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Research Article

**A COMPARATIVE STUDY TO ASSESS THE WELLBEING AND VIABILITY OF HYDRALAZINE PROFILE ALONG WITH GLYCERYL TRINITRATE AMONG FEMALES DIAGNOSED WITH SEVERE ECLAMPSIA & PRE-ECLAMPSIA**<sup>1</sup>Dr. Muhammad Arslan Arshad, <sup>2</sup>Dr Sadaf Aziz, <sup>3</sup>Dr Zehra Hasnain<sup>1</sup>House Officer, Mayo Hospital, Lahore, <sup>2</sup>Punjab Medical College Faisalabad, <sup>3</sup>Southwest Medical University, Sichuan, China.

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**Abstract:**

**Background:** Hypertension amid pregnancy is a typical ailment around the world, happening in 12-22% everything being equal. In the created world, the occurrence of hypertension and the seriousness of its intricacies are diminished extraordinarily, due to the successful and broad antenatal consideration administrations. In any case, hypertension still stays one of driving reason for maternal horribleness and mortality in creating.

**Objectives:** To think about the viability and wellbeing profile of hydralazine with glyceryl trinitrate (GTN) in ladies with extreme pre-eclampsia and eclampsia

**Patients and Method:** This semi trial consider was directed in Jinnah Hospital, Lahore from February 2017 to March 2018. A total of 100 patients were incorporated into this investigation. 50 patients were given hydralazine and 50 patients got Nitroglycerine.

**Results:** In groups A and B, the mean age was  $26.8 \pm 5.6$  and  $25.4 \pm 4.8$ , individually. In the two groups, the systolic and diastolic blood weights of patients were not essentially quite the same as one another. Meantime expected to accomplish powerful circulatory strain control in group A (hydralazine) was  $31.0 \pm 13.9$  minutes and in group B (GTN) was  $23.0 \pm 20.3$  minutes. Time interim between successful circulatory strain control and new hypertensive emergency was fundamentally drawn out in group A ( $96.1 \pm 27.2$  Vs  $73.8 \pm 18.1$ ,  $P < 0.05$ )

**Conclusion:** GTN sets aside less effort for powerful control of circulatory strain than hydralazine and wellbeing profile is practically identical with hydralazine

**Keywords:** Severe Pre-Eclampsia, Eclampsia, Hydralazine, GTN.

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## INTRODUCTION:

Hypertensive issue happens in 6-8% all things considered and are the second driving reason for maternal passing and add to critical neonatal dreariness and mortality [1]. Hypertension in pregnancy is characterized as one diastolic circulatory strain (B.P) perusing of in any event 110mmHg or two continuous diastolic pulse readings of at least 90mmHg, not <4 hours separated following 20 weeks of pregnancy [2].

The frequency of pregnancy prompted hypertension (PIH) fluctuates with age, equality, geographic appropriation and financial status. The hazard factors for pregnancy incited hypertension are age under 20 and more than 35 years, first pregnancy, past history of extreme pregnancy prompted hypertension, family ancestry of pre-eclampsia, short stature, headache, incessant renal infection and diabetes [3, 4].

The hypertensive issue of pregnancy influence over 10% of the antenatal populace of the U.K [5]. Each year it confuses 80,000 pregnancies in the United Kingdom and records for 12% – 24% of antenatal affirmations. The frequency of hypertensive issue is marginally lower for example 6% – 7% in the USA when contrasted with 10% – 12% of pregnancies in Pakistani population [6]. In a survey of various medicinal disarranges influencing pregnancy it was seen that the predominance of pregnancy incited hypertension was 19.92% in Pakistan [7].

The primary driver of death in pre-eclampsia and eclampsia was credited to cerebrovascular complexities, essentially cerebrovascular drain. Renal and hepatic disappointments are additionally as often as possible recorded as the reason for death. Scattered Intravascular Coagulation (DIC) is another vital reason seen in 15% of hypertensive deaths [8]. The fetal intricacies incorporate IUGR, intrauterine fetal hypoxia and acidosis, untimely birth and death [9]. 90% of patients giving proteinuria before 34 weeks of development conveyed babies weighing under 25th percentile [10]. Perinatal mortality increments quickly once proteinuria is built up. IUD (intrauterine demise) included 8.5% of all these perinatal deaths [11].

Serious hypertension i.e diastolic pulse of 110mmHg or more in pre-eclampsia and eclampsia can be risky and maternal demise most likely happens because of cerebral drain auxiliary to hypertension [12, 13]. Severe hypertension can likewise prompt cardiovascular disappointment and pneumonic oedema.

