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Describe the Relationship between Anesthesia and Pre-Eclampsia in Iraqi Women

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Abstract: **Background:** Preeclampsia is one of the most common emergencies faced by anesthesiologists as the definition, etiology, and pathophysiology are discussed, and eclampsia is often a difficult situation in our daily anesthesia practice. **Objective:** this research aims to Describe the relationship between anesthesia and pre-eclampsia in Iraqi women. **Material and method:** In this study, 100 pre-eclampsia for women patients who agreed to participate in the study were recruited. An observational, descriptive, and retrospective study on patients with pre-eclampsia in Iraqi women was conducted with data collected from several different hospitals in Iraq from Jun 2020 to September 2021. A questionnaire was designed by experts from anaesthesia on patients who pre-eclampsia Group of the Ministry of Public Health, and a database was created using Microsoft Access, statistical analysis was performed using IBM SOFT SPSS 22 for Windows, and the final document was prepared with Microsoft Office package. **Results:** the result which found in this study was 100 patients collected and distributed for two groups (alive 80 patients, death 20 patients) with aged between 20 to 55 years. In this study, the Aldrete Score was relied upon for the purpose of measuring recovery after anesthesia, which includes measuring consciousness, activity, breathing, and blood pressure. Weak results were found in the dead group, where was found a statistically significant relationship of 0.042. **Conclusion:** We conclude from this study that low blood pressure and lack of oxygen affect the regularity of the heartbeat, which accelerates the heart rate during pregnancy and childbirth, which accelerates the death of the patient.

Keywords: Anesthesia, ASA, Pre-eclampsia, Chronic high blood pressure.

INTRODUCTION

During pregnancy, arterial hypertension is considered to be present when systolic, and diastolic pressure values are greater than 140/90 mm Hg. Pregnancy-induced hypertension (pre-eclampsia) is indicated when these blood pressure values occur in previously hypertensive patients after 20 weeks and are recorded in 3 or more daily records, separated by more than 6 hours. [Cunningham, F.G. *et al*., 2010; Kaplan, P.W. *et al*., 1994; Sibai, B.M. *et al*., 1992]

Preeclampsia is a worldwide disease related to pregnancy. Patients with it may require anesthesia for various reasons, including serious complications. [Sibai, B.M. *et al*., 1990] Preeclampsia is a very common disease in pregnancy all over the world. Patients with this condition may need anesthesia for a variety of reasons, including serious complications. [Boxer, L.M. *et al*., 1997] The disease is also an important contributor to perinatal morbidity and mortality as a consequence of chronic uterine placental insufficiency generated by pre-eclampsia and prematurity, which often occurs. [Barton, J.R. *et al*., 1991; Mattar, F. *et al*., 2000]

Preeclampsia (PE) is traditionally considered a disease of nulliparous women since it is rare in multiparous women, especially if it has not occurred in previous pregnancies. Oddly enough, that protective factor that pluralism seems to exert disappears when the new couple is the father of a new child. [Moodley, J. *et al*., 1993; ETCG, 1995; NIHCE, 2010] For this reason, it would seem more accurate to call pre-eclampsia the first disease of parenthood. [Saklad, M, 1941]

Other risk factors include age, family history of pre-eclampsia in first-degree relatives, chronic high blood pressure, obesity, chronic kidney disease, diabetes, twin pregnancies, and antiphospholipid syndrome. [Dripps, R.D. *et al*., 1961; Dripps, R.D, 1963]

A disease that frequently affects pregnant women and affects 2-8% of pregnancies. Clinically, the diagnostic criteria are systolic blood pressure >140 mm Hg or diastolic blood pressure >90 mm Hg, measured on two occasions 4 hours apart. These symptoms can appear from the 20th week of pregnancy and last up to 12 weeks after delivery; It can also appear before 20 weeks in patients who had chronic high blood pressure before pregnancy.

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[Abouleish, A.E. *et al*., 2015] Elevated blood pressure rates are usually associated with proteinuria >300 mg/day, determined by proteinuria within 24 hours; Pre-eclampsia can also be diagnosed clinically (1-4). Appropriate sedation approach for a patient with pre-eclampsia includes a comprehensive pre-anesthesia assessment, both preclinical and clinical, [Hurtwitz, E.E. *et al*., 2017] as well as a careful intraoperative approach with regard to fluid management and disease-induced changes in the pharmacokinetics and pharmacodynamics of commonly used anesthetic drugs. Managing a postpartum hypertensive crisis can be a management challenge for an anesthetist, particularly when it occurs at the post-anesthesia recovery unit level. [Mayhew, D. *et al*., 2019]

Pregnancy-induced hypertension occurs in 5 to 10% of pregnancies. This disease constitutes one of the main medical problems in obstetrics, anesthesiology, and pediatrics, being in our environment, one of the most common causes of fetal and maternal morbidity and mortality. According to the data of the Ministry of Health and Social Action of the Argentine Republic, in 1998, hypertension accounted for 15% of the causes of maternal death. In Uruguay, according to the Department of Statistics of the Ministry of Public Health, it was 20% in the same year. Similarly, in the United States, hypertensive diseases of pregnancy are the second leading cause of maternal death in advanced pregnancy 1–3. A similar pattern occurs in the United Kingdom of Great Britain, where the most recent confidential survey (199,496) revealed that 15% (20/134) of all direct maternal deaths from obstetric causes were related to the hypertensive disease. [Leahy, I. *et al*., 2019]

This paper aims to Describe the relationship between anesthesia and pre-eclampsia in Iraqi women.

