Proteinuria and Renal Function (Serum Creatinine) Between Eclampsia And Low Risk Pregnancy

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ABSTRACT

Objective: In this study our main aim is to evaluate the status of proteinuria and renal function (serum creatinine) between eclampsia and low risk pregnancy.

Method: This cross sectional study was conducted at inpatient department of Obstetrics & Gynecology, Chittagong Medical College Hospital from one year (January 2017 – January 2018) among 100 patients according to inclusion and exclusion criteria was included in the study.

Result: In our study among 100 patients, in group-A and in group-B, both group most of the patients were house wife and only 14% patients in group-B completed their higher education whereas 0% patients in group-A completed their higher education. Proteinuria, serum creatinine and renal function status are highly significant observed (P = 0.000).

Conclusion: From our result we can say that, proteinuria and renal function (serum creatinine) level was improper in women with eclampsia. Further study is highly appreciated for better outcome.

Keywords: Proteinuria, Renal Function, Eclampsia.

INTRODUCTION

In developed countries, eclampsia complicates about 1 in 2000 deliveries. In developing countries, the prevalence of eclampsia varies widely, from 1 in 100 to 1 in 1700.[1-3] It is common problem in developing countries because illiteracy, poverty, distance, lack of information, inadequate service, lack of health awareness and education, and cultural practice prevent women from seeking advice during pregnancy.

The incidence of eclampsia is extra ordinarily high (7.9%) in Bangladesh according to house to house servey.[2] In our country only small portion of women end their pregnancy under medical supervision, rest have no access to obstetric care.[4] As a result most preeclampsia causes remains undetected until severe compilations, such as eclampsia develops. In Bangladesh obstetric cases contributed to 70% of total maternal mortality, among which 20% due to eclampsia preceded by haemorrhage.[5] Al though eclampsia is the second major cause of maternal death in our country, it is the major cause in our hospital.

Eclampsia patients develop complications gradually; by the time they reach the hospital, complication have become so severe that they cannot be reverse easily. The most common causes of maternal mortality in eclampsia are pulmonary edema, adult respiratory distress syndrome, renal failure, cerebral hemorrhage, cardiac failure and sepsis.

Pregnancy is associated with normal physiological changes that assist the nurturing and survival of the fetus.[6] A woman undergoes dramatic physiological and hormonal changes. The kidney also undergoes tremendous anatomical and physiological changes to overcome changes in fluid distribution, produce an increase in glomerular filtration rate and lower plasma creatinine.[7] The plasma volume increases during pregnancy sometimes by as much as 50%.[8] Therefore it is not surprising that a significant number of women may develop new onset renal dysfunction or exacerbation of preexisting renal disease during pregnancy.[9] There is lowering of the normal range of value of urea and creatinine during pregnancy has clinical significance, because a normal urea or creatinine level (using a non-pregnant women standard) in a pregnant female may actually indicate an underlying renal disease.[10] An impaired renal function associated with bad obstetric history (preterm labour and its consequences which may lead to perinatal death).

In this study our main goal is to evaluate the status of proteinuria and renal function (serum creatinine) between eclampsia and low risk pregnancy.

OBJECTIVE
General Objective
- To assess the status of proteinuria and renal function (serum creatinine) between eclampsia and low risk pregnancy.

Specific Objective
- To identify status of the pregnancy
- To detect Blood pressure and serum creatinine of the patients

METHODOLOGY
Type of Study
Hospital based cross sectional comparative study.
Place of Study
Inpatient department of Obstetrics &Gynecology, Chittagong Medical College Hospital.
Study Period
One year (January 2017– January 2018)
Study Population
A total of 15862 patients were admitted in inpatient department of Obst. & Gynae at CMCH. Out of 365 eclampsia (ante partum/ intra partum/ post-partum) patients among them; 50 eclampsia patients were selected as case and 50 low risk pregnancy selected as control group.

ampling Technique
Purposive
Inclusion Criteria
50 diagnosed case of eclampsia (antepartum/ intrapartum/ postpartum) and 50 normotensive normal pregnant women.
Exclusion Criteria
- Known case of hypertension.
- Diabetes Mellitus
- Chronic renal disease
- Other cause of renal failure (acute fatty liver, thrombotic thrombocytopenia)
- Epilepsy
- Urinary tract infection
- Congestive cardiac failure.
- Lupus Nephritis
- Multiple myeloma
- Amylodosis

Data Collection and Analysis
Data will be collection in predesigned data collection sheet using various parameters. Interviews conducted using direct questionnaire and all information will be noted in pre from data collection sheet.

Data were compiled and appropriate statistical package for social science (SPSS). Qualitative data are summarized by ratio and percentage. Qualitative data are concise by mean and standard deviation (SD).

