%) and Sub-Saharan African region (10.3%), contrasted to high-income nations (4.7%).^{1,2} According to Pakistani studies mortality due to sepsis was 66.6%.⁴ In another local study mortality due to sepsis is 57%.⁵ Several predisposing factors accountable for puerperal sepsis are intercourse in the course of last week of pregnancy, low socio-economic settings and examination of pelvis in the course of pregnancy.⁶ Unhygienic delivery at home, prolonged labour, prolonged membranes' rupture, prematurity, anaemia, instrumental deliveries and multiple vaginal checkups are also causative factors.⁷ Sepsis is a syndrome based on a dysregulated immune reaction towards infection as well as including non-immunologic systems.⁸ The role of

platelets to pathophysiology of sepsis has been the matter of renovated attention. First, modifications of platelets count are usually faced in the intensive care units (ICUs). By general platelets count thresholds, thrombocytopenia represents 20–50% of cases for the whole part of intensive care backgrounds.⁸⁻¹⁰ Thrombocytopenia occurs commonly during pregnancy and influences 6% to 10% of all pregnant females.¹¹ Anyway, the decrease in platelets count in the course of normal pregnancy leads some pregnant females to develop platelet counts that come into the range of thrombocytopenic.^{11,12} Generally, these people have mild thrombocytopenia which first appears in the mid-second to third trimester of pregnancy. Since no diagnostic assay is present for gestational thrombocytopenia, this syndrome is a diagnosis of exclusion.^{11,13} Thrombocytopenia is frequent in patients who are severely ill, its association with poor prognosis as the supporter and enemy dialogue between endothelium and platelets has been widely studied and is believed to be pertinent to sepsis complications.⁸ Bearing in mind the fundamental contribution of platelets in hemostasis and as indications of circulated intravascular coagulation, a noteworthy decline in platelets count is shocking in the context of septic cases, as it is an autonomous factor forecasting death.^{14,15} No adequate data is available in literature specially at local level. Therefore, this study has been carried out to assess the thrombocytopenia as diagnostic indicator of maternal sepsis and its related morbidity and mortality.

MATERIALS AND METHODS

This cross-sectional study was carried out at Obstetrics and Gynaecology department of Liaquat University Hospital, Hyderabad. Duration of study was 6 months from March 2017 to August 2017. All the pregnant females with diagnosis of sepsis and age more than 18 years were enrolled into this study; and women with chronic hepatitis, immune thrombocytopenia and hypertensive disorders were excluded. All the women were interviewed regarding their socioeconomic status, parity, booking status, educational status and occupation. After complete clinical examination every women underwent 5cc blood sample for complete blood picture. All the women were

categorized in two categories, as group 1 (females with thrombocytopenia) and group 2 (women with normal platelets). Thrombocytopenia was well-defined as a platelets count below 150,000/mm³. Data regarding maternal complications and maternal mortality was filled in the proforma. Data entry and data analysis was carried out by SPSS (Statistical Package for the Social Science) version 20. Continuous variables such as age were analyzed as mean \pm standard deviation. Percentages and frequencies were computed as categorical variables. χ^2 test was performed and a P value <0.05 was taken as significant.

RESULTS

Total 120 septic mothers were included in the study, 70 patients had thrombocytopenia and 50 were with normal platelets. Most of the women 71.7% were with age groups of 20-30 years, while 25.8% were with age group of 31-40 years and only 2.5% women were aged more than 40 years. 55.0% women were uneducated, 23.3% were primary passed, 16.7% matric passed and only 05.0% were graduate. Most of the women 82.5% were house wives. 66.7% patients found with poor socioeconomic status and 33.3% had middle socioeconomic status, while no any female was found with upper socioeconomic status. Out of total women 65.0% were un-booked. 67.5% patients were multiparous and 32.5% were nulliparous. Most of the women 80.0% underwent Caesarean section, while remaining 20.0% were normally delivered. Table-I

According to the study groups out of total 120 women 70 were with thrombocytopenia and 50 were with normal platelets level. Figure-1

According to the maternal morbidity, septic shock was most common 36.7%, multi-organ failure was in 08.3%, prolonged Hospital stay was in 16.7%, ICU admission occurred in 18.3% patients, while renal failure, respiratory failure, hepatic failure, coagulopathy and metabolic acidosis were found with percentage of 03.3%, 02.5%, 10.8%, 10.8% and 09.2% respectively. Mortality rate was found among 8.3% out of total cases. Table-II

According to the association of maternal mortality

and morbidity with thrombocytopenia, almost all complications were found among women with thrombocytopenia as compare to women with normal platelets level, while statistically p-value was quite insignificant. Mortality was significantly high among patients with thrombocytopenia as out of 10 died patients, 7 had thrombocytopenia and 3 were with normal platelets level, p-value 0.032. Table-III.

Demographic Characteristics	Frequency	Percentage
Educational Status		
Graduation	20	05.0
Matric	06	16.7
Primary	28	23.3
Uneducated	66	55.0
Total	120	100.0
Age Groups		
20-30	86	71.7
31-40	31	25.8
>40 years	03	02.5
Total	120	100.0
Occupation		
House wife	99	82.5
Working lady	21	17.5
Total	120	100.0
Residential Status		
Urban	51	42.5
Rural	69	57.5
Total	120	100.0
Socio-Economic Status		
Poor	80	66.7
Middle class	40	33.3
Total	120	100.0
Booking Status		
Booked	42	35.0
Un-booked	78	65.0
Total	120	100.0
Parity		
Nulliparous	39	32.5
Multiparous	81	67.5
Total	120	100.0
Mode of Delivery		
NVD	24	20.0
Caesarean section	96	80.0
Total	120	100.0