MATERIAL AND METHOD

COLLECTION SAMPLE

An observational, descriptive, and retrospective study on patients with pre-eclampsia in Iraqi women was conducted with data collected from several different hospitals in Iraq from Jun 2020 to September 2021.

In this study, 100 pre-eclampsia for women patients who agreed to participate in the study were recruited.

METHOD

A specific questionnaire was applied to 100 patients between the ages of 20 and 55 from June 2020 to September 2021. Several different hospitals.

Exclusion criteria included patients with a history of pre-eclampsia in Iraqi women whose partner was diagnosed as anesthetized. Additionally, this study applies to females.

This study was divided according to the results of the dead and alive patients, as it was built based on age, weight, diseases, economic level, and ASA classification.

STATISTICAL ANALYSIS

A questionnaire was designed by experts from anaesthesia on patients who pre-eclampsia Group of the Ministry of Public Health, and a database was created using Microsoft Access, statistical analysis was performed using IBM SOFT SPSS 22 for Windows, and the final document was prepared with Microsoft Office package.

To determine the factors associated with anaesthesia on patients who pre-eclampsia in Iraqi women for patients, monodispersal logistic regression was used as a statistical method.

ETHICAL APPROVAL

Ethical and scientific rules have been considered to collect patient demographic data and information that are based on internationally accepted guidelines to preserve the rights, safety, and health of patients participating in this study. The autonomy of the patient and consent to provide the requested information, as well as the confidentiality of personal data, were also respected.

To apply the techniques and methodological procedures, permission and approval were received from the implementing authorities for the purpose of create this study.

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RESULTS

Table 1: Characterises demographic results of patients

Variables	Death (N=20)	Alive (N=80)	P-value
Age, N (%)			
20-34	10 (50%)	40 (50%)	0.0487
35-44	6 (30%)	25 (31.25%)	0.0492
45-55	4 (20%)	15 (18.75%)	0.047
BMI, %			
20-34	7 (35%)	21 (26.25%)	0.036
36-44	9 (45%)	47 (58.75%)	0.042
46-55	4 (20%)	12 (15%)	0.046
Comorbidities			
Chronic high blood pressure	5 (25%)	14 (17.5%)	0.046
Obesity	6 (30%)	35 (43.75%)	0.042
Chronic kidney disease	3 (15%)	10 (12.5%)	0.049
Diabetes	2 (10%)	9 (11.25%)	0.024
Pregnancy in twins	4 (20%)	12 (15%)	0.048
ASA%			
I	7 (35%)	26 (32.5%)	0.05
II	8 (40%)	32 (40%)	0.051
III	5 (25%)	22 (27.5%)	0.0499
Economic level			
low	7 (35%)	31 (38.75%)	0.0474
Moderate	8 (40%)	34 (42.5%)	0.048
High	5 (25%)	15 (18.7%)	0.0376

Table 2: Distributions of Patients according to Intraoperative complications

Variables	Death (N=20)	Alive (N=80)	P-Value
Voltage thrust	6 (30%)	33 (41.25%)	0.026
Hypotension	3 (15%)	16 (20%)	0.049
Tachycardia	4 (20%)	13 (16.25%)	0.048
Bradycardia	2 (10%)	5 (6.25%)	0.0465
Aldrete Score	5 (25%)	13 (16.25%)	0.038

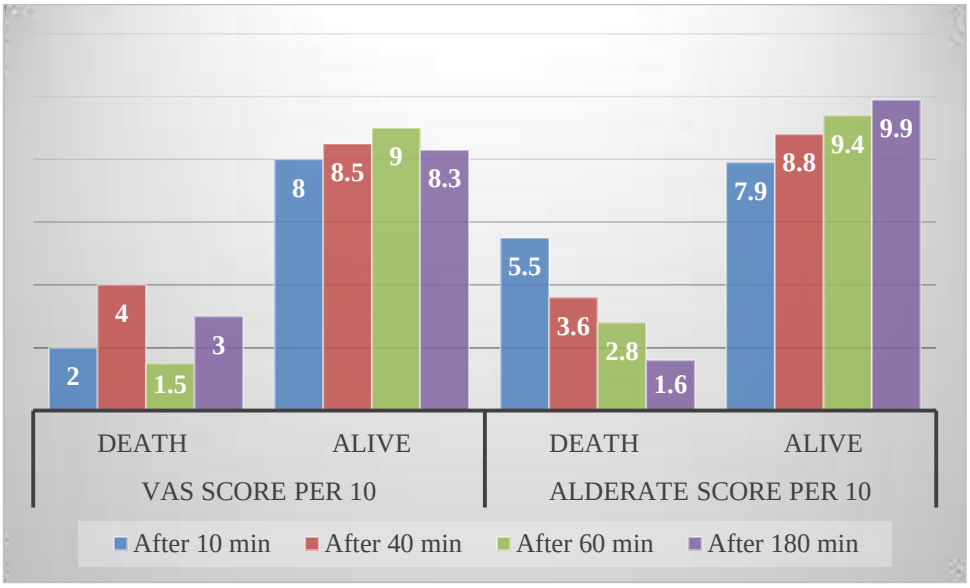

Fig 1: Patients VAS and Aldrete Score

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Table 3: Logistic regression for a patient-risk factors analysis

