

Prediction Of Postoperative Outcome In High Risk Obstetric Patients Posted For Surgical Procedures- A Prospective Study At Tertiary Center

Anaesthesia

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Abstract:

Context and Objectives: American Society Of Anesthesiology classifies normal pregnancy as ASA Class II, presence of certain co-morbid conditions will make such pregnancy ASA III or IV and onwards, therefore makes the situation more grim for treating Anesthesiologist in perioperative care if such patients need to be subjected to any procedures. Though the cardiovascular diseases are common and good predictors of outcome, non-cardiac diseases can be good predictor of a roller-coaster perioperative course. Therefore the purpose of present study was to analyze the predictors of postoperative outcome in high risk cases coming for various obstetric surgeries at department of Anesthesia of Jawaharlal Nehru Medical College, Sawangi Meghe, Wardha.

This was prospective and randomized study conducted during 1 August 2013 - 1 sept. 2014.

Total 108 patients of 18-40 years of age and of ASA class III and IV were selected and were divided into two groups CVS and Non CVS. Postoperative grading was done according to patients referral to, recovery room (grade I), to ICU (grade II) and ICU plus ventilation (grade III). The data was collected and analyzed.

Postoperative outcome of vast majority of the patients in both the groups was uneventful, duration of surgery did not affect the outcome, and the most common surgical intervention was cesarean section, however, high risk cases operated for ectopic pregnancy had significantly worst postoperative course when compared to others.

So, we draw conclusion that all the cases of high risk pregnancy if treated at tertiary centers under care of experienced personnel, modern monitoring facilities and ICU backup the postoperative outcome could be better in these patients.

Keywords: High risk, Co-morbidity, GA, Regional, MAC, C.S, Ectopic pregnancy.

Introduction:

The centers catering services to obstetric cases are full of eminent risks for the patients due to the altered physiology of pregnancy, in addition to its presence of some co morbid conditions are to be dealt with utmost professional care. Pregnancy even in normal mother put them in ASA grade II and can complicate their perioperative outcome. ASA status of III and IV makes this situation more challenging to the anesthesiologist. Postoperative ICU admissions are most common in the patients having cardiovascular diseases, but, certain non-cardiac conditions also are of same clinical

significance and should be dealt with high clinical acumen. So, this study was undertaken to interpret the importance of these indicators in the postoperative outcome of high risk parturient subjected to various surgical procedures.

Cardiovascular disease is the most frequent cause of maternal mortality, and the number is expected to grow in coming years, though it is associated with favorable outcome. Deaths from acquired heart disease appear to be increasing in past two decades. Mothers with pre-existing cardiac disease are at high risk and methods to predict poor outcome have been developed, but the tools for risk stratification need to be further refined in order to enhance the care that could be provided in these patients.

Cardiac medical conditions that can worsen the postoperative outcome are Valvular heart diseases, rheumatic heart disease, Congenital cyanotic or acyanotic heart diseases, peripartum cardiomyopathy, primary or secondary pulmonary hypertension and not common but difficult to manage is cardiac ischemia. Apart from this the mother could be having some common Non Cardiac medical conditions like morbid obesity, respiratory diseases, DM, renal disorders, certain hematological abnormalities, which are also frequently encountered in clinical practice. Maternal conditions like hypertensive disorders such as pre-eclampsia, eclampsia and HELLP syndrome, various embolisms during parturition and acute fatty liver of pregnancy are also having dreadful consequences if not managed timely.

Presence of either cardiac or non-cardiac condition in mother will affect on the course of pregnancy as well as peri-operative care. Evaluation of these high risk cases, proper planning of anesthesia care and provision of suitable postoperative care could make this challenging task easy.

This research is an attempt to categorize these high risk patients according the existing pathology and to analyze the outcome.

Materials and Methods:

This was a prospective study conducted at the Anesthesia department of Jawaharlal Nehru Medical College, Sawangi Meghe, Wardha after approval of institutional Ethics committee, from 1st of August 2013 to 1st of September 2014. The data was collected from history ,general

examination, investigations and peri-operative records of patients coming to obstetric procedures of this hospital. Total 108 patients belonging to ASA class III and IV posted for elective and emergency operations were involved and patients belonging to ASA I,II,V and above and cases done under local anesthesia were excluded from study.

The data was collected was demographic, indication for surgery, ASA classification, system affected, specific disease, anesthesia technique, duration of surgery and outcome.

Postoperative outcome of a patient was classified as

A) Grade I (Good): Patient shifted to recovery room after procedure.

B) Grade II (Fair): Patient shifted to ICU for monitoring

C) Grade III (Poor): Patient shifted to ICU for elective ventilation.

Short surgery was of less than 2 hours and long if lasted for more than 2 hours.

The patients were divided into two groups, CVS group (patients with cardiovascular disease) and Non CVS group (patients with other conditions).

This data was analyzed with Fischer's exact test and Chi-square test.

