

# Renal Assessment in hypertensive disorders of pregnancy at tertiary care Hospital

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## ABSTRACT

**Objective:** To determine the renal profile among hypertensive disorder women during pregnancy at tertiary care Hospital.

**Material and methods:** This prospective study has been conducted at gynaecology and obstetrics department of Liaquat University of Medical and Health Sciences Jamshoro. Study duration was six months from May 2019 to October 2019. All the pregnant women presented with hypertensive disorders including chronic hypertension, pregnancy induced hypertension, Eclampsia and pre-eclampsia, age 18 to 40 years and either of parity were included. A 3ml blood sample was taken from each patient and was sent to the Hospital diagnostic laboratory to the renal function. Serum creatinine level >1.4mg/dl was considered as renal failure. All the data was recorded via self-made study proforma. Data analysis was done by using SPSS version 20.

**Results:** Total 265 hypertensive disorder pregnant women were studied. Mean age of the women was 32.34±3.65 years and mean gestational age was 30.25±4.77 weeks. Out of all 57.0% women were un-booked and 43.0% were booked. Most of the women 55.2% had pre-eclampsia, followed by eclampsia, PIH and Help syndrome. 47.3% women had grade I parenchymal changes, 21.8% had grade II parenchymal changes, 6.1% had grade III parenchymal changes and in patient septations were found. Urea was raised among 37.0% women elevated creatinine level was in 13.9% females; however out of them mostly had mildly increased urea and creatinine levels.

**Conclusions:** Renal impairment was found to be frequently prevalent among hypertensive women during pregnancy. By early assessment and management can be reduce the fetomaternal morbidity and mortality among hypertensive pregnant women.

**Key words:** pre-eclampsia, eclampsia, PIH, creatinine level

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## INTRODUCTION

Hypertensive disorders are commonly occurred among 6 to 8% of the pregnancies.<sup>1</sup> There are several hypertensive disorders of the pregnancies like gestational hypertension, chronic hypertension, or eclampsia and preeclampsia.<sup>1</sup> There is a significant high risk consequences for the fetus and mothers resulting from eclampsia and pre-eclampsia.<sup>2</sup> These are linked to the pathological vascular lesions, vasospasm, multiple organ failures, raised activation of the platelets and the subsequent coagulation system activation in the microvasculature.<sup>2</sup> Pre-eclampsia is the most important cause of the a, but AKI incidence in preeclampsia, while its proper risk factors, and outcomes of the kidneys are undertermined.<sup>3</sup> Estimated risk factors of the pregnancy hypertensive disorders are age of the mother, family history of hypertension, twin pregnancy, overweight, elevated inter-pregnancy interval, underlying vascular disorders as; viral and bacterial infections, diabetes mellitus and the antiphospholipid syndrome.<sup>4,5</sup> In the advanced gestation, acute renal failure mostly linked to the abruptio placentae and the pre-eclampsia. The essential and the challenging differential diagnosis is that of ARF in the late pregnancy in relationship with the thrombocytopenia and the microangiopathic hemolytic anemia.<sup>6</sup> Nearly in past recent years, the prevalence of acute kidney injury during pregnancy has reduced among the developed nations from 1% to 2.8%. It is an infrequent pregnancy complication following the rare of septic abortion and a better perinatal care.<sup>7,8</sup> However, pregnancy related acute kidney injury still

a major and frequently prevalent among developing nations estimably 4.2–15%.<sup>7,8</sup> The etiology of PRAKI varies widely depending on the stage of pregnancy and the country involved.<sup>9</sup> However this study has been conducted for the renal assessment in hypertensive disorders of pregnancy at tertiary.

## MATERIAL AND METHODS

This prospective study has been conducted at gynaecology and obstetrics department of Liaquat University of Medical and Health Sciences Jamshoro. Study duration was six months from May 2019 to October 2019. All the pregnant women presented with hypertensive disorders including chronic hypertension, pregnancy induced hypertension, Eclampsia and pre-eclampsia, age 18 to 40 years and either of parity were included. All the women having renal problems before the pregnancy, chronic liver disease, diabetes and those who were not agreeing to participation in the study were excluded. Complete medical history and clinical examination were done. Fresh abdominal and pelvis ultrasound was done in each patients to assess the renal morphological assessment (parenchymal changes). A 3ml blood sample was taken from each patient and was sent to the Hospital diagnostic laboratory to the renal function. Serum creatinine level >1.4mg/dl was considered as renal impairment. All the data was recorded via self-made study proforma. Data analysis was done by using SPSS version 20.

