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EFFECTIVENESS OF HYDRALAZINE IN DECREASING THE BLOOD PRESSURE IN CASE OF SEVERE HYPERTENSION DURING PREGNANCY PERIOD

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Abstract:

Objectives: *This research work aimed to determine the protection and effectiveness of hydralazine in decreasing the BP (Blood Pressure) in case of severe HTN (Hypertension) in the duration of pregnancy.* ***Methodology:*** *In this research work, the inclusion of the pregnant patients with SBP (Systolic Blood Pressure) of 160.0 mmHg or greater and DBP (Diastolic Blood Pressure) 109.0 mmHg present with eclampsia and in emergency condition of HTN carried out. The starting hydralazine dose was 5.0 milligrams IV bolus then repeated one milligram at an interval of twenty minutes. The measures of the outcome to start the therapy were, SBP, DBP, duration needed to achieve desired level of BP, requirement of total dose, side effects of medicines and feto-maternal outcomes regarding safety and effectiveness of the used medicine.*

Results: *Total 110 patients suffering from eclampsia and HTN emergencies were the participants of this research work. The average age of the mothers was 26.70 ± 6.70 with a range from 18 to 45 years. Before the start of the treatment SBP was 165.50 ± 16.65 mmHg, and DBP was 115.44 ± 8.25 mmHg. After the start of the treatment, an important difference (P = < 0.0010) was detected with decrease in SBP 131.20 ± 9.49 mmHg and in DBP as 93.680 ± 6.30 mmHg. In 85.50% (n: 94) patients, sixty minutes were taken by IV bolus hydralazine, however, in 2.70% (n: 3) patients, there was requirement of more than three hours to control BP. The total dose of medicine needed was less than six milligram in 38.40% (n: 40) patients, 6.0 to 14.0 milligrams in 40.0% (n: 44) patients and in 15.50% (n: 17) patients, 15.0 to 20.0 milligrams dose was the requirement to control BP. Only 8.18% (n: 9) patients required medicine between 21.0 to 30.0 milligrams IV bolus hydralazine.*

Conclusion: *Hydralazine is much secure and effectual drug to control the BP in severe HTN in the duration of pregnancy as well as after delivery.*

KEY WORDS: *Mortality, hydralazine, HTN, milligrams, mmHg, BP, SBP, DBP, eclampsia, methodology.*

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INTRODUCTION:

HTN in the duration of pregnancy period is most important cause of high rate of morbidity as well as mortality. Control of BP of mothers and maintenance of the BP of placenta are important aims of this therapy. There is need of anti-hypertensive therapy in the duration of pregnancy to protect the females from the disasters of severe condition of HTN. The most severe complication in cerebral hemorrhage in the patients of eclampsia [1]. Medicines utilized in high level of BP are labetalol and hydralazine. Hydralazine is the standard treatment for the administration of HTN emergencies making the pregnancies more complicated. Parenteral hydralazine can be used for administration of the severe HTN when there decrease in BP.

Normal starting adult IV dose of this drug hydralazine is a bolus dose from 5.0 to 10.0 milligrams followed by the IV doses of 5.0 to 10.0 mg with a range from 5.0 to 20.0 mg every twenty to thirty minutes and when necessary to obtain a decrease in BP. It can be increase to forty milligrams per dose. There should be a close monitoring of the BP after employing the hydralazine [2]. Hypotensive impact starts within 5 to twenty minutes, maximum in ten to eighty minutes and it last for two to six hours. Approximately 85.0% to 87.0% hydralazine has bound with the plasma protein. Its metabolism carried out in gastrointestinal mucosa and liver and it got rapid excretion in urine. Breast milk and placenta are crossed by it [3].

METHODOLOGY:

This research work carried out in Obstetric Department of Jinnah Hospital, Lahore for a duration of complete one year from January 2019 to December 2019. There were total 2742 admissions in obstetrics, among total admissions, only 4.0% (n: 110) patients were present with HTN emergencies or eclampsia in the duration of ante-partum, intra-partum and post-partum periods. All these patients got admission through emergency department and outpatient department. We took the verbal consent of the patients after taking detailed past history and complete physical examination. Regardless of age and number of parity, the inclusion of all the patients present with SBP of 160.0 mmHg or above, DBP of 109 mmHg or more carried out in this research work. We defined the HTN emergency as sustained SBP of greater than 170.0 mmHg or DBP greater than 115.0 mmHg on repeated calculations at fifteen minutes apart. A senior doctor gave the dose of hydralazine, stating dose was five milligrams IV bolus state then one milligram at interval of twenty minutes until there was achievement of desired level of BP.

