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Effect of Serum Uric Acid Level on Outcome of Pregnancy in Pre-Eclampsia

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Abstract
Introduction: Pre-eclampsia is considered as a major cause of maternal and fetal morbidity and mortality. When a pre-eclamptic women develops associated hyperuricemia, fetal outcome may become worse. Raised serum uric acid in pre-eclamptic mother affects maternal and fetal condition which in turn give rise to poor maternal and fetal outcome.
Objective: To find out the effect of serum uric acid on outcome of pre eclamptic patient.
Study design: It was analytic type of cross sectional study.
Study setting and period: The study was done in Dhaka Medical College Hospital. The study period was March 2016 to September, 2016.
Participants: Among all patients who fulfilled the inclusion criteria during the study period and who gave consent were selected.
Methodology: The study was performed on 50 women with pre- eclampsia. The study was performed on two groups; the first group (n=25) with serum uric acid > 6 mg/dl (hyperuricemia group-A) was compared to the second group (n=25) with serum uric acid <6 mg/dl (normal uric acid group-B). Relevant history was taken; clinical examination and investigations were done in all cases. All informations were collected by investigator and were recorded in a predestined data collection sheet.
Results: The result of this study shows among 50 patients, incidence of pre-eclampsia was more at the age between 21 -30 years (52.0%). Mean age of hyperuricemic group (uric acid>6) was 27.8±7.0% and in normal uric acid group (uric acid-6) was 26.6±7.7%. There was no statistically significant differenc of Mean±SD of age between two groups. Most of the participants were primi. In hyperuricemic group, 15(60%) were primi and in normal uric acid group, 13(52%) were primi. Mean±SD of systolic blood pressure of both group had non-significant difference (p-0.760). Mean±SD of diastolic pressure was 114.40±115.57 mmHg in hyperuricemic group and 105.40±13.06 mmHg in normal uric acid group. The difference of diastolic pressure between two groups were significant (p-0.032). In hyperuricemic group, Mean±SD of uric acid was 7.66±1.59 mg/dl and Mean±SD of uric acid was 4.71±0.85 mg/dl in normal uric acid group. Mean±SD of Uric acid of both groups had significant difference (p-0.001). Termination was needed earlier in hyperuricemic group than normal uric acid group although Mean±SD of gestational weeks of both groups had non-significant difference (p-0.84). Hyperuricemic group had 7(28.0%) eclampsia, 1(4.0%) acute renal failure, 2(8.0%) HELLP, 2(8.0%) pulmonary edema and 3(12.0%) PPH but normal uric acid group had 2(8.3%) eclampsia, acute renal failure 0(0.0%), HELLP 0(0.0%), pulmonary edema 0(0%), PPH 0(0.0%). Mean±SD of maternal complications of both groups had significant difference (p-0.001). In hyperuricemic group, 5(20.8%) birth asphaxia, 7(29.2%) preterm baby, 6(25.0%) still birth, 2(8.3%) perinatal death. In normal uric acid group, 1(4.0%) birth asphaxia, 9(36.0%) preterm baby, 0(0.0%) still birth,0(0.0%) perinatal death. Mean±SD of fetal complications between two groups were statistically significant (p-0.003). Moreover, the complications either maternal or fetal was more in hyperuricemic group than normal uric acid group.
Conclusion: As there are some limitation the result will not reflect cent percent of the real picture among Bangladeshi population. This study identifies association of hyperuricemia with maternal and fetal outcome in pre-eclamptic patients. Since this complications are preventable if detected and treated at an early stage, and to institute proper medical care in time. Development of simple, sensitive biochemical test is therefore important to detect pregnant women who are at a risk of developing pre-eclampsia.

Keywords: Serum uric acid level, outcome, pregnancy, pre-eclampsia

Introduction Pre-eclampsia is a multisystem disorder of unknown aetiology, unique to pregnancy.

