Original Research Article

Management of Anesthesia in Pre-Eclamptic Patients with Covid 19 Infection

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Abstract: *Background:* Pregnant women with immunological and cardiopulmonary system abnormalities may experience more severe symptoms from respiratory virus infections. *Objectives:* The aim of this study was to assess the management of anesthesia in pre eclamptic patients with covid 19 infection. *Methods:* This cross-sectional descriptive study was carried out in the Department of Anaesthesia, Uttara Adhunik Medical College Hospital, during October 2020 to September 2021. A total of 50 pregnant women with pre-eclampsia and had positive polymerase chain reaction (PCR) test for COVID-19 with nasopharyngeal swabs were included in the study irrespective of age and patients who were not willing to participate were and who were clinically suspected (such as a clinical situation or travel history) but tested negative for COVID-19 excluded from this study. Statistical analyses of the results were be obtained by using window based Microsoft Excel and Statistical Packages for Social Sciences (SPSS-22), where required. *Results:* The mean age of the patients was 26± 2.0 years. 36% patients were within 26-31 weeks of gestational age, 40% patients were within 32-36 weeks of gestational age, 20% patients were within 37-42 weeks of gestational age, and only 4% had more than 42 weeks of gestational age. About 60% patients had mild pre-eclampsia and 40% had severe pre-eclampsia. 98% patients had given spinal anesthesia and 2% had given epidural type of anesthesia. The indication for caesarian section was 50% for severe pre-eclampsia, 25% for uterine rupture in pre-eclampsia and 25% for previous caesarean section. The mean Hemoglobin was 12.17 ± 1.70, mean Aspartate aminotransferase was 28.05 ± 21.11, mean Alanine aminotransferase, was 17.06 ± 12.98, mean Creatine was 0.68 ± 0.71, mean C-reactive protein was 2.10 ± 2.33 and mean D-Dimer was 3.00 ± 2.26. About 60% of the patients were fit to discharge within 4 days and 40% within 5 days. *Conclusion:* Preeclampsia as one of pregnancy related complications is a notable burden of adverse health. Regional anaesthesia is not considered to be prohibited by the diagnosis of COVID-19 alone. In conclusion, COVID-19-infected pregnant women should be managed by specialised teams in a multidisciplinary facility, and all medical personnel involved in the caesarean section should be careful to use Level-3 PPE equipment. Due to the increased risk of infection and morbidity in general anaesthesia in pregnant women with COVID-19, regional anaesthesia becomes more prevalent. We also noted that there is no umbilical chord transmission from mother to child.
Keywords: Preeclampsia, Anesthesia, COVID-19.

INTRODUCTION

The broad family of viruses known as coronaviruses (CoV) can result in anything from minor, self-limiting infections like the common cold to more severe infections, such as MERS, the Middle Eastern respiratory syndrome and SARS, or the severe acute respiratory syndrome. A novel CoV with the name SARS-CoV-2 that causes COVID-19 was discovered in China at the end of 2019. Due to the development of COVID-19 cases in 113 countries other than China, where the first pandemic occurred, the World Health Organisation (WHO) proclaimed this quickly spreading illness a global epidemic on March 11, 2020 [1]. Pregnant women with immunological and cardiopulmonary system abnormalities may experience more severe symptoms from respiratory virus infections [2]. Pregnant women made up roughly 1.0% of those with H1N1-subtype influenza-A infections and 5.0% of those who died from the virus in 2009 [3]. Although the overall SARS fatality rate was 10.5%, pregnant women were reported to have a mortality rate of 25.0% [4]. Serious problems during pregnancy, such as endotracheal intubation, intensive care unit (ICU) admission, renal failure, and mortality, were known to be caused by both SARS-CoV and MERS-CoV infections [4,5]. There is currently no evidence to suggest that pregnant women are particularly vulnerable to COVID-19 [6]. Furthermore, there is no concrete proof that SARS causes an intrauterine infection that results in a congenital disorder. Due to the small number of cases, it is still challenging to draw conclusions about this subject [7-9]. After 20 weeks of gestation, pre-eclampsia is defined as the combination of pregnancy-induced hypertension and proteinuria of greater than or equal to 300 mg/24 hours [10]. It is a serious pregnancy complication that has been found to affect 4-7% of all pregnancies and results in persistent foetal morbidity and mortality [10, 11]. Pre-eclampsia can potentially jeopardise the health of mothers by causing complications such as placental abruption, HELLP syndrome (haemolysis, high liver enzymes, low platelets), and eclampsia [10, 12]. In 2000, the developing nations accounted for about 98% of the more than 6.3 million perinatal fatalities that occurred worldwide [13]. Thus the aim of the study was to assess the management of anesthesia in pre eclamptic patients with covid 19 infection.