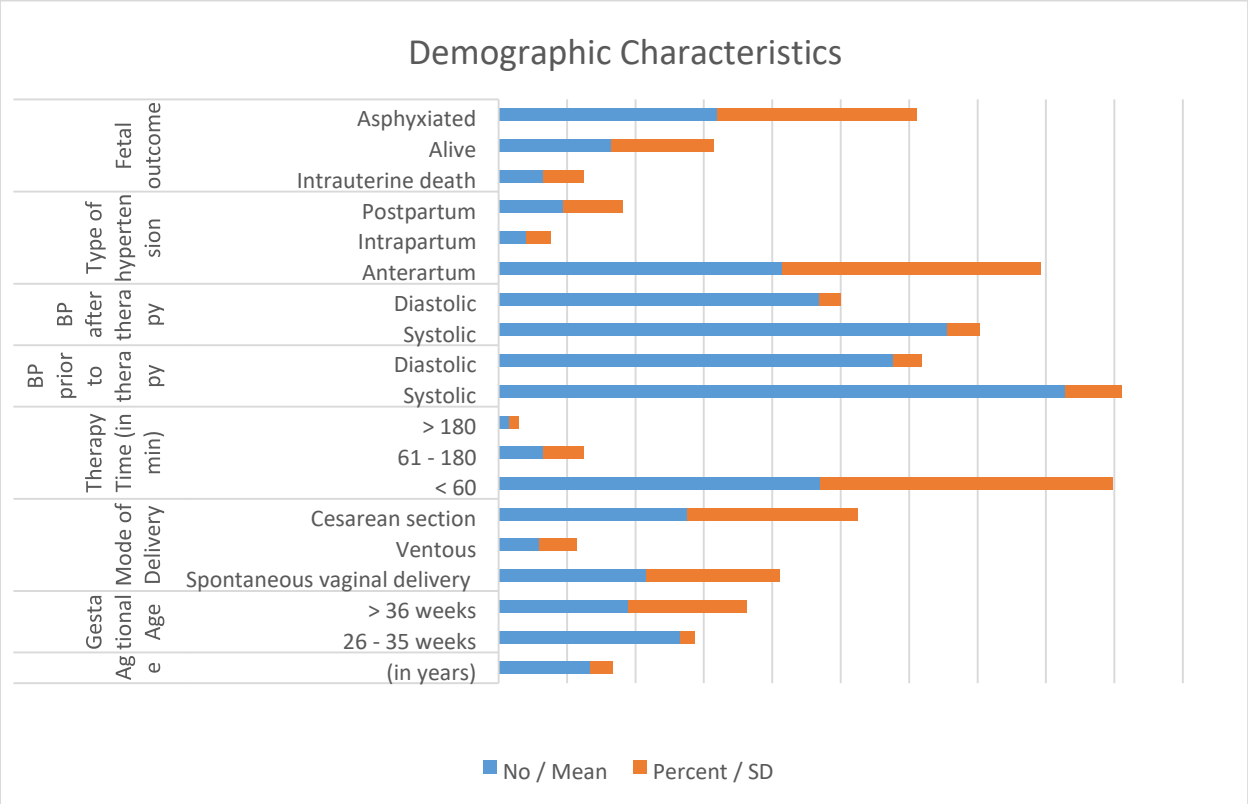
The monitoring of the patients carried out by recording the BP, heart rate and present side effects. The monitoring of the fetal carried out by the clinical recording of the sounds of fetal heart & CTG. The final outcome measures were measurement of SBP and DBP before and after treatment, side effects, time required to achieve normal level of BP and feto-maternal outcome. We recorded all the information on a well-organized Performa. SPSS V. 20 was in use for the statistical analysis of the collected information. We presented the qualitative data in percentages and we presented the categorical data in averages and standard deviations. We used the Student T test for the comparison of the average values of SBP and DBP before and after treatment. P value of less than 0.050 was significant one.

RESULTS:

In the duration of this research work, there were total 2742 admission in Obstetric Department. Total 110 females were present with the HTN emergencies or eclampsia. The prevalence of this complication was more common in the younger reproductive age with an average age of 26.7 ± 6.7 with a range from 18 to 45 years. Total 41.80% (n: 53) patients appeared between 26-35 gestational week, 34.50% (n: 38) patients appeared at higher than 36th gestational week and 17.20% (n: 19) were present with post-partum eclampsia, so the rate of occurrence of severe HTN was very high in the duration of ante-partum and intra-partum. Out of total one hundred and ten females, 50% (n: 55) females delivered child by CS (Cesarean Section) and by normal delivery through vagina (Table-1). Before the start of the treatment, the average SBP was 165.50 ± 16.65 mmHg and DBP was 115.450 ± 8.250 mmHg.

