

Study of Maternal outcome in Thrombocytopenia of Pregnancy at a secondary level referral centre for a period of one year. (2019- 2020)

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Abstract:

Background: Platelets are involved primarily in hemostasis. They are Non-nucleated cellular fragments from Megakaryocytes of bone marrow. Their surface contain receptors for vWF, glycoproteinIb, platelet integrin, glycoproteins (GP IIb / IIIa) which facilitate in platelet adhesion, aggregation and plug formation in arresting bleeding. The incidence of thrombocytopenia in pregnancy is 7–10% and 80% of it is related to Gestational Thrombocytopenia.⁽¹⁾

Methods: Study was conducted in District Hospital, MCH Block, where the number of deliveries is 7561 for a period of 1 year (2019-2020).

Objective: To identify the incidence and causative factors of Thrombocytopenia and its impact in maternal outcome.

Results: The total number of deliveries in the institute during the study period is 7561 . The incidence of Thrombocytopenia during pregnancy is 7% as per the definition. But as per the inclusion criteria the Thrombocytopenia is 2.90%. Most of these cases are related to gestational Thrombocytopenia. 2 cases are diagnosed as ITP. One Maternal Death noticed after referral to tertiary care centre and died due to DIC.

Conclusion: Thrombocytopenia during pregnancy is a dreadful situation to Obstetricians. Establishment of Etiological diagnosis should be attempted to assess prognosis. Some may require platelet transfusion or treatment with Corticosteroids, IVIG. Some may need Obstetric Intensive Care as with HELLP Syndrome. In summary, in the majority of cases the outcome is favorable but needs close monitoring and multi-disciplinary approach at tertiary care centre. Platelet functional abnormalities, which cannot be identified unless there is high index of suspicion, with normal platelet count and same symptomatology should be considered. They may require Tranexamic Acid, DDAVP, Recombinant factor VIIa administration.

The difficulties in management of Thrombocytopenia are - establishing Etiology, short life span of platelets, non-availability of blood components in Blood Banks and possibilities of platelet functional disorders.

In pregnancy, the Thrombocytopenia can cause recurrent abortions, APH, PPH, Subcutaneous bleeding, intracranial hemorrhages and neonatal Thrombocytopenia.

Key Words: Platelets, IVIG, PPH

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I. Introduction:

Platelets are involved in primary hemostatic mechanism. Normal platelet count is 1,50,000 to 4,00,000 per micro Litre. Thrombocytopenia can be classified as

MILD – Platelet count is between 1,00,000 – 1,50,000 /mcL (or) 100 – 150 X 10⁹ /L

Moderate – Platelet count is between 50,000 - 1,00,000 /mcL (or) 50 – 100 X 10⁹ /L

Severe - Platelet count is <50,000 /mc L (or) < 50 X 10⁹ /L

Thrombocytopenia can cause mild subcutaneous bleeds to severe life threatening intracranial haemorrhages or PPH in Obstetric practice and is unsafe for spinal & epidural anesthesia if count falls below 80,000 /mcL. Spontaneous haemorrhage can be expected if count is below 20,000 per mcL or $20 \times 10^9/L$

The common causes for Thrombocytopenia in Obstetric practice include gestational Thrombocytopenia, ITP, TTP, HELLP Syndrome, Infections, drugs and Malignancies in order of frequency⁽¹⁾. Gestational thrombocytopenia is a benign condition due to hemodilution and accelerated destruction of platelets during pregnancy. It resolves after postnatal period, it rarely requires platelet transfusion. It may recur in subsequent pregnancies and it will not lead to neonatal Thrombocytopenia.

Diagnosis of ITP is a disease of exclusion. No laboratory data is pathognomonic for its diagnosis. Bone marrow aspiration cytology is to be done to rule out other possibilities. IVIG, Corticosteroids, Rituximab, Romiplostim, at times splenectomy are the treatment modalities⁽³⁾. TTP should be born in mind whenever there is evidence of Microangiopathic manifestations. It is caused by ADAMTS 13 enzyme deficiency. The condition requires only plasmapheresis. Above all it is very difficult to identify platelet function disorders like Glanzmann Thrombasthenia or Bernard Soulier syndrome, Hermansky Pudlak syndrome, which can cause PPH & other bleeding manifestations with normal platelet count, adding confusion to diagnosis. They may respond to tranexamic acid, desmopressin or recombinant factor VIIa or cryoprecipitate or FFP. HELLP Syndrome is a dreaded complication in pregnancy and Endothelial damage and coagulation activation are attributed as causes. FFP, Cryoprecipitate, Platelet transfusion and termination of pregnancy are treatment modalities⁽⁸⁾.

II. Material And Modalities

Inclusion criteria:

The study was done in the District Hospital, MCH Block, Vizianagaram, Andhra Pradesh for the year (April 2019 – March 2020).

All the pregnant women who were admitted in the hospital for delivery are subjected to CBC, along with other tests. Those with Platelet count $< 100,000/mcL$ (100×10^9) are included in study group. Those with Platelet count below $50,000/mcL$ ($50 \times 10^9/L$) are referred for further evaluation at tertiary care centre and followed up.

Exclusion Criteria:

Pregnant women with platelet count $> 1,00,000/mcL$ ($100 \times 10^9/L$) are excluded in study.

