# DISSEMINATED INTRAVASCULAR COAGULATION IN OBSTETRIC PATIENTS AT COMBINE MILITARY HOSPITAL QUETTA

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## ABSTRACT

***Objective:*** To describe the frequency of disseminated intravascular coagulation (DIC) as a complication in obstetric patients.

***Study Design:*** Descriptive study

***Place and Duration of Study:*** This study was carried out between April 2006 to August 2007 at the department of obstetrics and gynecology, Combined Military Hospital Quetta.

***Subjects and Methods:*** All pregnant subjects who presented at the out-patient department, CMH Quetta for delivery or related complaints were considered for inclusion into the study. After various exclusions, a total of 1939 patients were included in our study. They were consented, and evaluated with detailed history and clinical examination for the presence of DIC. In suspected patients DIC screening was ones's, including fibrinogen levels, prothrombin time, partial thromboplastin time, platelet and fibrin degradation products. These patients were regularly followed up during the course of the disease till their discharge or otherwise.

***Results:*** Out of 1939 subjects 15 (0.77%) subjects developed disseminated intravascular coagulation. Out of these 15 subjects, 10 (66.7%) subjects were having no booking record. 10 (66.7%) subjects developing DIC were multi-gravida, while 5 (33.3%) were primary gravida. The major complications leading to DIC in our subjects were abruption 4 (26.7%), intrauterine death 4 (26.7%) and sepsis 4 (26.7%).13 (86.7%) ladies were finally discharged without complications, while 1 (6.7%) subject developed acute renal failure and 1 (6.7%) subjects died.

***Conclusion:*** Disseminated intravascular coagulation is a grave complication of obstetrical population, which increases the maternal mortality and morbidity.

**Keywords:** Disseminated intravascular coagulation, fibrinogen levels, prothrombin time, Activated partial thromboplastin time, platelet and fibrin degradation products

## INTRODUCTION

DIC is a complex systemic thrombohemorrhagic disorder involving the generation of intravascular fibrin clot and consumption of platelets along with coagulation factor [1]. Healthy pregnancy is accompined by changes in the haemostatic system which convert it into a hypercoaulable state valunerable to a spectrum of disorder ranging from vonous thrombosis to DIC [2]. Pregnancy on one side is itself a hypercoaguble state and while placenta on the other hand when gets damaged releases a lot of thromboplastin. These two factors lead to consumption coagulopathy, making the pregnant lady susceptible to a profound increase risk of DIC. This can further result in uterine and sometimes generalized bleeding in some of the cases. DIC in clinical practice is seen in association with a number of well defined clinical situations including sepsis, abruption, eclampsia, intra uterine death and retained products of conception [3].

Keeping in view the above mentioned side effects of DIC, early clinical suspicion and laboratory diagnosis is essential for prompt management of the underlying disorder [4]. Despite the advances in obstetric care and the availability of blood transfusion services, hemorrhage still constitutes a major factor in maternal mortality and morbidity [5]. Even the very well advance set ups have a come across mortality rates in excess of 50%. Presently different set ups have shown variable frequencies of DIC in their obstetric populations [6]. In our local set up only few studies have addressed the problem of DIC in

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our patients presenting at gynecological and obstetric out-patient departments.

In August 2006 an obstetric patient complicated with DIC was saved with multi-disciplinary approach. Based upon this experience it was planned to measure the frequency of disseminated intravascular coagulation as a complication in our obstetric patients, and then to further document the outcomes in these complicated cases.

## SUBJECTS AND METHODS

This descriptive study was carried out at the department of obstetrics / gynecology Combined Military Hospital, Quetta between April-2006 to August - 2007. The target population were subjects who were referred for antenatal check up or admitted in emergency or developed this complication while in hospital. These subjects were then considered further for inclusion into the study. Subjects who had known coagulation disorders like thrombophillias, using drugs for some chronic disorders and or having some non obstetrical causes were excluded from the study. Finally selected subjects (n=1939) were formally consented and explained in detail the various procedural details and consequences of the study All these subjects on presentation were interviewed, and clinically examined, followed by periodic medical check-ups during the whole course of their admissions till their discharge.