## RESULTS

Total 265 hypertensive disorder pregnant women were studied. Mean age of the women was  $32.34 \pm 3.65$  years and mean gestational age was  $30.25 \pm 4.77$  weeks. Out of all 100(60.6%) women were educated and 65(39.4%) were un-educated. 149(90.3%) women were housewives and only 16(9.7%) were working ladies. Most of the women 93(56.4%) were poor. 94(57.0%) women were un-booked and 71(43.0%) were booked. As per parity 87(52.7%) women were multiparous and 78(47.3%) were primiparous. Table.1

According to hypertensive disorders most of the women 55.2% had pre-eclampsia, followed by eclampsia, PIH and Help syndrome. As per ultrasound assessment, 47.3% women had grade I parenchymal changes, 21.8% had grade II parenchymal changes, 6.1% had grade III parenchymal changes and in patient septations were found. Out of all 37.0% women had raised urea and elevated creatinine level was found in 13.9% females; however out of them mostly had mildly increased urea and creatinine levels. Table.2

Table.1. Descriptive statistics of demographic variables n=165

Variables		Statistics
Age	Mean $\pm$ SD	32.34 $\pm$ 3.65 years
Gestational age	Mean $\pm$ SD	30.25 $\pm$ 4.77 weeks
Education	Educated	100(60.6%)
	Uneducated	65(39.4%)
Occupation	House wife	149(90.3%)
	Working lady	16(9.7%)
Residence	Urban	87(52.7%)
	Rural	78(47.3%)
Socio-economic status	Poor	93(56.4%)
	Middle	69(41.8%)
	Upper	03(1.8%)
Booking status	Booked	71(43.0%)
	Un-booked	94(57.0%)
Parity	Primi	78(47.3%)
	Multi	87(52.7%)

Table. 2. Hypertensive disorder and renal assessment n=165

Variables		Frequency	Percent
Hypertensive disorder	PIH	29	17.6
	Pre-eclampsia	91	55.2
	Eclampsia	35	21.2
	Chronic hypertension	10	06.1
Renal parenchymal changes (U/S KUB)	Grade I	78	47.3
	Grade II	36	21.8
	Grade III	10	6.1
	Septations	01	0.6
	Normal	40	24.2
Blood urea	Normal	104	63.0
	Raised	61	37.0
Creatinine level	Normal	142	86.1
	Raised	23	13.9

## DISCUSSION

Because women are becoming pregnant at a later age, hypertension is more commonly encountered in pregnancy.<sup>10</sup> In this study mean age of the women was  $32.34 \pm 3.65$  years and mean gestational age was  $30.25 \pm 4.77$  weeks. On other hand Hassan I et al<sup>6</sup> reported that the mean age of the patients with pregnancy related ARF was  $25 \pm 6.1$  years. Nisa SU et al<sup>11</sup> reported that the mean age of participants was  $23 \pm 5$  years and mean gestational age was  $35.95 \pm 2.849$  weeks. However in the study of Sharma C et al<sup>12</sup> stated that the mean age of women presenting with HDP was  $25.42 \pm 4.64$  years.

In this study 94(57.0%) women were un-booked and 71(43.0%) were booked, while 87(52.7%) women were multiparous and 78(47.3%) were primiparous. Consistently Ahsan N et al<sup>11</sup> reported that the out of 84 cases primigravida were 24 (28.6%), multigravida 27 (32.1%) and grand multipara (>5 parity) 33 (39.3%). On other hand Sharma C et al<sup>12</sup> also reported that the multiparous women were in majority 53.1% and 45.9% were primiparous.

In this study according to hypertensive disorders most of the women 55.2% had pre-eclampsia, followed by eclampsia 21.2%, PIH 17.6% and chronic hypertension 6.1%. These findings were similar to the study of Perveen S et al<sup>4</sup> as the frequency of HDP, chronic HTN, gestational HTN, and severe PE and eclampsia is 5.5%, 0.66%, 3.5%, 1.6% and 1.7% respectively. In another study of Ahsan N et al<sup>13</sup> Pregnancy induced hypertension cases were 44(52.3%), of pre-eclampsia 34(40.4%) and eclampsia 6(7.1%). Similarly Nisa SU et al<sup>11</sup> reported that out of pregnancy-related hypertensive disorders PIH was 23.2%, pre-eclampsia 25.0%, eclampsia 42.8%, chronic hypertension 4.5% and help syndrome 1.8%. 50.2% were pre eclampsia, 35.7% eclampsia, 12.5% were gestational hypertension and rest were chronic hypertension.

In this study out of all 37.0% women had raised urea and elevated creatinine level was found in 13.9% females; however out of them mostly had mildly increased urea and creatinine levels. In the study of Gopalakrishnan N et al<sup>14</sup> reported that the out of etiological factors of AKI the pre-eclampsia was 21%. On other hand Prakash J et al<sup>15</sup> reported that the eclampsia, severe pre-eclampsia, and the HELLP syndrome were observed to be the commonest causes of the acute renal failure among 35.29% of the cases. Pre-eclampsia is linked to the altered hemodynamic abnormalities like renal plasma flow decreases, decreases in the GFR by 30% to 40%, and renal vasoconstriction. Consequently the kidneys in the pre-eclamptic females significantly susceptible to ischemic injury.<sup>16</sup>

## CONCLUSION

Renal impairment was found to be frequently prevalent among hypertensive women during pregnancy. By early assessment and management can be reduce the fetomaternal morbidity and mortality among hypertensive pregnant women. There was many limitation of the study like small sample size singled center study etc. However further large scale studies are recommended on this objective.

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