III. Results

Total number of deliveries including C- Section during study period of 1 year is 7561. The incidence of Thrombocytopenia in the institute is 7.10% according to definition, i.e., $< 150,000/mcL$ ($150 \times 10^9/L$). But as per inclusion criteria i.e., Platelet count $100,000/mcL$ ($100 \times 10^9/L$) the incidence is 3%. Two patients found to have ITP, One patient had HELLP Syndrome, One patient had SLE⁽¹⁰⁾.

IV. Discussion

The District Hospital, MCH Block, Vizianagaram has the delivery turnover of 7561 during study period (2019 – 2020). Every pregnant woman admitted in hospital has undergone test for CBC including platelet count. Patients with counts below $80,000/mcL$ ($80 \times 10^9/L$) were referred to tertiary care centre and were given follow up.

The incidence of Thrombocytopenia in third trimester of pregnancy is 7% as per criteria of $1,50,000/mcL$ ($150 \times 10^9/L$). But when Platelet count $< 1,00,000/mcL$ ($100 \times 10^9/L$) is taken into consideration, the incidence is only 3%. The condition is more common in 20 – 25 years age group. 97.8% of cases are found to be due to gestational Thrombocytopenia after excluding known diagnostic possibilities. During the study period two patients are found to be ITP and responded to corticosteroids. One patient delivered without complications. One patient had PPH, required 8 units of Platelet transfusion and survived. One patient developed HELLP Syndrome and expired with uncontrolled PPH, in spite of treatment in tertiary care centre. One patient was suspected to have SLE and confirmed the diagnosis. She had an uneventful delivery under care of Nephrologist. Above study clearly indicates that every pregnant woman needs platelet count estimation and diagnostic evaluation. If there is Thrombocytopenia, investigations for the causative factors to be done to ascertain prognosis, treatment or referral to higher centre.

ETHICAL COMMITTEE APPROVAL

Permission from District Hospital Ethical committee, Vizianagaram was obtained and approved.

V. Conclusion

Severe Thrombocytopenia in pregnancy is a rare entity, commonly seen in ITP, bonemarrow depression, HELLP Syndrome, DIC,TTP. It is a lifethreatening condition requiring multidisciplinary approach at tertiary care centre to save the life of a pregnant woman. Mild and moderate conditions require establishment of etiological diagnosis, followup and specific treatment at well equipped centre with blood component facilities. Availability of FFP, Platelet rich plasma, recombinant factor VIIa are required for its management. 1 unit of PRP (50 – 70 ML) can raise platelet count 5– 8 X 10⁹/L and 10 – 140L may be required at times for emergency surgeries. If platelet pheresis done, one unit may raise 40 – 50 X 10⁹/L Cryoprecipitate and FFP must be available in case of DIC . In patients with severe thrombocytopenia , not only Obstetric complication like PPH, but also Intracranial hemorrhage, Intraperitoneal hemorrhage are problem , which can be fatal. Early recognition of condition and gradual fall of count in serial testing require referral to tertiary care centre. Above all to add more confusion platelet function disorders are very difficult to diagnose but it is worth trial to administer FFP,PRP,Tranexemic acid as empirical therapy to save delay.

Maternal Thrombocytopenia in majority of cases is due to gestational thrombocytopenia and is benign. However frequent testing; observation of further fall requires approach for other diagnostic possibilities and appropriate treatment ⁽¹⁾.

VI. Recommendations

1. Platelet count between 150X10⁹/L - 100X10⁹/L may be considered as benign gestational thrombocytopenia, when there is no further drop of platelet count during follow up, but rarely it may be as low as 50X10⁹/L
2. Serial follow up is mandatory. If there is consistent fall during observation, a diagnostic work up is required for specific treatment.
3. Higher centers should have the availability of PRP, Platelet pheresis , FFP, Cryoprecipitate, Factor VIIa for the management.
4. Spinal & Epidural anaesthesia is unsafe for C–Section & other surgical procedures, if platelet count falls below 80,000 /mcL (80X10⁹/L)
5. In suspected coagulation defects platelet function disorder should be born in mind and empirical therapy with DDAVP and Tranexemic acid administration should be considered.

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Conflicts:

There are no conflicts of interest

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TABLE – 1 Aetiological factors of Thrombocytopenia in pregnancy

S.No	Etiology	No.of cases	Percentage
1	Gestational Thrombocytopenia (Diagnosis of exclusion)	218	97.80%
2	Idiopathic Thrombocytopenia purpura	2	0.88%
3	Eclampsia	1	0.44%
4	HELLP Syndrome	1	0.44%
5	SLE	1	0.44%
	TOTAL Out of 7561	223	

TABLET – 2
Incidence of Thrombocytopenia in pregnancy according to grading

GRADE	No. of Cases	Percentage
MILD (100X10 ⁹ /L- 150X10 ⁹ /L)	529	6.99%
MODERATE (50X10 ⁹ /L- 100X10 ⁹ /L)	223	2.95%
SEVERE (<50X10 ⁹ /L)	2	0.026%

TABLE - 3
Incidence of Thrombocytopenia in the Institute (Month wise)

Month	No.of Deliveries	Platelet count below 1,00,000/mcL	Percentage
January'2019	586	26	4.43%
February'2019	612	28	4.57%
March'2019	713	24	3.36%
April'2019	655	23	3.51%
May'2019	685	22	3.21%
June'2019	651	25	3.84%
July'2019	647	0.9	1.39%
August'2019	689	0.6	0.87%
September'2019	625	22	3.52%
October'2019	636	23	3.60%
November'2019	540	0.4	0.74
December'2019	522	11	2.10%
TOTAL	7561	223	2.95%

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