Subjects (n=129) who were suspected to have DIC on clinical grounds, were sampled for "DIC screen" Following investigations were included in the DIC screen: 1-Prothrombin time, 2-Activated partial thromboplastin time, 3-Platelet count. Subjects who had any of these above investigations deranged were then investigated for 4-Fibrinogen levels, and 5-Fibrin degradation products. Subjects who finally had a raised fibrin degradation level, and low fibrinogen were diagnosed to have DIC. Subjects who were clinically suspected, but proven negative were followed by daily lab parameters till improvement of their clinical condition. After diagnosis of DIC (n=15), the subjects were admitted in intensive care unit, and were monitored for:

a. Record of treatment- All treatment given to these patients were recorded. These included: 1-Blood transfusion records, like red cell components, platelets, fresh frozen plasma, 2-Any surgical procedure done, like evacuation of retained products of conception and emergency caesarean section)
b. Development of complications- The monitoring was done by regular measuring of their vital signs and related aspects. All necessary supportive treatments were given as per the standard protocol. The complications considered were: 1-abruptio placenta, 2- intrauterine death, 3-sepsis, 4-renal failure, and 5-mortality.

### Statistical Analysis

All data was entered in SPSS version-15. Descriptive statistics, in terms of frequency of complication as DIC in obstetric study population, and their various end outcomes were calculated.

## RESULTS

Total 1939 subjects were included in this study. The mean age of study population was 28+2.2 years. 15 (0.77%) subjects were diagnosed to have disseminated intravascular coagulation after final lab confirmation of these diagnoses. Out of the subjects diagnosed to have DIC, the median age was 29 years, and most subjects were in the age bracket of 21 -25 years (table-1). Out of the fifteen DIC subjects, 10 (67%) were booked and 5 (33%) were not booked (figure) .DIC remained more prevalent among primi-gravida i.e., 33% and 67% were mutli-gravida (Table-2). Major obstetrical complications leading to DIC in our study were abruption (26%), intrauterine death (26%), sepsis (26%), eclampsia accounts for (13%) and retained products of conception (6%) (Table-3). Thirteen (86.7%) ladies were finally discharged without complications, while 1 (6.7%) subject developed acute renal failure who was managed successfully with hemodylasis, and 1 (6.7%) subject died of secondary PPH and septicemia.

## DISCUSSION

The frequency of disseminated intravascular coagulation remained 0.77 % in our obstetrical population. The leading

**Table-1: Age distribution of cases diagnosed to have DIC (n=15)**

| S.No | Age distribution in years | No of subjects | (%) of subjects |
|---|---|---|---|
| 1 | 16-20 | 1 | 6.7 |
| 2 | 21-25 | 5 | 33.3 |
| 3 | 26-30 | 4 | 26.7 |
| 4 | 31-35 | 4 | 26.7 |
| 5 | Greater than 36 | 1 | 6.7 |

**Table-2: Parity status in DIC patients (n=15)**

| S.No | Parity status | No of subjects | (%) of subjects |
|---|---|---|---|
| 1 | 1 | 5 | 33.3 |
| 2 | 2-4 | 6 | 40 |
| 3 | More than 4 | 4 | 26.7 |

**Table-3: Major obstetrical complications leading to DIC (n=15)**

| S.No | Obstetrical complication | No. of subjects | (%) of subjects |
|---|---|---|---|
| 1 | IUD* | 4 | 26.7 |
| 2 | Abruption | 4 | 26.7 |
| 3 | Eclampsia | 2 | 13.3 |
| 4 | RPCO** | 1 | 6.7 |
| 5 | Sepsis | 4 | 26.7 |

*Intra uterine death
**Retained products of conception

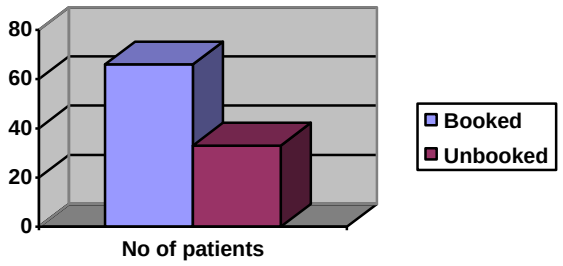


**Figure: Booking status in subjects diagnosed to have DIC (n=15)**

predispositions to development of DIC in our subjects remained abruption of placenta, intra-uterine death and sepsis. In modern obstetric practice DIC remains the leading complication of abruption, intrauterine death and sepsis and haemorrhagic shock with delay in resuscitation leading to endothelial damage. The diagnosis of DIC was made on clinical presentation and coagulation studies and monitored hematologically by serial platelet counts and serum fibrin degradation products (FDPs).