Women with pre-eclampsia usually develop raised blood pressure and proteinuria, but the condition is also associated with abnormalities of the coagulation system, disturbed liver function, renal failure and cerebral ischaemia [1]. Diagnosis of pre-eclampsia required the presence of proteinuria and pregnancy induced hypertension. Proteinuria was defined as ≥+1 on dipstick (300 mg/24h) found twice at least 6 hours apart. Pregnancy induced hypertension was defined as blood pressure ≥140/90 mm Hg or as an increase diastolic pressure of ≥15 mm Hg compared with the average before 20 wks of gestation [2]. Hypertensive disorders during pregnancy are classified into 4 categories, as recommended by the National High Blood Pressure Education Program Working Group on High Blood Pressure in Pregnancy: 1) chronic hypertension, 2) preeclampsia-eclampsia, 3) preeclampsia superimposed on chronic hypertension, and 4) gestational hypertension (transient hypertension of pregnancy or chronic hypertension identified in the latter half of pregnancy) [3]. Hypertensive disorder of pregnancy complicates 7-10% of all pregnancies. Approxymately 70% of women diagnosed with hypertension during pregnancy will have gestational hypertension, pre-eclampsia [4]. In Bangladesh the incidence of pre-eclampsia is alarmingly high, about 16% of maternal deaths are associated with it. The rate ranges between 6% and 17% in healthy nulliparous women and 2% and 4% in multiparous women [5-8]. Preeclamptic women have some predisposing factor. These include family history, age and parity. Current thinking is that the primary pathophysiology in pre-eclampsia is placental [9, 10]. Pre-eclampsia occurs in women who have an abdominal pregnancy and in those with a hydatidiform mole, indicating that uterine and fetal factors are not essential. In addition, it is more common amongst women who have conditions associated with a large placenta (such as multiple pregnancies and hydrops fetalis) and in women who have microvascular disease (such as diabetes, hypertension and collagen vascular disease). In pre-eclampsia, trophoblastic implantation is abnormal, with reduced placental perfusion [11]. Some of the reported abnormalities include placental ischemia, generalized vasospasm, abnormal hemostasis with activation of the coagulation system, vascular endothelial dysfunction, abnormal nitric oxide and lipid metabolism, leukocyte activation, change in various cytokines as well as in insulin resistance [12]. Preeclampsia may cause multi organ involvement such as pulmonary edema, seizures, oliguria (less than 500 mL per 24 hour.), thrombocytopenia(platelet count less than 100,000/mm3), abnormal liver enzyme in association with persistent epigastric or right upper quadrant pain, or persistent severe central nervous system symptoms (altered mental status, headaches, blurred vision or blindness) [5, 6]. Pre eclampsia responsible for 10-15% of maternal death [13]. Both incidence and prevalence of pre eclampsia and eclampsia higher in our country. In Dhaka Medical College Hospital from 1998 to 2000, maternal mortality rate was 28 per 1000 total birth. Among the causes of maternal death eclampsia ranks first that is 47.8%. Hypertensive disorder of pregnancy is still the 2nd most common cause of maternal mortality, accounting for 15.5% direct death. Hypertension in pregnancy is also responsible for 18% of fetal and infant mortality and 46% of infant born small for gestational age [14-16]. The level of uric acid above 4.5 mg/dl is indicative of preeclamptic process [17]. Elevated uric acid in pregnancy may not only be a valuable biomarker for pre-eclampsia but may also have a contributory role in predicting maternal and foetal complications. Uric acid freely passes into foetal circulation has been found to block VEGF (Vascular Endothelial Growth Factor) induced endothelial proliferation and have a direct role in blocking foetal angiogenesis [18]. In case of Pre-eclampsia, one of the most accessible and easiest screening tests is serum uric acid measurement. Numerous studies have demonstrated a relation between elevated maternal serum uric acid level and adverse maternal and foetal outcome. Among several pathophysiologic factors that most commonly accepted explanation for hyperuricemia in pre- eclampsia is increase reabsorption and decrease excretion of uric acid [19]. The aim of the present study is to assess the association of serum uric acid with pre-eclampsia.

Materials and Methods

Study design: The study was an analytic type of cross sectional study.

