SEASONAL VARIATION IN THE INCIDENCE OF PREECLEMCIA AND ECLAMPCIA AMONG THE PATIENTS PRESENTING IN THE CATCHMENT AREA OF AYUB MEDICAL TEACHING HOSPITAL ABBOTTABAD

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ABSTRACT

Background: Preeclampcia and eclampcia are the leading cause of maternal morbidity and mortality. Many observational studies have shown correlation in the onset of preeclampcia and eclampcia and various seasonal changes. The aim of our study is to find seasonal variation in the onset of preeclampcia and eclampcia among patients presenting in the catchment area of Ayub teaching hospital.

Method: It's an observational study. Data was collected from maternity register records from January 2014 to December 2015 for 24 months. The study period was divided into two groups winter and spring (November to April), and summer and autumn (May to September).the incidence preeclamcia and eclampcia in these two groups were compared.

Results: In 24 month study duration total deliveries were 12590 and preeclampcia cases were 284(2.25%) and eclampcia cases were 132 (1.04%).There were 180 (2.99%) cases of preeclampcia in winter and spring season (November to April) and 104(1.58%)cases of preeclampcia in summer and autumn (may to September) ,While there were 80(1.33%) cases of eclampcia in winter and spring season (November to April) and 52(0.79%) cases of Eclampcia in summer and autumn (may to September).

Conclusion: In the cold climate of Abbott bad, the incidence of eclampsia and preeclampsia is significantly higher in winter and spring when the weather is cooler than the rest of the year. There is increased incidence of preeclampcia and eclampcia in winter and spring then in summer and autumn.

INTRODUCTION

Preeclampcia affects 2-5% of pregnancies. Preeclampcia and eclampcia are associated with increased maternal morbidity and mortality, and pregnancy complications like preterm delivery, placental abruption, intrauterine growth restriction and perinatal morbidity and mortality.[1] Since Hippocrates seasonal variations in disease occurrence is being studied. Exact aetiology of eclampcia and preeclampcia is not known exactly but environmental effect is not included in its aetiology. Studies from tropical areas Scandinavia and Africa have shown increased incidence of preeclampcia and eclampcia in winter and monsoon season than in summer and dry weather.[5] There is increased confusion for seasonal variations on the incidence of preeclampcia and eclampcia. In US increased incidence of preeclampcia and eclampcia seen during hurricane and humid hot weather. Some studies show increased incidence of preeclampcia and eclampcia in cold weather while others suggest increased incidence in summers.[6]

Worldwide 800 women die from preventable diseases in which 99% deaths occur in low and middle income countries.76,000 maternal deaths worldwide occur due to preeclamcia. Incidence of preeclamcia is 2-8% while 10-15% direct maternal deaths occur from preeclampcia and eclampcia.[7]

Large number of cases presents with preeclampcia and eclampcia throughout the year in our hospital and there is difference in number of cases present in certain part of year, so we conducted this study to find any seasonal variation in presentation of cases of preeclampcia and eclampcia. Ayub teaching hospital is a tertiary care centre and most of cases presented to hospital are referred cases. Our study data have shown many of cases were from hilly areas of kohistan,Alai,Bisham and Battagram. Due to low health facilities in these areas mostly preeclampcia and eclampcia cases are referred to tertiary hospital. We have observed variations in presentation of preeclampcia and eclampcia cases in different seasons.

METHOD

This study is observational study. This study was

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Table 1: Seasonal variation of incidence of Preeclampcia

Year	November-April(Winter&spring)		May-September(Summer &Autumun)	
	No. of deliveries	Preeclampcia cases	No of deliveries	Preeclampcia cases
2014	2360	94(1.56%)	2800	46(0.69%)
2015	3653	86(1.43%)	3777	58(0.86%)
Total	6013	180(2.99%)	6577	104(1.58%)