Chi square (X^2) and Unpaired t-test were used to assess the significance of Quantitative data respectively.

Table 1: Age distribution of the patients

Age Group	Group A, n (%)		Group B, n (%)		Total, n (%)	
≤25 Years	32	64.0	46	92.0	78	78.0
> 25 Years	18	36.0	04	8.0	22	22.0

Table 2: Scio demographic characteristics of the patients

Socio-demographic variables		Group A (n = 50)		Group B (n = 50)		Total	
		n	%	n	%	n	%
Community	Muslim	37	74.0	30	60.0	67	67.0
	Hindu	10	20.0	15	30.0	25	25.0
	Buddhist	03	6.0	05	10.0	08	8.0
Habitat	Urban	16	32.0	32	64.0	48	48.0
	Rural	25	50.0	15	30.0	40	40.0
	Slum	09	18.0	03	6.0	12	12.0
Occupation	House Wife	43	86.0	38	76.0	81	81.0
	Service Holder	07	14.0	12	24.0	19	19.0
Educational Status	Illiterate	12	24.0	02	4.0	14	14.0
	Primary	21	42.0	08	16.0	29	29.0
	Secondary	17	34.0	33	66.0	50	50.0
	Higher Secondary & Above	00	0.0	07	14.0	07	7.0
Socio-Economic Condition	Poor	22	44.0	04	8.0	26	26.0
	Average	26	52.0	46	92.0	72	72.0
	Affluent	002	4.0	00	0.0	02	2.0

Table 3: Distribution of the patients according to renal function related variables

Renal function related variables		Group A (n = 50)		Group A (n = 50)		Total		X^2 Test Significance
		n	%	n	%	n	%	
Proteinuria by Dip stick test	Nil	00	0.0	50	100.0	50	50.0	X^2= 100.000
	30mg/dl=(+)	06	12.0	00	0.0	06	6.0	P = 0.000^{HS}
	100mg/dl=(++)	16	32.0	00	00.0	16	16.0	
	300mg/dl=(+++)	28	56.0	00	00.0	28	28.0	
Serum Creatinine Status	Normal Increased	21	42.0	50	1000	71	1.0	X^2 = 40.845
		29	58.0	00	00.0	29	9.0	P = 0.000^{HS}

Where, HS= Highly Significant (P< 0.001); This study considers S. Creatinine as renal function test; Normal non pg S. Creatinine - 0.67 ± 0.14 mg/dl; Low risk pregnancy - 0.43 ± 0.13 mg/dl; Impaired renal function - 0. 9mg/dl.

Table 4: Blood pressure and serum creatinine of the patients according to renal function group (with t-test significance).

Variable	Study Groups	N	MEAN	SD	MEDIAN	RANGE	SIGN.*
Systolic Blood Pressure (mmHg)	Group A	50	154.60	14.03	150.00	140-180	t = 17.615
	Group B	50	116.30	6.29	120.00	100-120	P = 0.000
	TOTAL	100	135.45	22.08	130.00	100-180	HS
Diastolic Blood Pressure (mmHg)	Group A	50	111.30	7.20	110.00	100-120	t = 31.307
	Group B	50	73.20	4.71	70.00	70-80	P = 0.000
	TOTAL	100	92.25	20.08	90.00	70-120	HS
Serum creatinine mg/dl	Group A	50	1.64	0.72	1.50	0.7-3.3	t = 8.431
	Group B	50	0.78	0.11	0.80	0.5-0.9	P = 0.000
	TOTAL	100	1.21	0.67	0.90	0.5-3.3	HS

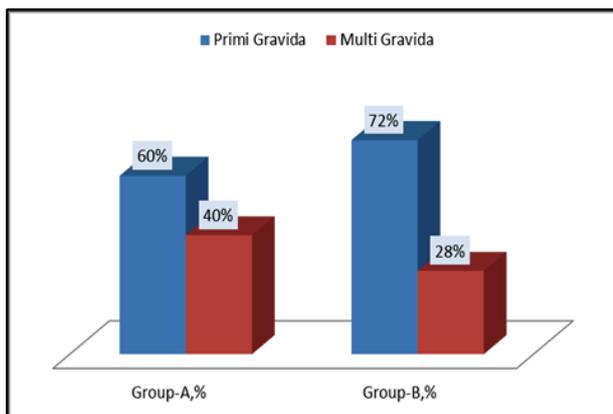Independent samples t-test. HS= Highly Significant (P < 0.001)