In our clinic, an expansive number of patients go to the loss division with the determination of pregnancy-initiated hypertension, pre-eclampsia and eclampsia. The vast majority of them have effectively created complexities.

An imperative piece of any administration convention is an organization of antihypertensive operators where hypertension is extreme for example circulatory strain >160/110mmHg [14]. The perfect medication, for this reason, should act rapidly, without causing fetal or maternal reactions. Hydralazine has been utilized as a standard treatment for this purpose [15, 16]. Hydralazine, where given as boluses, is protected and viable yet there are issues with hydralazine use. It can cause a sharp decrease in circulatory strain in this way unfavourably influencing the mother just as uteroplacental flow [17, 18]. It might likewise prompt maternal tachycardia and liquid maintenance and must be managed parenterally. Other antihypertensive medications like labetalol and nifedipine are being utilized for antihypertensive treatment. Labetalol isn't accessible in Pakistan. Imbuement of glyceryl trinitrate can be utilized and makes no huge antagonistic impacts the mother and fetus [19]. Hydralazine an arteriolar dilator which diminishes after burden. Nitroglycerin, in low dosages, is mostly a venodilator and diminishes preload however in high portions it is both an arteriolar and venodilator.

As the greater part of the crisis antihypertensive medications like hydralazine are not effectively accessible, stays out of stock and more often than not will be not accessible in Pakistan, elective medication GTN (which is utilized most usually in Ischaemic Heart Diseases (IHD) might be utilized. So, the target of the present examination was to think about the adequacy and wellbeing profile of hydralazine with glyceryl trinitrate (GTN) in ladies with extreme pre-eclampsia and eclampsia.

## PATIENTS AND METHODS:

This semi trial consider was directed in Jinnah Hospital, Lahore from February 2017 to March 2018. An aggregate of one hundred patients was incorporated, 50 patients were given hydralazine (Group A) and 50 patients got nitroglycerine (Group B). To blind, it was guaranteed those patients did not know the kind of the medication given to them. An educated verbal assent was taken from each investigation subject. For the analysis of extreme pre-eclampsia at least one of the accompanying oughts to be available:

1. A blood pressure reading of > 160 mmHg systolic or > 110mmHg diastolic

- with the patient at rest.
2. Proteinuria level of at least 5gms in 24 hours of urine collection.
  3. Cerebral or visual disturbances, scotoma or blurred vision.
  4. Pulmonary oedema or cyanosis.
  5. Epigastric or upper quadrant pain caused by stretching of Glisson's capsule.
  6. Impaired LFT's (liver function test) of unknown aetiology.
  7. Thrombocytopenia
  8. IUGR (Intrauterine growth retardation) or oligohydramnios with abnormal umbilical artery Doppler reading.

Eclampsia is depicted as "The event of seizures in ladies whose condition additionally meet the criteria for pre-eclampsia and the co-accidental neurological sickness, for example, epilepsy does not cause the spasm.

#### Inclusion Criteria:

All patients with extreme pre-eclampsia and eclampsia having gestational age >20 weeks until weeks (from last menstrual period or from the last ultrasonography accessible.

#### Exclusion criteria:

Ischemic heart disease

Rheumatic valve disease

Hypersensitivity to the drug during the study

Information gathered on each patient included age, gestational age, equality, pre-eclampsia or eclampsia, beat rate, systolic circulatory strain, diastolic pulse, time expected to accomplish pulse control in minutes and mean urinary out patients. The information examination was done on SPSS.

#### RESULTS:

A sum of 100 patients was partitioned into two groups. Fifty patients got hydralazine (Group A) and 50 patients' glyceryl trinitrate (Group B). It was discovered that 16 patients (32%) in group A and 22 patients (44%) in group B were between 18-23 years old 21 patients (42%) in group An and 16 patients (32%) in group B between 24-29 years. The age gather between 30-34 years had 4 patients (8.0%) in group A and 8 patients (16%) in group B. There were 9 patients (18%) in group A and 4 patients (8%) in group B who were 35-40 years old. In group A and aggregate, B means age was 26.8+5.6 and 25.4+4.8, separately. There was no factually noteworthy distinction between the two groups.

Sixteen patients (32%) in group An and 14 patients (28%) in group B were had gestational age between 26-30 weeks. 12 patients (24%) in group A and 17 patients (34%) in group B had a gestational age between 31-34 weeks. 15 patients (30%) in group A and 17 patients (34%) in group B ( $P > 0.05$ ) had gestational age between 35-38 weeks and between 39-40 weeks of growth, 7 patients (14%) in group A and 2 patients (4%) in group B. Equality circulation uncovered that 28 patients (56%) in group A and 26 patients (52%) in group B were primigravidae while 22 patients (44%) in group An and 24 patients in group B were multigravidae.