Place of study: This study was carried out in the Department of Obstetrics & Gynaecology, Dhaka Medical College & Hospital, Dhaka, Bangladesh.

Study period: Six months-from March 2016 to September 2016

Sample size: Sample size determination depends on time and resources. As prevalences of pre-eclampsia in DMCH as per medical recoard in 2013 is 15.3/%, so estimated population was calculated by using the following statistical formula:

$n = z^2pq/d^2$
$= (1.96)^2x0.153x (1-0.153)/ (0.05)^2$
$= 199.13$
$= 200.$

q=1-p Using the above formula the expected sample size will be n=199; but may be considerable as 50cases due to time limitation in study period. In this study 50 patients will be taken due to convenient and effective data collection.

Study population: All the patients of department of Obstetrics & Gynaecology, DMCH who fulfilled the inclusion criteria.

Selection criteria

Patients admitted to the above mentioned hospital and after meeting the inclusion and exclusion criteria a probability sampling technique was applied for selecting the sample patients.

Inclusion criteria

1. Pre-eclamptic patients
2. Gestational age >20 weeks
3. Singleton pregnancy

Exclusion Criteria

1. Patients/legal guardians who would not give consent
2. Essential hypertension
3. Diabetes
4. Renal disease

Method of data collection: After taking informed consent from eligible patient, her history was taken and clinical examinations were performed. Relevant investigations were done. Data was collected in a pre-designed data collection sheet.

Operational definitions: Pre-eclampsia is a multi-system disorder of unknown etiology characterized by development of hypertension to extent of 140/90 mm hg or more with proteinuria after the 20th week in a previously normotensive and non-proteinuric patient. The term proteinuria is preferable to albuminuria, as apart from albumin, the other fraction of protein leak out in the urine. Presence of 24 hour protein more than 0.3gm or ≥2+ (1.0gm/l) on at least two random clean-catch urine samples tested ≥24 hours apart in absence of urinary tract infection is considered significant.

Procedure followed: Women coming to hospital with pregnancy and signs and symptoms of pre eclampsia were included. Diagnosis was made initially by taking history with relevant clinical examinations, blood pressure on two occasions 6 hour apart and confirmed by laboratory investigations.

Bed side test for albumin (Heat coagulation test): Laboratory procedure-Two third of the test tube was filled with urine and heated into upper third, if turbidity appear then acetic acid was to added. Then the interpretation was if the turbidity disappeared albumin was absent, if translucent albumin was trace, if turbidity was thick then protein was present in urine. In dipstick testing 1+ albumin indicate less than 2gm and 2+ to 4+ indicate more than 2gm protein in 24 hours urine.

24 hour urinary protein estimation: Laboratory procedure-10 ml of urine from 24 hour collection sample was taken in a clean and dry test tube. The 24 hours volume of urine was noted. 1ml of urine was taken from 10 ml sample and mixed with 20% trichloro-acetic acid. After 10 minutes precipitate was formed then sample was to centrifuge. Supernatant fluid was discarded. Precipitate (0.5 ml) was mixed by dissolving in normal solution of NaOH. Then, 2.5 ml of distilled water was added and 5ml of burette reagent was added with it and mixed well and wait for 30 minutes at room temperature (25-30 degree centrigrate). Reading was taken at 530-wave length in colorimeter.

Method of data collection and processing: Data will be collected by structured questionnaires. After collection of data, all data will be put in the computer for analysis.

Data analysis: Data analysis will be done with the help of SPSS (statistical package for social science) version-17. The chi-square test and student "t" test and "Z" value will be used to analyze the significance level of $p<0.05$.