Table 2: Seasonal Variation In Incidence Of Eclampcia

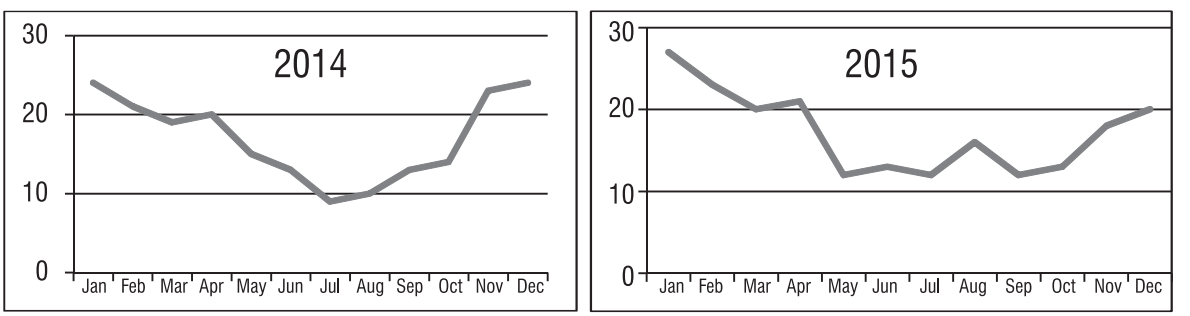
Year	November-April(Winter&spring)		May-September(Summer &Autumn)	
	No. Of deliveries	Eclampcia cases	No of deliveries	Eclampcia cases
2014	2360	43(0.715%)	2800	25(0.38%)
2015	3653	37(0.615%)	3777	27(0.41%)
Total	6013	80(1.33%)	6577	52(0.79%)

No of cases of pre eclampcia in November-April(winter and spring)	No of cases of pre eclampcia in May-September(Summer &Autumn)	P value = 0.0380 So there is statistical difference in cases of preeclamcia in winter and spring and pre ecalampcia cases in summer and autumun
180(2.99%)	104(1.58%)	

No of cases of eclampcia in November-April(winter and spring)	No of cases of eclampcia in May-September(Summer &Autumn)	P value = 0.0474 So there is statistical difference in cases of Eclamcia in winter and spring and Ecalampcia cases in summer and autumun
80(1.33%)	52(0.79%)	

Mean age in years of cases in months of Nov and April (winter and spring)	Mean age in years of cases in months of May and September (Summer and Autumn)	P value= 0.83603 The difference is not statistically significant
25.6	24.8	

Mean parity of cases presented in months of November and April(winter and spring)	Mean parity of cases presented in months of May and September(-Summer and Autumn)	P value= 0.237345 The difference is not statistically significant
3.2	3.4	



Monthly distribution of cases of preeclampcia and eclampcia

conducted in patients delivered in maternity units of Ayub teaching institute. Data was recorded retrospectively from maternity register of all deliveries and related complications for period of 24 months from January 2014 to December 2015.

Women of reproductive age having pregnancy presented with increased B.P headache, epigastric pain, edema, nausea and vomiting and fits during pregnancy after 20 weeks of gestation till 10days postpartum were included in study. Diagnosis was made on the basis of history examination and laboratory investigations. Patients with convulsions other than eclampcia like epilepsy, metabolic abnormality, or intracranial haemorrhage, or other medical disorders or those presented after 10days of delivery were excluded. Data was collected and studied in different seasons from November to April and from May to September. Variation of presentation of cases was compared in different weathers.

RESULTS

In 24 month study duration total deliveries were 12590 and Preeclampcia cases were 284 (2.25%) and Eclampcia cases were 132 (1.04%).There were 180(2.99%) cases of preeclampcia in winter and spring season (November to April) and 104(1.58%)cases of preeclampcia in summer and autumn (May to September) as shown in table 1.statistical analysis was done by applying unpaired t test t(2) 4.9818 and p value is 0.0380.There are increased number of preeclampcia cases in months November to April and there is a statistical difference in the incidence of preeclampcia cases in November to April(winter and spring) than cases in months of May to September(summer and autumn).

There were 80 (1.33%) cases of Eclampcia in winter and spring season (November to April) and 52(0.79%) cases of Eclampcia in summer and autumn (may to September) as shown in table 2.statistical analysis done by unpaired t test.t(2) 4.4272 and p value was 0.0474, so there is statistical difference in incidence of eclampcia cases in (winter and spring) and (summer and autumn).