Dispersion of cases by conclusion uncovered that 42 patients (84%) in group An and 44 patients (88%) in group B were analyzed as pre-eclampsia cases while 8 patients (16%) in group An and 6 patients (12%) in group B were eclamptic ( $P > 0.5$ ).

**Table – I:** Distribution of cases by Maternal age and Gestational age

Age (year)	Group-A (Hydralazine n=50)	Group-B (Glyceryl Trinitrate n=50)	Gestational age (weeks)	Group-A (Hydralazine n=50)	Group-B (Glyceryl Trinitrate n=50)
	No. (%)	No. (%)		No. (%)	No. (%)
18-23	16(32)	22(44)	26-30	16(32)	14(28)
24-29	21(42)	16(32)	31-34	12(24)	17(34)
30-34	04(08)	08(16)	35-38	15(30)	17(34)
35-40	09(18)	04(08)	39-40	07(14)	02(04)
<b>Mean ±SD</b>	<b>26.8±5.6 years</b>	<b>25.4±4.8 years</b>	<b>Mean ±SD</b>	<b>33.5±4.0 weeks</b>	<b>31.1±3.4 weeks</b>
<b>P value</b>	<b>0.17</b>		<b>P value</b>	<b>0.56</b>	

In two groups, the systolic circulatory strain and diastolic blood weights of patients were not fundamentally the same as one another. P esteem was

watched 0.98 and 0.73, separately. Meantime expected to accomplish powerful circulatory strain control in group A (hydralazine) was 31.0+13.9

minutes and in group B (GTN) was 23.1+20.3 minutes.

It implies GTN requires less investment for circulatory strain control for example measurably noteworthy ( $P= 0.02$ ). Time interim between viable circulatory strain control and new hypertensive emergency was altogether drawn out in group A (96.1+27.2vs 73.8+18.1) p esteems 0.04 was watched. Mean urinary yield was more in group B when contrasted with group A (918.0+527.0 versus 802.0+360.0 mls ). Results were measurably unimportant ( $p=0.19$ ).

After starting adjustment, a new hypertensive emergency happened in 13 patients (26.0%) in hydralazine group and 9 patients (18.0%) in the GTN group. There was no factually critical distinction between the two groups.

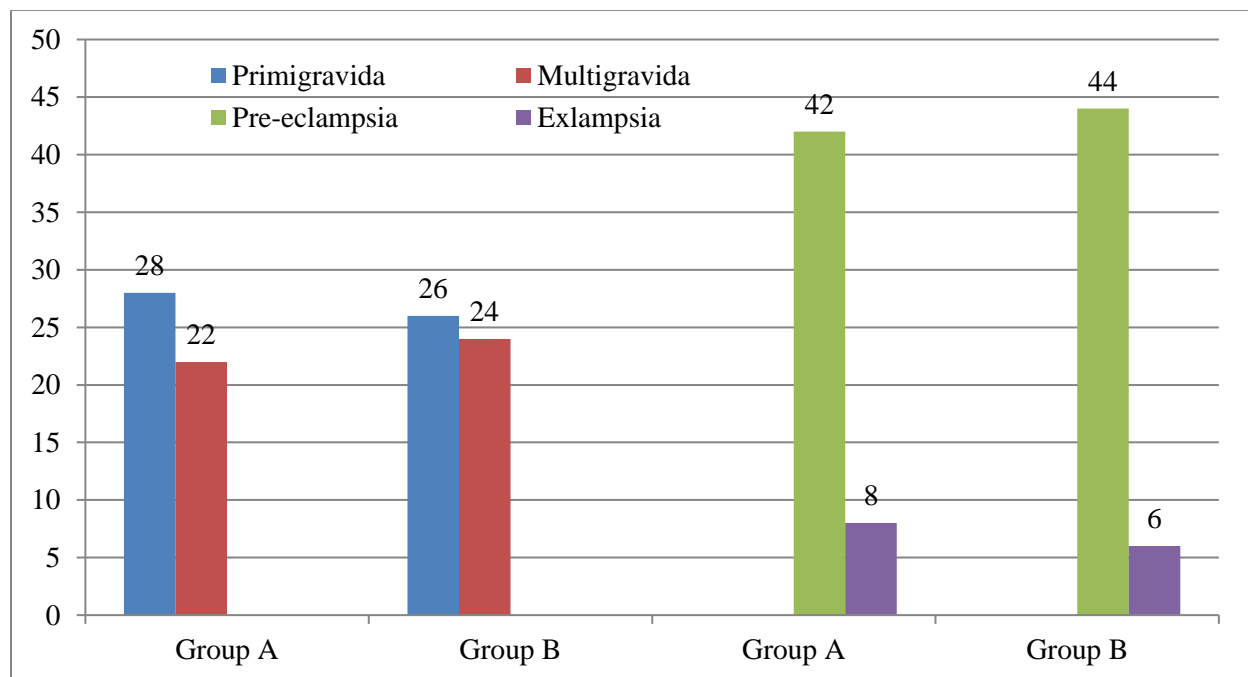
As to impacts of security profile new maternal cerebral pain happened in 21 patients (42.0%) in group A and 30 patients (60.0%) in group B. There was no measurably noteworthy distinction between the two groups ( $P=0.07$ ). Maternal tachycardia happened in the two groups with practically break even with frequencies. Queasiness and spewing were