Results

Table 1: Demographic characteristics of the patients (N=50)

Age (in years)	Group A (n=25) No (%)	Group B (n=25) No (%)	p value
<20	5(20.0%)	6(24%)	
21-30	12(48.0%)	14(56%)	
31-40	8(32.0%)	3(12%)	
> 40	0(0%)	2(8%)	
Mean ± SD	27.8±7.0%	26.6±7.7%	.579 ns
Occupation			
Housewife	22(88%)	25(100.0%)	
Business	3(12.0%)	0(0.0%)	
Total	25(100.0%)	25(100.0%)	0.074ns
Obstetric history			
Prior sub fertility	2(8.0%)	1(4.0%)	
Gravida			
Primi	15(60.0%)	13(52.0%)	
Multi	10(40.0%)	12(48.0%)	

Data was performed to compare between two groups, ns = Not significant, Group A= Uric acid level > 6 mg/dl, Group B= Uric acid level < 6 mg/dl

Table-1 shows the distribution of age of the respondent out of 50 patients of pre eclampsia. Here among 50 patients, 11(22.0%) were in less than 20 years age group and 26 (52.0%) were in the 21-30 years. Within 31-40 years age group, 11 (22.0%) and rest of 2 (4.0%) were in the age group of more than 40 years. Out of 50 patients of pre eclampsia, in group A- 5(20.0%) were in the less than 20 years age group, majority cases 12 (48%) were in age group 21-30 years and no cases were above more than 40 year. Mean ± SD of age in this group was 27.8±7.0%. In group B-6(24.0%) were in the less than 20 years age group and 14 (56%) were in 21-30 years age group and only 2(8.0%) were more than 40 years. Mean±SD of age in this group was 26.6±7.7%. The difference of mean age of both groups were non-significant. 22 (88.0%) of patients of Group A were house wife, 3(12.0%) were business women. 25(100%) of Group B were house wife. The difference was not significant. Out of 50 patients, In Group A, 15(60%) were primi and 10(40%) were multi gravida where in Group B 13 (52%) were primi and 12(48%) were multi gravida.

Table 2: General examination of two groups of patients (n-50)

General examination	Group A (n=25) Mean ± SD	Group B (n=25) Mean SD	p value
Pulse (beat/min)	83.96±18.22	83.20±19.15	0.759ns
SBP (mmHg)	157.0±20.7	158.8±20.7	0.760ns
DBP (mmHg)	114.40±15.57	105.40±13.06	0.032s

Data were expressed as Mean ± SD, Unpaired t-test was performed to compare between two groups, ns Not significant, s= Significant

Table-2 shows general examination (pulse, blood pressure-systolic and diastolic) of the respondents. Out of 50 patients, Mean ± SD of pulse in Group A and group B was 83.96±18.22 beats/min and 83.20±19.15 beats/min respectively. The difference of mean pulse between two groups was non-significant (p-0.759). Mean ± SD of systolic blood pressure of Group A and Group B was 157.0±20.7 mmHg and 158.8±20.7 mmHg respectively. The difference of mean systolic pressure of both groups was non-significant (p- 0.760). Mean ± SD of diastolic pressure of Group A was 114.40±15.57 mmHg and Group B was 105.40±13.06 mmHg. There was significant (p- 0.032) difference of diastolic pressure in both groups.

Table 3: Comparison of serum uric acid concentration with diastolic pressure between two Groups (n-50)

Groups	Diastolic pressure (mm of hg) Mean ± SD	Uric acid (mg/100ml) Mean ± SD
Group A(n=25)	114.40±15.57	7.66±1.59
Group B(n=25)	105.40±13.06	4.71±0.85

Table-3 shows, comparison of serum uric acid concentration with diastolic pressure between two group (n=50). Mean ± SD of diastolic pressure was 114.40±15.57 mmHg in Group A when Mean ± SD of uric acid was 7.66±1.59 mg/dl and Mean ± SD of diastolic pressure of Group B was 105.40±3.06 mmHg when Mean ± SD of uric acid was 4.71±0.85 mg/dl.

Table 4: Comparison of serum uric acid level between two Groups (n-50)

Investigations	Group A (n=25) Mean ± SD	Group B (n=25) Mean ± SD	p value
S. uric acid (mg/dl)	7.66 1.59	4.71±0.85	<0.001[s]

Table-4 shows uric acid levels of the respondents. Among the 50 respondents, Mean ± SD of uric acid in Group A was 7.66±1.59 mg/dl and Group B was 4.71±0.85 mg/dl which had significant difference (p-0.001) between two groups.