Table-I: Demographic details of the patients (n = 110)

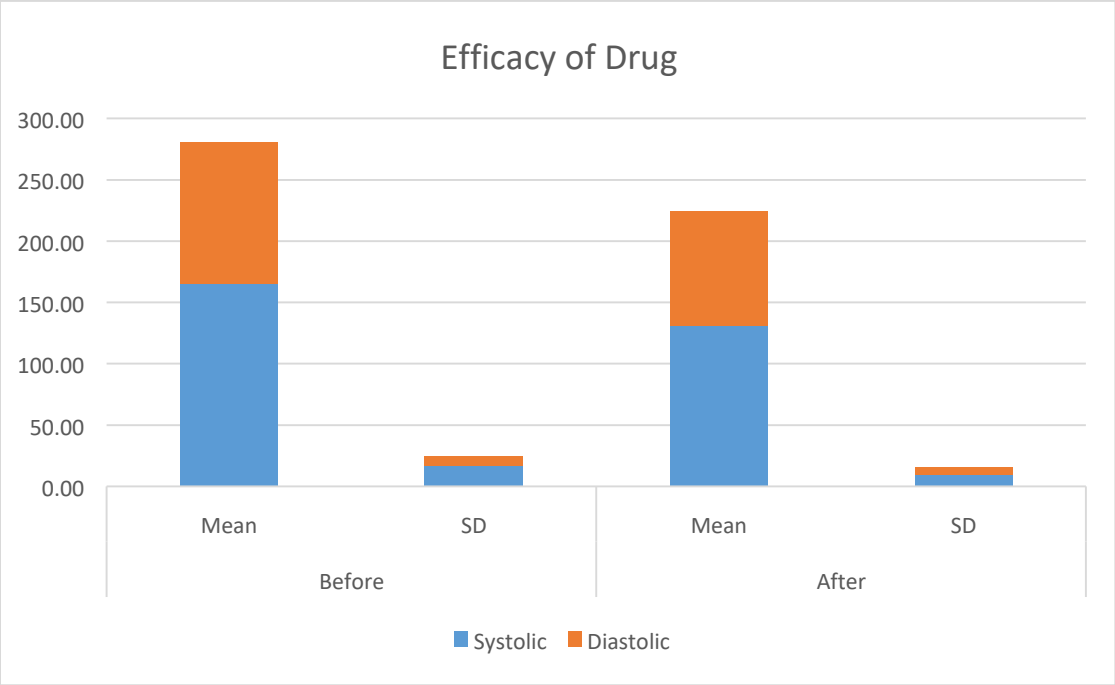
Parameters		No / Mean	Percent / SD	Range
Age	(in years)	26.7	6.70	(18 - 45)
Gestational Age	26 - 35 weeks	53.0	4.18	-
	> 36 weeks	38.0	34.50	-
Mode of Delivery	Spontaneous vaginal	43.0	39.10	-
	Ventousdelivery e	12.0	10.90	-
	Cesarean section	55.0	50.00	-
Therapy Time (in min)	< 60	94.0	85.50	-
	61 - 180	13.0	11.80	-
	> 180	3.0	2.70	-
BP prior to therapy	Systolic	165.5	16.65	(140-240)
	Diastolic	115.5	8.25	(105 - 150)
BP after therapy	Systolic	131.2	9.49	(110-160)
	Diastolic	93.7	6.30	(80 - 110)
Type of hypertension	Antepartum	83.0	75.50	-
	Intrapartum	8.0	7.30	-
	Postpartum	19.0	17.30	-
Fetal outcome	Intrauterine death	13.0	11.80	-
	Alive	33.0	30.00	-
	Asphyxiated	64.0	58.20	-



After providing the IV bolus hydralazine, average decrease in SBP was 131.20 ± 9.49 and DBP was 93.680 ± 6.30 mmHg with high difference significantly (P= < 0.0010) (Table-2).

Table-II: Efficacy of drug (n = 110)