Observations and results:

During this study 108 ANC patients aged between 18 and 40 years were enrolled, the mean age was 27.5 years with a SD of 4.90 years. Table I shows that the majority of the patients were of 21-35 years age group. Out of 108 patients 37 (38%) cases were of CVS group, and in Non CVS group PIH was the most common disease noted(31 of 71 patients,43.7%). Rheumatic heart disease was the most common disorder in CVS group (65%) and others were essential hypertension and congenital heart disease (Table 2). Table 3 shows technique of anesthesia used in the care and GA was commonly used to induce. The table 4 shows that the majority of high risk cases had an uneventful outcome and was shifted to recovery for observations. Only 7% patients were shifted for elective ventilation and only 4% were admitted in ICU for monitoring. As per expectations, Cesarean section were accounted for the

majority of the i.e 58%, exploratory laparotomies were the next most common surgeries and more than half of which were for ruptured ectopic(9 of 17). Table 6 shows an overwhelming majority of cases were of short duration i.e 78%. Table 7 shows that in CVS group 46% of patients received GA, followed closely by 35% patients who received IV sedation and monitored anesthesia care, and 17% of them received regional anesthesia. In 97% of patients of CVS group postoperative outcome was of grade I showing a favorable course. However only 1 patient was sent to elective mechanical ventilation (Grade III) (Table 8). In Non CVS group 64% patients were given GA, 28% were administered regional and 8% patients had IV sedation or MAC (Table 9). The statistical test showed that the postoperative outcome was significantly better in CVS than NonCVS group p value of 0.0447, as shown in Table 10.

Table I: Age group

Age distribution	No. of patients
18-20	7
21-25	44
26-30	30
31-35	19
36-40	8

Table 2: Major systems involved

System	No. of patients
CVS	37
Others	71

Table 3: Types of anesthesia

Technique	No. of patients
GA	61
SAB/EA	28
MAC/IVS	19

Table 4: Postoperative outcome

Outcome	No. of patients
Grade I	96
Grade II	4
Grade III	8

Table5: Indication for surgery

Indication	No. Of Patients
Caesarean section	62
Exploratory laparotomies	17
Check curettage	9
MTP	7
Others	7
Suction evacuation	3
Vesicular mole evacuation	3

Table 6: Duration of surgery

Duration	No. of patients
Long (>=2hrs)	24
Short(< 2hrs)	84

Table 7: Anesthesia for CVS group

Anesthesia	No. of patients
GA	17
RA	7
IVS/MAC	13

Table 8: Postoperative outcome in CVS group

Outcome in CVS group	No. of patients
Grade I	36
Grade II	0
Grade III	1

Table 9: Anesthesia for Non-CVS group

Anesthesia	No. of patients
GA	45
RA	20
IVS/MAC	6

Table 10: postoperative outcome in NonCVS group

Outcome	No. of patients
Grade I	60
Grade II and III	11

Table 11: Comparison of postoperative outcome between CVS and Non CVS group

System	Outcome	
CVS	Grade I 36	Grade II ,III 1
NonCVS	60	11. p-0.0447

There was no significant effect of duration of surgery on the outcome of the patients (p=0.224).

In Non CVS group cases operated for ruptured ectopic had a significantly worse outcome compared to others as well as CVS group(p=0.006).

Lastly, postoperative outcome in the cases which were conducted under regional and IV sedation had better outcome compared to those who were administered GA.

Discussion:

The physiological changes in pregnancy makes anesthetic management very challenging itself, and, accepting very high risk cases even at tertiary care institute may turn out to be nightmare for the anesthesiologists.

The system most commonly involved is Cardiovascular system and is the most frequent cause of death even in developed nations and the number of pregnant patients with heart disease is expected to be growing in the coming years.¹ Though cardiac disease is a leading cause of mortality it is usually associated with favorable outcome. Deaths from acquired heart disease appears to be increasing in the past two decades.²

Pregnancy complicated by maternal heart disease has a general incidence of 0.5%.³ Common diseases encountered are rheumatic heart disease (RHD), congenital heart disease (CHD) and arrhythmias. Other diseases frequently encountered are pregnancy induced hypertension (PIH), bronchial asthma, diabetes mellitus (DM) and so on.

In present study we found that 34% (37 of 108 cases) of the high risk cases had cardiovascular involvement in some form, making it the leading cause of increased risk in such patients. The second most common was PIH (31 out of 108).

The overwhelming incidence of CVS and other diseases complicating pregnancy prompted us to conduct this study where we analyzed the predictors of outcome.

U.V Oka et al⁴ in their study on the pattern of ICU admission have shown that 50% of patients requiring ICU admission were affected with pre-eclampsia or eclampsia followed by obstetric hemorrhage (22.2%) ,in present study 28.7% patients were diagnosed to have PIH and outcome in Non CVS group was worse than of CVS group.

In another study conducted by Anna Rudnicki et al³ it was found that the indications for ICU admission was more of respiratory insufficiency (40%), however in our study only 3 patients had asthma and outcome was better.60% of the patients in the study done by Anna Rudnicki et al³ admitted were for non CVS cause and 18% had PIH which is consistent with finding in our study.

In the present study we found that ruptured ectopic gestation was the major indication of surgery and they required ICU care this is again is similar to the study done by Anna Rudnicki³, who noted 24% of their patients needed ICU cares for hemodynamic instability.

In our study we had 4 cases of CHD of which 2 had ASD, 1 was operated case of PDA and another was operated case

for TGA, VSD and pulmonary stenosis, the first 3 were given GA and last was provided MAC, all 4 patients had good outcome, Bhatia N et al⁵ had stated significant impact of corrections of these conditions on outcome.

In present study we also considered effect of duration of surgery on outcome which did not have any significant effect, and also on any correlation between techniques of anesthesia used.

Conclusion:

Thus we conclude from our study that all high risk cases coming for obstetric procedures including sever pregnancy induced hypertension and cases of ruptured ectopic along with other high risk predictors should be dealt at tertiary centers by experienced anesthesiologist equipped with modern ICU setup and intensive monitoring. The timely care and management of these patients can assure a good postoperative outcome.

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