The mean age of cases presented in months November to April(winter and spring) was 25.6 years and mean age of cases presented in months of May to September(summer and autumn) was 24.8 years. Mean ages of both groups were compared by using T-test for two independent means and p value was 0.530594, So there is no statistical difference in the mean age of both groups. The mean parity of cases presented in months November to April(winter and spring) was 3.2 and mean parity of cases presented in months of May to September(summer and autumn) was 3.4. Mean parity of both groups were compared by using T-test for two independent means and p value was 0.237345,so there is no statistical difference in the mean parity of both groups. These results show that the statistical difference in the onset of cases of eclampcia and preeclampcia in both groups is due to effect of seasons not due to specific parity or age of patients.

DISCUSSION

Preeclampcia is defined as hypertention developed during pregnancy after 20 weeks of gestation associated with protienuria.It effects 2-5% of pregnancies. Preeclampcia and eclampcia are associated with increased maternal morbidity and mortality, and pregnancy complications like preterm delivery, placental abruption, intrauterine growth restriction and perinatal morbidity and mortality.[1]Severe preeclampcia patient presents with severe headache and blurring of vision, epigastria pain, uncontrolled hypertension and severe oedema, and with eclampcia patient presents with fits along with preeclampcia.[2]hypertensive disorder of pregnancy is attributed nearly 18% of maternal mortality. Worldwide maternal death due to hypertensive disorder of pregnancy is 1 in 1700 to 1in 2100 deliveries. There is wide variation of maternal mortality due to hypertensive disorders of pregnancy ranging very low 1 in 3800 in developed countries to very high in poor income countries like sub-Saharan Africa where it is 1 in 39 deliveries.[3]Pakistan ranks at sixth number in the world's most populous countries. According to Pakistan demographic and health survey 2006-2007maternal mortality rate of Pakistan is 279/100,000live births. In Pakistan 34% tertiary care hospital admissions include maternal death due to eclampcia.[4]

Most of previous published data show increased incidence of preeclampcia in wet and cold weather which can suggests effect of humidity and cold weather on blood vessels causing vasoconstriction and release of vasoactive substances which is the underlying mechanism of preeclampcia. Change in plasma volume due to change of temperature with weather changes can be one of proposed mechanism of difference in incidence of preeclampcia with season. Shahgheibi s et al have shown increased incidence of preeclampcia in winter.[8]in Nigeria rate of caesarean section was found higher in rainy season and low in dry weather. In Kuwait increased incidence of preeclampcia was found in cold humid weather then in hot dry weather. Similarly Scandinavian study and study in South Africa showed increased incidence of preeclampcia in winters.[9]

Studies in Thailand and India found no statistical difference in incidence of preeclampcia with seasonal variation. Increased preeclampcia cases were noted in winter in a study in Pakistan while in iran no difference was noted in risk of eclampcia and rainy season.[10]

Various hypotheses are proposed for these seasonal variations in the onset of preeclampcia and eclampcia. Literature evidence have shown protective effect of dehydration seizures. Overhydration and hyponatreamia causes neurons to swell up and make them overactive and vulnerable for injury. So increased sweat-

ing during summer and loss of sodium and dehydration makes pregnant patients protective of convulsions. In winters vasospasm can be a proposed mechanism for hypertention.[6]

In this study increased cases of preeclampcia and eclampcia were noted in the months of November to April than in the months of May to September and there is statistical difference in these seasonal variations. Exact mechanism of effect of metrological parameters on onset of preeclampcia is not known .further research is required to find the relation of meteorological parameters on incidence of preeclampcia and eclampcia.

CONCLUSION

There is seasonal variation of incidence of preeclampcia and eclampcia. In our study increased number of cases of preeclampcia and eclampcia present in winter and spring season than in summer and autumn. So regular antenatal checkups, early detection of condition and early referrals to tertiary health facility and patient education can reduce maternal and perinatal mortality and morbidity.

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