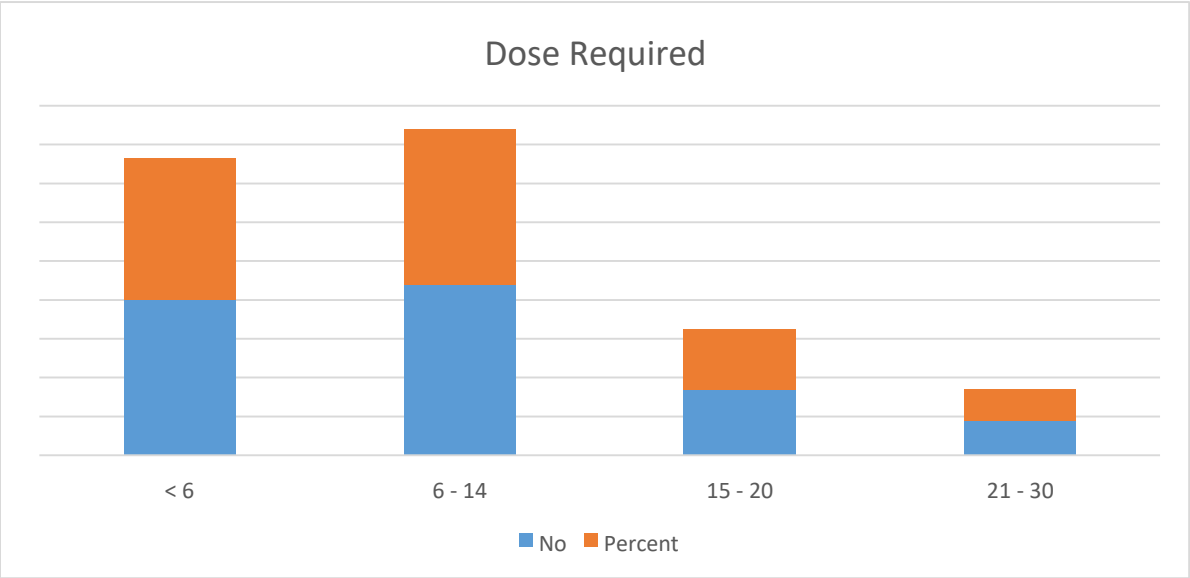
Blood Pressure:	Before		Aft er		P value
	Mean	SD	Mean	SD	
Systolic	165.50	16.65	131.20	9.49	< 0.0010*
Diastolic	115.40	8.25	93.60	6.30	< 0.0010*



The required time to control the BP was less than sixty minutes in 85.50% (n: 94) patients and 11.80% (n: 13) patients took sixty minutes to one hundred and eighty minutes to give proper response, however, 2.70% (n: 3) patients took more than three hours to obtain the desired level of BP (Table-1). For 36.40% (n: 40) patients, less than six milligrams hydralazine dose was effective, in 40.0% (n: 44) females, there was requirement of 6.0 to 14.0 milligrams medicine to control BP. Only 8.18% (n: 9) females needed the dose from 21.0 to 30.0 milligrams. There was no side effect of hydralazine. There were only few patients who complained about the headache. Only three patients gave no response to the treatment and switched over to other treatment method (Table-3).

Table-III: Total dose required (n = 110)

Dose (in Mg)	No	Percent
< 6	40.0	36.40
6 - 14	44.0	40.00
15 - 20	17.0	15.50
21 - 30	9.0	8.10



Concerning outcome of fetal in this research work, 58.20% (n: 64) babies were delivered with Apgar score of less than 6, 30.0% (n: 33) babies were alive and 11.80% (n: 13) babies were dead at time of birth (Table-1).

DISCUSSION:

IV hydralazine is wide in use for the treatment of severe HTN in the duration of pregnancy period. The main benefits of this drug are no bad impacts on fetal growth, easy administration and easily affordable [4]. In on research work conducted by Paterson-Brown in three different hospitals of United Kingdom, total 70 females obtained IV bolus hydralazine and the decrease in the average pressure in arteries was 12.0 mmHg after first bolus dose [2]. Mosammat Rasheed in his research work conducted in Bangladesh stated that out of total seventy seven patients, 57.10% (n: 44) patients obtained IV bolus hydralazine and treatment failure was nil [5].

The highest dose, we utilized was up to 30.0 milligrams, the dose from 5.0 to 20.0 milligrams was effective in 91.0% patients out of total one hundred and ten patients. Only nine females out of total one hundred and ten patients required dose of 20.0 to 30.0 milligrams. Same findings were the outcome of the research work by Mabie WC who gave comparison of labetalol with the hydralazine. In this current research work, hydralazine decreased the average BP of arteries greater than did by labetalol 33.30 ± 13.20 versus 25.50 ± 11.20 mmHg [6]. A research work carried out on forty other diagnosed patients of eclampsia at one hospital of Lahore, compared the IV bolus hydralazine with the continuous drip of same drug. They concluded that 60.0% to 70.0% less duration of time was needed and 37.50% to 50.0% less quantity of drug was used in bolus IV hydralazine vs continuous drip of hydralazine [7].

CONCLUSION:

The results of this research work showed that IV bolus hydralazine can be much secure and effectual among patients suffering from severe HTN in the complete duration of pregnancy and after child birth. This is easily available and affordable. With the utilization of this medicine, we can decrease the high rate of morbidity as well as mortality associated with the severe HTN with minimum number of side effects.

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