Table 5: Distribution of patients fundal height (gestational weeks) in two groups (n-50)

Per-abdominal examination	Group A (n=25) Mean ± SD	Group B (n=25) Mean ± SD	p value
Fundal height (weeks)	32.88±3.05	33.04±2.76	0.84[ns]

Table-5 shows gestational weeks (fundal height) of the respondents. Among the 50 respondents, Mean ± SD of gestational weeks of Group A was 32.88±3.05; Group B was 33.04±2.76, which had non-significant difference (p-0.84)

Table 6: Distribution of the patients by maternal outcome in two groups (n-50)

Maternal Outcome	Group A (n=25) No. (%)	Group B (n=25) No. (%)	p value
No complications	10(40.0%)	23(92.0%)	<0.001[s]
Complications	15(60.0%)	2(8.3%)	<0.001[s]
Eclampsia	7(28.0%)	2(8.3%)	
HELLP	2(8.0%)	0(0.0%)	
Pulmonary edema	2(8.0%)	0(0.0%)	
Acute renal failure	1(4.0%)	0(0.0%)	
PPH	3(12.0%)	0(0.0%)	

Data were expressed as frequency and percentage, Chi-square test was performed to compare between two groups, ns= Not significant, s= Significant, Group A= Uric acid level > 6 mg/dl, Group B= Uric acid level < 6 mg/dl

Table-6 shows the distribution of maternal outcome of the respondents. Among 50 respondents, in Group A, 7(28.0%) had eclampsia, 1(4.0%) had acute renal failure, 2(8.0%) had HELP, 2(8%) had pulmonary edema, 3(12.0%) had PPH. But in Group B, only 2(8.3%) had eclampsia, and no acute renal failure, HELP, pulmonary edema, PPH patient. There was significant (0.001) difference of maternal complications between two groups.

Table 7: Distribution of patients by fetal outcome in two groups (n-50)

Fetal outcome	Group A (n=25) No. (%)	Group B (n=25) No. (%)	p value
Healthy (no complications)	5(20.0%)	15(60.0%)	0.003[s]
Complications	20(80.0%)	10(40.0%)	0.003[s]
Birth asphyxia	5(20.8%)	1(4.0%)	
Preterm	7(29.2%)	9(36.0%)	
Still birth	6(25.0%)	0(0.0%)	
Perinatal death	2(8.3%)	0(0.0%)	

Data were expressed as frequency and percentage, Chi-square test was performed to compare between two groups, ns- Not significant, s- Significant, Group A Uric acid level > 6 mg/dl, Group B Uric acid level < 6 mg/dl

Number of the patients by fetal outcome in two groups (n-50)

Table-7 shows the distribution of fetal outcome of the respondents. Among the 50 patients, in Group A, 5(20.8%) birth asphaxia, 7(29.2%) preterm baby, 6(25.0%) still birth, 2(8.3%) perinatal death. In group B, 1(4.0%) birth asphaxia, 9(36.0%) preterm baby but no still birth, perinatal death. The difference of fetal complications between two groups were statistically significant (p-0.003).

Discussion

The present analytic cross sectional study was conducted in the Obstetrics & Gynaecology department of Dhaka Medical College Hospital during the period of March 2016 to September 2016. Patients with pre-eclampsia attending the indoor department of Obstetrics & Gynaecology, DMCH were taken as subject of the study. Total 50 patients were