In our study it was noted that the majority of the patients were young, un booked and multiparous. Oyelese Y in her study shows that abruption complicates about 1% of all pregnancies reported to their department [7]. DIC occurs in 4 (26.7%) pregnancies as a results of abruption in our setup. Pitaphrom A determined in her study that DIC occurs in 5.8% of patients as result of placental abruption [8].

What could be the possible reasons to these differences? this is due to as majority of subjects were unbooked and came from rural areas of Balouchistan province with limited facilites of transportation and availability of tertiary care center. Multiparity remains an important contributing aspect as compared to primiparity. In our study about 40% were multipara with parity of 2-4 and 26.7% were grandmultipara with parity of more than 4. Grandmultiparity remains an important risk factor for antepartum and postpartum haemorrhage leading to DIC according to Levi et al [9]. From historic point of view, the renowned Mughal emperors wife Malika Mumtaz mahal died of severe PPH leading to DIC after giving birth to her 11th child. At that time there were no guidelines to diagnose and monitor DIC. Intrauterine death leading to DIC occurs in 4 (26.7%) of patients in our study where as it was 14% in a study done by Ansari et al [10]. The median maternal age in our study was 32 years (16-45), which is quite comparable to other studies [11]. Where as in our study median maternal age was 29 years.

DIC due to retained products of conception is a rare entity. In our study one patient developed this complication with morbidity in the form of acute renal failure. Some studies have shown such frequency to be up to 31%10. Renal failure is related to prolonged maternal hypovolemia and can largely be prevented by appropriate fluid replacement therapy. Eclampsia was a predisposition in 13.3% of our patients leading to DIC in our study. With regards to sepsis our frequency was 26.7%, which remained quite comparable to other studies [12]. In our study mortality occur in only one (6.7%) subject. The possible explanation to such a low mortality could be related to series of clinical examination, early suspicion, quick delivery and prompt blood

transfusion and multidisciplinary approach. Factors contributing to severity of DIC were also analyzed in our study which were mostly socioeconomic, lack of medical facilities, illiteracy and lack of self awareness .Majority of women in our study do not come for their routine antenatal checkup and presented to hospital at the last moment. The above factors very much contributed in the development of the complication. In spite of all the problems mentioned above, there is some improvement in the outcome with the prompt availability of tertiary care facilities in combined military hospital Quetta. Lastly, there are many recent studies which have recommended that supportive measures and removal of the triggering mechanism are the key to successful management [13].

Few limitations to our study must be acknowledged: Firstly, this is a hospital based descriptive study, where non-probability convenience sampling was adopted as a method of sampling, which has its own inherent weaknesses. Secondly, the study was not meant to establish a cause and effect relationship. It being a descriptive, but pioneer study from the province of Baluchistan was primarily meant to describe some of the general aspects of the disease. It is definitively recommended that separate epidemiological surveys be carried out to further augment or disapprove our findings.

The clinical implications associated with our study are very important. DIC being a catastrophic obstetrical emergency has profound effect on maternal mortality and morbidity. Our study showing the frequency of DIC, its predisposing conditions and complications thus emphasizes the need for having a high index of suspicion among patients with risk factors to develop an effective management policy for DIC.

## CONCLUSIONS

Disseminated intravascular coagulation is a grave complication in obstetrical population, which increases the maternal mortality and morbidity to many folds. Our study at CMH Quetta has a frequency rate of 0.77% DIC in obstetrical patients. The factors related to DIC in our subjects were un-booked status and multi-parity.

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