seen in 16 patients (32.0%) in group A and in 24 patients (48.0%) in group B. Results were factually irrelevant ( $P= 0.10$ ). Unexpected fall of blood compelled happened in 2 patients (4%) in group A and in 9 patients (18%) in group B. There was factually noteworthy contrast between the two groups ( $P= 0.02$ ).

With respect to impacts of security profile new maternal cerebral pain happened in 21 patients (42.0%) in group A and 30 patients (60.0%) in group B. There was no measurably noteworthy contrast between the two groups ( $P=0.07$ ). Maternal tachycardia happened in the two groups with practically square with frequencies. Queasiness and retching were seen in 16 patients (32.0%) in group A and in 24 patients (48.0%) in group B. Results were factually inconsequential ( $P= 0.10$ ). Abrupt fall of blood compelled happened in 2 patients (4%) in group A and in 9 patients (18%) in group B. There was the measurably noteworthy distinction between the two groups ( $P= 0.02$ ).

Looking at the two groups in regards to fetal result, Apgar score at 5 minutes in 5 babies (17%) in group A and 3 babies (11%) in group B was under 6 ( $P = 0.88$ ).

**Figure:** Distribution of cases by Parity and Diagnosis



**Table – II:** Distribution of cases by the efficacy of the drug

Variables	Group-A (Hydralazine) Mean±SD	Group-B (Glyceral Trinitrate) Mean±SD	P value
Systolic blood pressure before drug administered	166.1+16.0 (mmHg)	166.2+22.8 (mmHg)	0.98
Diastolic blood pressure before drug administered	166.4+8.2 (mmHg)	117.0+9.0 (mmHg)	0.73
Time needed to achieve effective B.P control (min)	31.0+13.9 (min)	23.1+20.3 (min)	0.02
Time interval between effective B.P control and new hypertensive crisis (min)	96.1+27.2 (min)	73.8+18.1 (min)	0.04
Mean urinary output (mls) in 24 hrs	802.0+360.3 (mls/24 hrs)	918.8+527.0 (mls/24hrs)	0.19

**Table – III:** Comparison of complications observed in Group A (Hydralazine) and Group B (Glyceryl trinitrate)

	New hypertensive crisis		Maternal headache		Nausea/ vomiting		Sudden fall of blood pressure	
	Group-A No. (%)	Group-B NO. (%)	Group-A No. (%)	Group-B No. (%)	Group-A No. (%)	Group-B No. (%)	Group-A No. (%)	Group-B No. (%)
Yes	13(26.0)	09(18.0)	21(42)	30(60)	16(32)	24(48)	02(04)	09(18)
No	37(74.0)	41(82.0)	29(58)	20(40)	34(68)	26(52)	48(96)	41(82)
<b>Total</b>	<b>50(100)</b>	<b>50(100)</b>	<b>50(100)</b>	<b>50(100)</b>	<b>50(100)</b>	<b>50(100)</b>	<b>50(100)</b>	<b>50(100)</b>
	<b>P value=0.33</b>		<b>P value=0.07</b>		<b>P value=0.10</b>		<b>P value=0.02</b>	

**Table – IV:** Distribution of cases by Apgar score

Apgar Score	Group-A (Hydralazine) n=29		Group-B (Glyceryl Trinitrate) n=27	
	No.	%	No.	%
<b>At 1 minute</b>				
<6	08	27.6	06	22.2
6-10	21	72.4	21	77.8
<b>Mean ±SD</b>	<b>5.7±2.5</b>		<b>6.6±1.5</b>	
<b>P value</b>	<b>0.09</b>			
<b>At 5 minute</b>				
<6	05	17.3	03	11.1
6-10	24	82.7	24	88.9
<b>Mean ±SD</b>	<b>7.1±3.8</b>		<b>8.6±1.9</b>	
<b>P value</b>	<b>0.07</b>			