METHODOLOGY

This cross-sectional descriptive study was carried out in the Department of Anaesthesia, Uttara Adhunik Medical College Hospital, during October 2020 to September 2021. A total of 50 pregnant women with pre-eclampsia and had positive polymerase chain reaction (PCR) test for COVID-19 with nasopharyngeal swabs were included in the study irrespective of age and patients who were not willing to participate were and who were clinically suspected (such as a clinical situation or travel history) but tested negative for COVID-19 excluded from this study. There is a protocol for the prophylactic use of magnesium sulphate but because of costs and unavailability, diazepam is commonly used instead. For patients who can afford it, magnesium is given. Local guidelines for anaesthetic management of pre-eclampsia involve an initial assessment of the patient by the senior house officer or registrar who informs the senior registrar. The senior registrar may then decide to call the consultant in severe cases when he/she considers consultant intervention necessary. After taking consent and matching eligibility criteria, data were collected from patients on variables of interest using the predesigned structured questionnaire by interview, observation, clinical examination and hematological investigation of the patients. Statistical analyses of the results were be obtained by using window based Microsoft Excel and Statistical Packages for Social Sciences (SPSS-22), where required.

RESULT

Table-1: Distribution of the patients by gestational age, parity and age of the patents with pre-eclamptia

Gestational age	N=50	%
<26	0	0
26–31 weeks	18	36
32–36 weeks	20	40
37–42 weeks	10	20
>42 weeks	2	4
Age of Patients		
≤19	5	10
20–25	10	20
26–30	20	40
31–35	5	10
36–40	5	10
≥41	5	10

Mean Age ± (SD)	26± 2.0	
Parity		
Nulliparous	20	40
1	5	10
2	15	30
3	5	10
4	4	8
≥5	1	2

Table-1 shows that 36% patients were within 26-31 weeks of gestational age, 40% patients were within 32-36 weeks of gestational age, 20% patients were within 37-42 weeks of gestational age, and only 4% had more than 42 weeks of gestational age.

The mean age of the patients was 26± 2.0 years. 40% of the patients were aged between 26-30 years, 20% were between 20-25 years and 10% were aged between 31-35 and 36-40 respectively. Regarding parity 40% had nulliparous, 30% had 1, 8% had 4, and 10% had 1 and 3 parity respectively.

Table-2: Distribution of the patients by indication for caesarian section

	N=40	%
Severe pre-eclampsia	20	50
Uterine rupture in pre-eclampsia	10	25
Previous caesarean section	10	25

Table-2 shows that the indication for caesarian section was 50% for severe pre-eclampsia, 25% for uterine rupture in pre-eclampsia and 25% for previous caesarean section.

Figure-1 shows that 60% patients had mild pre-eclampsia and 40% had severe pre-eclampsia.
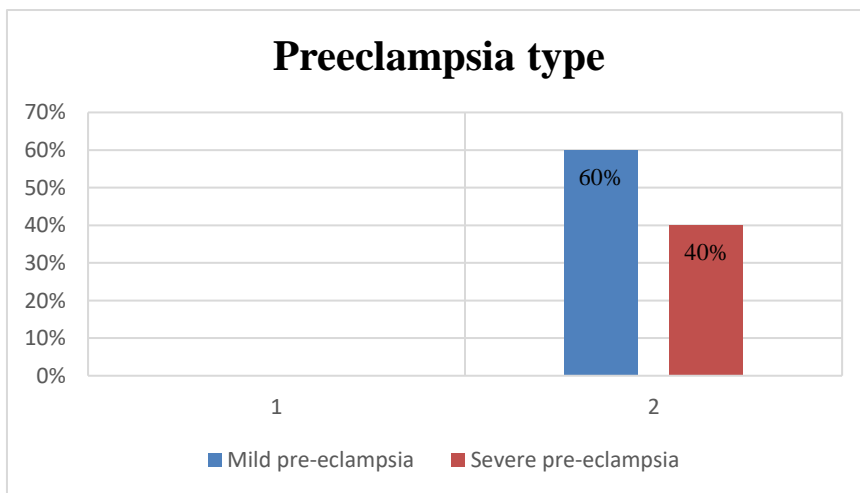

Figure-1: Distribution of the patients by type of pre-eclamsia

Table-3: Distribution of the patients by total deliveries, number of live and still birth, number of c-section and normal vagainal delivery

	N=50	%
Total number of live births	48	96
Total number stillbirth	2	4
Total number of C-section	40	80
Total number of normal delivery	10	20

Table-3 shows that live births was 96%, stillbirth was 4%, C-section was 80% and normal vagainal delivery was 20%

Table-4: Distribution of the patients by results of the laboratory analysis

Laboratory findings	N=50
Hemoglobin, g/dL	12.17 ± 1.70
Aspartate aminotransferase, U/L	28.05 ± 21.11
Alanine aminotransferase, U/L	17.06 ± 12.98
Creatine, mg/dL	0.68 ± 0.71
C-reactive protein, mg/dL	2.10 ± 2.33
D-Dimer, ng/mL	3.00 ± 2.26

Here, the mean Hemoglobin was 12.17 ± 1.70, mean Aspartate aminotransferase was 28.05 ± 21.11, mean Alanine aminotransferase, was 17.06 ± 12.98, mean Creatine was 0.68 ± 0.71, mean C-reactive protein was 2.10 ± 2.33 and mean D-Dimer was 3.00 ± 2.26.