enrolled in the study. The study was conducted to find out association of serum uric acid with maternal and fetal outcome in pre-eclamptic patient among the Bangladeshi population. In the present study, out of 50 patients with pre-eclampsia, maximum cases (52%) were in 21-30 year age group and only 4.0% were in the age group of more than 40 year. Mean ± SD of group A was 27.8±7.0% and Mean ± SD of age was 26.6±7.7% in group B that reveals non-significant difference of mean age between two groups. In a study carried out by Masuda (dissertation) at Sir Salimullah Medical College and Hospital the age range was (21-25) year [20]. A case control study was conducted jointly in department of Biochemistry and Obs and Gynae, Dhaka Medical College during 2010-2011, where most of the patients belonged to (21-30) year age groups and the mean age was 24.06±3.71 year in case and 24.066±3.22 year in control which was not statistically different [19]. A study was conducted in department of Gynae and Obs in B J Medical College and Civil hospital, Ahmedabad, from 2011 to 2012 where the Meant±SD of age was 29+5.1% in group A (uric acid>6) and 2814.8% in group B(uric acid<6) which is not statistically different [21]. A study was conducted at Sylhet MAG Osmani medical college (SOMCH) from July 2007 to June 2008, where the mean age of group A (hyperuricemia) was 24.9±4.41% and group B (normal uric acid) was 26.59±4.71 which was not statistically different. In a retrospective study conducted at Mettu Karl Refferral Hospital from 2010 to 2013, majority 82.6% of mother were in the age range between 18-34 year with Mean ± SD of age was 24.4±5.12 [22]. A cross sectional study was conducted in department of biochemistry in collaboration with department of obstetrics and gynaecology Regional Institute of Medical Science (RIMS) Manipur, India where maximum pre-eclamptic patients were in 21-25 age group and Mean ± SD of age for cases(pre-eclamptic) was 26.50±5.50 years, for controls (normotensive) was 27.64±4.76 years [23]. In the present study, 22 (88.0%) patients of Group A were house wife, 3(12.0%) were business women. In group B 25 (100%) patients were house wife. So the difference between the groups is not significant. In present study, out of 50 pre eclamptic patients in Group A, 15(60%) were primi and 10 (40%) were multi gravida. In Group B 13 (52%) were primi and 12(48%) were multi gravida. According to the study of B J Medical College and Civil hospital, out of 100 pre-eclamptic patient in group A (uric acid>6) there was 36 primi and 14 multi patient where in group B(uric acid<6) 20 primi and 30 multigravida patient [21]. Jennifer Uzan *et al*. reported, the incidence of pre-eclampsia ranges 3%-7% for nulliparous and 1%-3% for nulliparous multiparous [24]. Sabai *et al*. reported the rate of pre eclampsia ranges between 2%-7% in nulliparous women [6]. In present study, Out of 50 patients, Mean ± SD of pulse in Group A was 83.96±8.22 beats/min and in Group B was 83.20±9.15 beats/min which was statistically non-significant (p-0.759). Mean ± SD of systolic blood pressure was 157.0±20.7 mmHg in Group A and 158.8±20.7 mmHg in Group B which was statistically non-significant (p-0.760). Mean ± SD of diastolic pressure was 114.40±15.57 mmHg in Group A and 105.40±13.06 mmHg in Group B. Difference of diastolic pressure of both groups were statistically significant (p-0.032) difference. In a study conducted at Sylhet MAG Osmani medical college (SOMCH) from July 2007 to June 2008 where Mean ± SD of systolic blood pressure was 156.30±18.60 mmHg in Group A (hyperuricemia) and 151.72±12.09 mmHg in Group B (normal uric acid). Mean ± SD of diastolic pressure was 102.61±12.42 mmHg in Group A and 98.59±7.54 mmHg in Group B. No statistically significant difference (p>0.05) of both systolic and diastolic blood pressure was found between the both groups [25]. In present study, Mean±SD of uric acid in Group A was 7.66±1.59 mg/dl and Group B was 4.71±0.85 mg/dl. The difference of Mean ± SD of both groups was statistically significant (p-0.001). In Sylhet MAG Osmani medical college (SOMCH) study in hyperuricemic subjects Mean ± SD of serum uric acid concentration was 7.09±1.09mg/dl and in normouricemic group, it was 4.62±0.76mg/dl. Significant differences of uric acid levels between two groups were observed [25]. In a study conducted in department of Gynae and Obs in B J Medical College and Civil hospital, out of 100 patients Mean ± SD of uric acid in Group B uric acid <6 mg/dl) was 3.7±1.1mg % where in Group A (uric acid-6 mg/dl) was 6.4±1.7mg % [21]. Mustaphi and Gopalan found that an elevation of the mean values for uric acid correlated with degree of severity of toxemia [23]. In the present study, gestational weeks (fundal heights) of the respondents, among the 50 respondents, Mean±SD of gestational weeks of Group A was 32.88±3.0, Group B was 33.04±2.76 which was statistically non-significant (p- 0.84). Voto *et al*. study reported a significant decrease in average gestational age at delivery in women with severe pre eclampsia and super imposed pre eclampsia with higher serum uric acid level [26]. In present study, among 50 respondents, in Group A, 7(28.0%) had eclampsia, 1(4.0%) had acute renal failure, 2(8.0%) had HELLP, 2(8%) had pulmonary edema, 3(12.0%) had PPH. In Group B only 2(8.3%) had eclampsia but other complications like Group A were absent. The difference of complications between two groups were significant (p-0.001). In B J Medical College and Civil hospital study, out of 100 patient there were 4 cases of eclampsia, 4 cases of abruption placentae, 4 cases of HELLP, 1 case of acute renal failure in group A(uric acid>6).In group B(uric acid<6) only one case of eclampsia but there were no complications like Abruptio placentae, HELLP syndrome or ARF [21]. The risk of adverse maternal outcome increased with increasing uric acid. Specifically, an elevated uric acid level was associated with a five-fold increased risk of development of maternal renal dysfunction as measured by increased serum creatinine when compared with the risk in the absence of hyperuricaemia [27]. The present study shows the difference of fetal complications between two groups.In Group A 5(20.8%) had birth asphaxia, 7(29.2%) baby was premature, still born was 6(25.0%) and perinatal death was 2(8.3%). In group B,number of birth asphaxia was 1(4.0%), preterm delivery was 9(36.0%) and no other complications. The difference of fetal complications between two groups were statistically significant (p-0.003). In B J Medical College and Civil hospital study, in group A (uric acid>6), there were 10 pre-term babies, 8 IUFD, 13 IUGR and 20 babies had low apgar (<7). In group B (uric acid<6), 2 pre-term babies, 4 IUGR, 5 babies with low apgar (< 7) and no IUFD. So these entire abnormal fetal outcomes were higher in Group A (uric acid 26mg/dl) [21]. In a prospective study conducted at the Government Lady Goschen Hospital, Mangalore, Karnataka, India, where 86.4% had perinatal deaths and 60% had preterm delivery of those patients who had uric acid levels > 5.5 mg/dl. All the babies born to mothers who