**DISCUSSION:**

Overall reports about maternal mortality have reliably appeared high maternal mortality related to the hypertensive issue of pregnancy, especially the extreme hypertension of pre-eclampsia [19]. In the latest triennium in the UK arrangement, maternal mortality from hypertension illnesses was most normally credited to intracerebral haemorrhage [19]. There is general agreement that maternal hazard is

diminished by the antihypertensive treatment that intensely brings down hypertension. Acknowledgement of this particular hazard has implied that control of intensely raised circulatory strain has turned out to be vital for ladies with extreme hypertension, especially that of pre-eclampsia.

Hydralazine has been utilized for control of

circulatory strain in serious pre-eclampsia and eclampsia. The other two short-acting medications like labetalol and oral or sublingual nifedipine have likewise been utilized all the more generally for control of pulse.

A meta-investigation of randomized controlled preliminaries of short-acting enemy of hypertensive for serious hypertension in pregnancy was distributed in BMJ 2003 [20]. In this meta-examination, 21 preliminaries were incorporated, eight contrasted hydralazine and labetalol. Hydralazine was related to less tireless hypertension than labetalol yet more serious hypertension than with nifedipine. Hydralazine was related with increasingly maternal hypertension, progressively cesarean segment, increasingly placental suddenness, progressively maternal oliguria, increasingly unfriendly impact on FHR, and all the more low Apgar scores. Hydralazine was related with progressively maternal symptoms and with less neonatal bradycardia (hazard distinction 0.24) [20]. So, they inferred that hydralazine ought not to be utilized as first-line treatment for extreme hypertension in pregnancy, however, preliminaries were not sufficiently fueled to make clinical proposals.

In this examination when hydralazine was contrasted and GTN, compelling control of circulatory strain was accomplished before with GTN than with hydralazine. Symptoms of the two medications were practically comparative.

An examination was led in 1996 Aligarh Muslim University, India, looking at sublingual nifedipine and topical nitroglycerine in the peripartum period in extreme pre-eclampsia. Results demonstrated that nitroglycerine was progressively compelling in treating hypertension, which is practically identical to show study [21].

A randomized clinical preliminary looking at hydralazine and different medications like labetalol in serious hypertension of pregnancy was distributed in September 2006 in the European Journal of Obstetrics and Gynecology. It was led on 200 ladies, with serious hypertension of pregnancy. Ladies were randomized to get hydralazine (5mg boluses) or labetalol. The principal result measures were, effectively bringing down circulatory strain and maternal hypotension. No huge contrast was seen between the two medications. As to utilization of hydralazine, results are practically identical with the present study [22].

The consequences of the present investigation are

practically identical with the examination led at Department of Obstetrics and Gynecology, Cumhuriyet University, School of Medicine, Turkey, on the impact of GTN on hypertension of extreme pre-eclampsia, eclampsia and HELLP disorder. It was review consider, did on a little example of 55 ladies. They considered the adequacy of GTN for circulatory strain control and symptoms (cerebral pain, method of conveyance and perinatal results). The outcomes demonstrated that GTN mixture causes a huge decrease in circulatory strain in pre-eclampsia, eclampsia and HELLP disorder. GTN mixture was related to migraine and flushing [19].

This examination proposed that imbue of GTN can be utilized as an elective specialist to understood medications and cause no noteworthy unfriendly impact on mother and hatchling. Aali and Nejad directed a similar report among nifedipine and hydralazine as a first line operator to control pulse in serious pre-eclampsia. It was a solitary visually impaired randomized clinical preliminary. Results are practically identical with the present examination in regards to the utilization of hydralazine [23]. The utilization of oral nifedipine is simple in cognizant patients; GTN is particularly useful in patients with mental status changes amid and after an eclamptic assault while starting an enemy of hypertensive operator for the first run through. As per our experience, GTN can be acknowledged as an increasingly compelling enemy of a hypertensive specialist with a prior impact than hydralazine, and symptom profile is equivalent with hydralazine.

### CONCLUSION:

Based on results contrasting hydralazine and glyceryl trinitrate (GTN), glyceryl trinitrate (GTN) sets aside less effort for powerful control of pulse than hydralazine. A security profile is tantamount with hydralazine.

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