Table-I. Distribution of patient according to demographic characteristics n=120

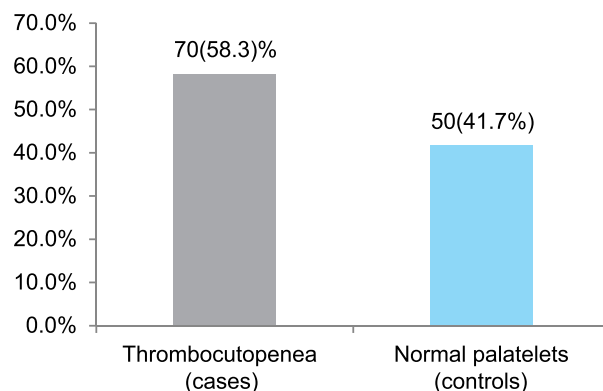


Figure-1. Distribution of patients according to study groups n=120

Variables	Frequency	Percentage
Septic Shock	44	36.7
Postpartum Haemorrhage	11	09.2
Multi-organ Failure	10	08.3
Renal Failure	11	09.2
Respiratory Failure	03	02.5
Liver Failure	13	10.8
Coagulopathy	13	10.8
Metabolic Acidosis	04	03.3
Prolonged Hospital Stay	20	16.7
ICU Admission	22	18.3
Mortality	10	08.3

Table-II. Maternal morbidity and mortality among septic women n=120

Maternal Morbidity and Mortality	Thrombocytopenia n=70	Normal Platelets n=50	Total	P-Value
Septic Shock	19	11	30	0.521
Postpartum Haemorrhage	08	03	11	0.335
Multi-organ Failure	07	03	10	0.434
Renal Failure	06	05	11	0.789
Respiratory Failure	02	01	03	0.767
Hepatic Failure	09	03	12	0.217
Coagulopathy	10	03	13	0.150
Metabolic Acidosis	03	01	04	0.292
Prolonged Hospital Stay	13	05	18	0.195
ICU Admission	15	05	20	0.098
Death	07	03	10	0.032

Table-III. Maternal morbidity and mortality according to thrombocytopenia among septic women N=120

DISCUSSION

Because of its high mortality rate and prevalence, sepsis is a key challenge to public health.¹⁶ This study has been carried out to evaluate the thrombocytopenia as a diagnostic marker of maternal adverse outcome among septic women. Studies reported that the role of platelets in the pathophysiology of sepsis has been the matter of renovated attention. First, modifications of platelets count are usually faced in the intensive care units (ICUs). By general platelets count thresholds, thrombocytopenia represents 20–50% of cases for the whole part of intensive care backgrounds.¹⁶⁻¹⁸ In this study adverse outcome were found among septic patients with thrombocytopenia as compare to those presented with normal platelets level. Other studies reported that thrombocytopenia or failure to resolve thrombocytopenia is correlated to poor outcome.^{16,19-21} No such studies have been found regarding maternal morbidity and mortality among septic women with thrombocytopenia, while particular studies have been conducted on maternal outcome in sepsis and thrombocytopenia separately.

In this study most of the women 71.7% were with age group of 20-30 years, while 25.8% were with age group of 31-40 years and only 2.5% women were aged more than 40 years. Chepchirchir MV et al²² reported that 57.2% of the partakers were aged between 20-29 years. In current study 55.0% females were uneducated and poor socioeconomic status was seen in 66.7% patients. Chepchirchir MV et al²² documented that 64% of the partakers had low socioeconomic status (jobless) and 56.2% of them were found with low parity status, 9.8% females were uneducated and primary passed were found 50.2% of the females. Poor socioeconomic status obstructs the females from getting sufficient food in the course of antenatal period. Incidentally, some studies have documented high rate of (65.2%) sepsis among low socioeconomic group. Poor social background is correlated with poor antenatal care, ill health, poor hygiene, illiteracy, prolonged labor, pre-labor rupture of membranes, and delayed referrals all of which set the scene for the incidence of sepsis.⁷

In this study according to the maternal morbidity, septic shock was most common 36.7%, multi-organ failure was in 08.3%, prolonged Hospital stay was in 16.7%, ICU admission occurred in 18.3% patients, while renal failure, respiratory failure, hepatic failure, coagulopathy and metabolic acidosis were found with percentage of 03.3%, 02.5%, 10.8%, 10.8% and 09.2% respectively. Chuppana Ragasudha et al²³ reported that literature reports a 20 to 40% of mortality rate for severe sepsis accompanying acute organ dysfunction that rises upto 60% when septic shock occurs. Study of Ventra C et al²⁴ concluded that cases having thrombocytopenia had further events of major bleeding, extended ICU stay and raised prevalence of acute renal injury.

In this study mortality rate was found among 8.3% out of total cases. Chuppana Ragasudha et al²³ reported three deaths among 12 females with severe sepsis and septic shock representing a mortality of 25%. In this study according to the association of maternal mortality and morbidity with thrombocytopenia, almost all complications were found among women with thrombocytopenia as compare to women with normal platelets level, while statistically insignificant, p-value quite insignificant. Mortality was significantly high among patients with thrombocytopenia as out of 10 died patients, 7 had thrombocytopenia and 3 were with normal platelets level, p-value 0.032. Similarly a study reported that adverse outcome was higher among patients had thrombocytopenia.²⁵

CONCLUSION

It was concluded that thrombocytopenia is a good marker for adverse outcome among septic mothers. Maternal morbidity and mortality was higher among septic women with thrombocytopenia. Early management of thrombocytopenia can lessen the maternal morbidity and mortality. Further larger sample size studies required on this association.

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

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2	Majida Khan	Manuscript writing and review.	
3	Samia Aijaz	Data analysis and manuscript writing.	
4	Nasreen Rebecca Wilson	Manuscript writing and review.	