had this value ok had birth weight < 2.5 kgs, 68% of them being Small for Gestational Age [28]. Varma TR demonstrated 38% of IUGR in severe pre eclampsia group and only 18% IUGR in mild PE group. The incidence of low birth weight was higher in severe PE group 16% in comparison with mild PE group (12%) [29].

Conclusion

The incidence of pre-eclampsia is high in developing countries like Bangladesh. Since the complications are preventable if detected in early stage, it is essential to diagnose at early stage and to institute proper medical care in time. Development of simple, sensative biochemical test is therefore important to detect pregnant women who are at risk of developing pre- eclampsia. Despite continuous effort, preeclampsia could not be prevented completely even in developed countries. But vigilant regular antenatal cheek up and appropriate measure in time has improved the maternal and perinatal outcome in a great extent. For monitoring different laboratory investigations are done which are expensive and many of them not easily available in developing countries. So, trail has been made to find out simple, sensitive biochemical test as an indicator of maternal and fetal outcome.

Limitations of this study

- The present study had the following limitations –
- Small sample size
- Follow up not done as all patients did not come for follow-up.
- Study in a single center.
- Single measurement of serum uric acid is done due to lack of facilities.
- Some patient were unable to answer correctly to the questionnaire.

Recommendations

This type of study should be done in large scale including community. Though a multi centre large scale study needed to be performed for recommendation, a little can be recommended from this small scale study with previous literature review.

- Regular antenatal checkup and measurement of blood pressure help to early diagnosis of preeclampsia, so that complication or sequelae can be prevented.
- Awareness should be made from government to grassroots level by addressing the problem.

Conflict of Interest

Not available

Financial Support

Not available

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