Figure -2 shows that 98% patients had given spinal anesthesia and 2% had given epidural type of anesthesia.
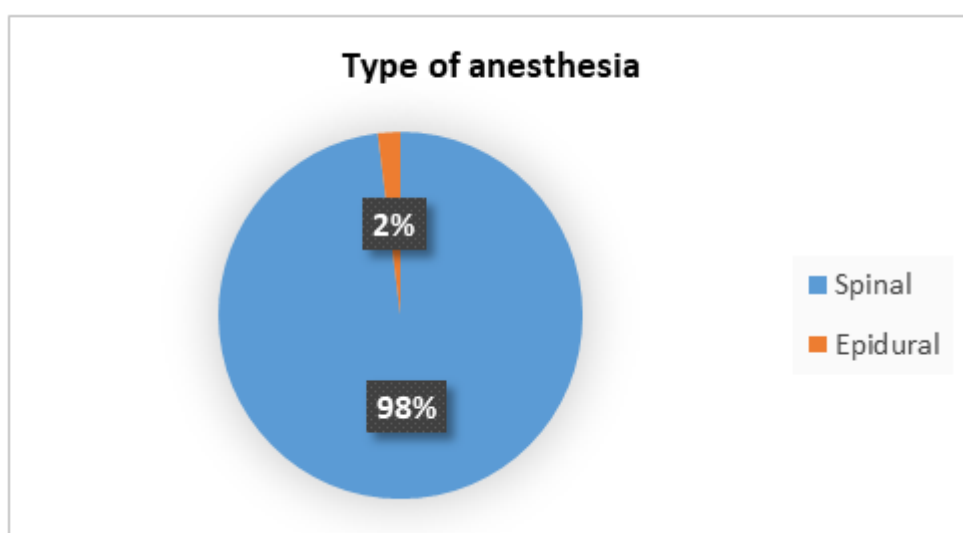

Figure-2: Distribution of the patients by type of anesthesia given

Table-5: Distribution of the patients by out come

Outcome	N=50	%
Discharged within 4 days	30	60
Discharged within 5 days	20	40

Table-5 show that 60% of the patients were fit to discharge within 4 days and 40% within 5 days.

DISCUSSION
A total of 50 parturients clinically suspected for COVID-19 were evaluated. The mean age of the patients was 26± 2.0 years. 40% of the patients were aged between 26-30 years, 20% were between 20-25 years and 10% were aged between 31-35 and 36-40 respectively. Regarding parity 40% had nulliparous, 30% had 1, 8% had 4, and 10% had 1 and 3 parity respectively. gestational age, 20% patients were within 37-42 weeks of gestational age, and only 4% had more than 42 weeks of gestational age. This findings are almost similar with an article by Okafor *et al.,* [14]. We believe that anaesthesia can be applied to COVID-19 positive obstetric patients successfully and safely. In this current study indication for caesarian section was 50% for severe pre-eclampsia, 25% for uterine rupture in pre-eclampsia and 25% for previous caesarean section. A previous study said Cesarean section rates were significantly higher in the group with preeclampsia than in the control group ($p < 0.05$) [15]. In our study live births was 96%, stillbirth was 4%, C-section was 80% and normal vagainal delivery was 20%. Another study shwed that in the preeclamptic women undergoing vaginal delivery, 31% of them underwent induction of labor [15]. Our study shows that 60% patients had mild pre-eclampsia and 40% had severe pre-eclampsia. Here, 98% patients had given spinal anesthesia and 2% had given epidural type if anesthesia. Chen *et al.,* applied general anesthesia to three of 17 COVID-19 positive patients

undergoing cesarean section, and the remaining 14 patients received epidural anesthesia [16]. A review of the literature showed that most obstetric patients were asymptomatic at the time of admission or had COVID-19-like symptoms (fatigue, muscle pain, shortness of breath, congestion, etc.), which can be easily confused with common pregnancy symptoms [17-19]. Here, the mean Hemoglobin was 12.17 ± 1.70, mean Aspartate aminotransferase was 28.05 ± 21.11, mean Alanine aminotransferase, was 17.06 ± 12.98, mean Creatine was 0.68 ± 0.71, mean C-reactive protein was 2.10 ± 2.33 and mean D-Dimer was 3.00 ± 2.26. In this study, 68.9% of our COVID-19 positive patients included were asymptomatic. In our study 60% of the patients were fit to discharge within 4 days and 40% within 5 days.

CONCLUSION AND RECOMMENDATION

Regional anaesthesia is not considered to be prohibited by the diagnosis of COVID-19 alone. In conclusion, COVID-19-infected pregnant women should be managed by specialised teams in a multidisciplinary facility, and all medical personnel involved in the caesarean section should be careful to use Level-3 PPE equipment. Due to the increased risk of infection and morbidity in general anaesthesia in pregnant women with COVID-19, regional anaesthesia becomes more prevalent. We also noted that there is no umbilical chord transmission from mother to child.

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