Risk factors	Death	Alive	P-value
Age			
20-34	0.86 (0.7-1.1)	0.78 (0.6-1.0)	0.66
35-44	1.12 (0.86-1.2)	1.2 (0.7-1.2)	0.98
45-55	1.22 (0.98-1.66)	1.3 (1.0-1.5)	0.075
Chronic high blood pressure	2.66 (1.9-5.5)	1.87 (1.4-2.5)	0.026
Diabetes	1.56 (1.1-2.4)	1.44 (1.1-1.8)	0.01
Chronic kidney disease	5.4 (3.1-8.9)	1.3 (0.9-1.8)	0.04
Hypotension	5.3 (3.1-8.9)	1.6 (0.9-1.8)	0.042

Table 4: Estimation the correlation of outcomes with a case of patient

Variable	*Outcomes*	*Death*	*Alive*
R correlation	***1/0***	***+0.67***	***-0.22***
Sig	--	**0.042**	***0.7***
N		**100**	

DISCUSSION

In this study, 100 patients in Iraq were collected and distributed according to the anesthesia on patients who pre-eclampsia of Iraqi women that include death 20 and 80 alive), and the average age in this study ranged between 20-55 years.

The most frequent ages in this study were from 20-44 for 100, where the death cases are 16, and alive cases are 65. According to BMI percentage, the patients range between 36-44 in the percentage of 9 (45%) for death and 47 (58.75%) for alive patients.

The study revealed a high body mass index for women over the age of 40 years; 32 women were diagnosed from a 35% to 45% percentage of death patients' group 20-44 kg/m2.

The study also revealed the presence of ASA of patients under anesthesia consists of I 7 (35%), II 8 (40%), III 5 (25%) for death patients while I 26 (32.5%), II 32 (40%), III 22 (27.5%) as shown in Table 1.

This study is of great importance both in the clinical practical field and in the theoretical field because, thanks to this, we have a better view of the determinants that may be associated with anesthesia.

A significant association was found in anesthesia with pre-eclampsia of women over 22 years of age, a finding like the studies of Robert. [Ferrari, L.R. *et al*., 2020]

Katia CR 2010, who also found an association between the anesthesia of patients with pre-eclampsia were determined that 75% of patients of pre-eclampsia under anesthesia who between the ages of 22 and 55 are the struggle of pain after surgery which effect on the fetus pregnancy which causes death for a woman and her child. [Ferrari, L. *et al*., 2021]

In the same way, Emre and Symon determined that age was a risk factor associated with Anastasia during surgery of pre-eclampsia with a value of $p<0.05$. [Davenport, D.L. *et al*., 2006]

An observational study of 70 patients in the municipality of the United States determined that more than half of them had dead.

Another recent study conducted in Las Tunas County identified a high rate of death in anesthesia of women.

CONCLUSION

The anesthesia approach aims to provide behaviours that maintain the integrity of the mother-child pairing, which is why an appropriate pre-anesthesia assessment and early anesthesia approach is essential to prevent complications. Obstetric analgesia techniques can provide an improvement in hemodynamic pattern, including improvement in blood pressure numbers. Despite the ingenuity of anesthesia in recent years, anesthesia of patients with Bouaké reflux remains difficult. It is a delicate anesthesia that is performed urgently in health facilities with a limited technical platform. The method of anesthesia is general anesthesia.

So far as to the results most closely related between fetus and mother, The long-term effects of types of anesthesia on the cognitive function of a young boy are not known. When general anesthesia is used, this should be considered prior to airway difficulty, and the risk of aspiration from

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the pregnant woman as analgesia must be administered for the postpartum period, and consideration may be given to the multi-organ disorders that may present in the setting of hypertensive disorder especially in these patients causing acute pre-eclampsia during anesthesia.

The closed-type anesthesia approach aims to provide patient safety behaviors and lower pain scores than the closed-type, which is why appropriate pre-anesthesia assessment and an early anesthesia approach are essential to prevent complications. Closed-type techniques can provide an improvement in the circulatory pattern, including an improvement in blood pressure numbers.

Regarding outcomes most closely associated with closed type and hemorrhoids, The long-term effects of anesthetics on a patient's cognitive function are not known. When using general or specific anesthesia, this should be taken into account the high blood pressure, especially in those patients whose hemorrhoids are large for some patients during anesthesia.

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