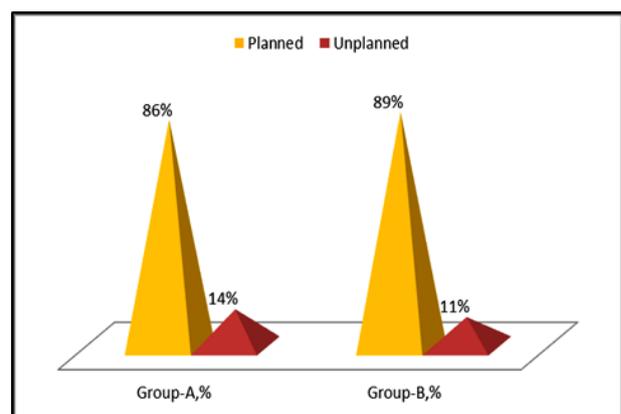Figure 1: Parity distribution of the patients.

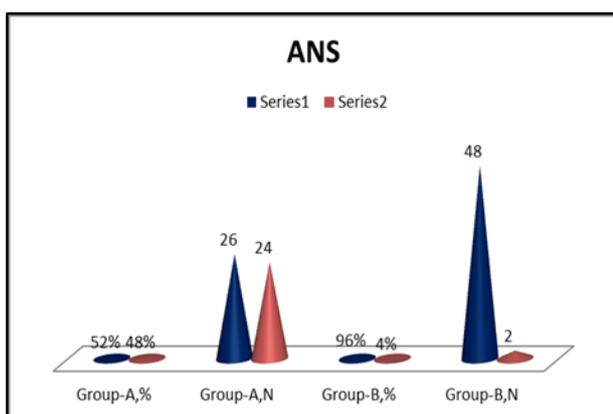Figure 3: Distribution of the patients according to status of the pregnancy

Figure 2: Distribution of the patients according to ANS

RESULTS

In table-1 shows age distribution of the patients where in group-A and in group-B most 64% and 92% of the patients belongs to ≤25 Years age group.

In figure-1 shows parity distribution of the patients where in group-A 60% patients belongs to primi gravida whereas in group-B 72% belongs to primi gravida.

In table-2 shows socio demographic characteristics of the patients where there is no significance deference between both groups. In both group most of the patients were house wife and only 14% patients in group-B completed their higher education whereas 0% patients in group-A completed their higher education.

In figure-2 shows distribution of the patients according to ANS (Antenatal Check-up) where in group-A and group-B 52% and 92% patients went hospital for ANS regularly.

In figure-3 shows distribution of the patients according to status of the pregnancy where 86% patients in group-A had planned pregnancy and in group-B it was 89%.

In table-3 shows renal function related variables where proteinuria, serum creatinine and renal function status are highly significant (P = 0.000).

In table-4 shows blood pressure of the patients according to renal function variable where systolic & diastolic blood pressure and serum creatinine were highly significant (P = 0.000).

DISCUSSION

In our study,majority (82%) of them are ante partum eclampsia patients which was similar with other study.[14] One study also showed that 53% was ante partum eclampsia.[11]

There was no difference regarding age among the study group and control group. About half (48.3%) of eclampsia patient were over 25 years age in impaired renal function group. On the other hand 23.8% of patients were in normal renal function group. Six patients were above 30 years age, among them five patients had impaired renal function. This may decreased renal reserve with increasing age and this finding correspond with one study.[12]

So it appears from this study multi gravida eclampsia patient were prone to develop impairment of renal function with decreasing renal reserve. This information shows similarity with many Study.[12,13]

Regarding socio demographic variables of the study most of the eclampsia patients were from rural based habitation (50%), poor socio economic class (44%)j, Muslim community (74%), primary level educated (42%), housewife (86%). These finding are similar with various studies respectively.[3,12-14]

Proteinuria has been found in all cases in the study group (n = 50). Among them majority (56%) had severe proteinuria (3+ in Dipstick) and 32% had significant proteinuria (2+ in Dipstick). On the other hand there is no proteinuria among low risk pregnancy. A study done is USA observed no proteinuria in 21% of eclampsia patient.[15]

Level of serum creatinine was significantly higher in eclampsia patients than low risk pregnancy. Mean value was 1.64 ± .72 mg/dl VS .78 ±.11 mg/dl. There is significant difference in the level of s.creatinine between impaired and normal renal function group of eclampsia patients. Mean value was 2.12±.55 mg/dl VS .88 ±.18 mg/dl (P = 0.000).One report found impaired renal function in 15% of eclampsia patients and another study reported 48% of eclampsia patient had impaired renal function.[16]

CONCLUSION

From our result, we can conclude that, proteinuria and renal function (serum creatinine) level was improper in women with eclampsia. Further study is highly appreciated for better outcome.

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