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SEASONAL VARIATION IN THE OCCURRENCE OF PRE-ECLAMPSIA

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Abstract. *The term (PIH) pregnancy induced hypertension is defined as hypertension that direct result of gravid state it includes gestational hypertension, pre-eclampsia, eclampsia. as we know pre-eclampsia is a complication of the last trimester of pregnancy that effect 2-8% of all pregnant women, it is a multi-systemic disorder with unknown etiology, characterized by hypertension (BP ≥ 140 /90 mmHg) with protein urea (more than > 0.3g) after 20th week of gestations in previous normotensive and normoproteinuric women. Some of the edema is normal during pregnancy thus edema exclude Frome the diagnostic criteria unless it is pathological. The Features of pre-eclampsia may appear even before 20th weeks of gestation as in cases of hydatidiform mole or poly hydramnios. Pre-eclampsia is one of the leading causes of maternal morbidity and mortality globally, As estimated by WHO the prevalence of pre-eclampsia is seven-fold higher in developing countries as compared to developed countries. The prevalence of Pre-Eclampsia ranges between 1.8 - 16.7% in developing countries.*

In this retrospective descriptive study, the main objective is to evaluate the effect of seasonal change on the occurrence of pre-eclampsia. We have included all the pregnant women that were hospitalized due to Parturition at OBS/GYN ward of Nangarhar University Teaching Hospital (NUTH) during the time frame of 01/01/1401 – 29/12/1401. Also, we have included all the women with gestational age of > 20 weeks and notable Hypertension and Proteinuria. All the women with multiple pregnancy, polyhydramnios, trophoblastic disease was excluded from our research.

During the period of this research (12812) pregnant women delivered their babies. Among these (271) or (2,1%) were diagnosed with pre-eclampsia, after the analysis of the data that has been collected from this research following risk factors contributes in the occurrence of Pre-eclampsia: poverty (61.5%), low educational background (97%), mean age were 32 years, 20.9% were primigravida rest of them were women with high parity, (41.6 %) related to overweight class, (51.2%) to obese class of BMI classification. and (1%) women were with personal history of DM and (3%) with past history of HTN. According to the data that we have collected it shows that Spring and summer were the seasons with less numbers of the Pre-eclampsia (17.3%) on the other hand Autumn and Winter were the seasons with the most numbers of the Pre-eclampsia (82.6%).

Key words: *pre-eclampsia, incidence, Climate change, PIH.*

СЕЗОННЫЕ КОЛЕБАНИЯ В ВОЗНИКНОВЕНИИ ПРЕЭКЛАМПСИИ

Аннотация. *Термин (ПВГ) гипертензия, вызванная беременностью, определяется как гипертензия, которая является прямым результатом состояния беременности, он включает гестационную гипертензию, преэклампсию, эклампсию. Как мы знаем, преэклампсия является осложнением последнего триместра беременности, которое поражает 2-8% всех беременных женщин, это мультисистемное расстройство неизвестной этиологии, характеризующееся гипертензией (АД ≥ 140/90 мм рт. ст.) с*

протеинурией (более > 0,3 г) после 20-й недели беременности у предыдущих нормотензивных и нормопротеинурических женщин. Некоторые отеки являются нормой во время беременности, поэтому отеки исключают Фроме диагностические критерии, если они не являются патологическими. Признаки преэклампсии могут появиться даже до 20-й недели беременности, как в случаях пузырного заноса или многоводия. Преэклампсия является одной из основных причин материнской заболеваемости и смертности во всем мире. По оценкам ВОЗ, распространенность преэклампсии в семь раз выше в развивающихся странах по сравнению с развитыми странами. Распространенность преэклампсии колеблется от 1,8 до 16,7% в развивающихся странах.

В этом ретроспективном описательном исследовании основной целью является оценка влияния сезонных изменений на возникновение преэклампсии. Мы включили всех беременных женщин, которые были госпитализированы в связи с родами в отделение акушерства и гинекологии клинической больницы университета Нангархар (NUTH) в период с 01.01.1401 по 29.12.1401. Кроме того, мы включили всех женщин со сроком беременности > 20 недель и выраженной гипертонией и протеинурией. Все женщины с многоплодной беременностью, многоводием, трофобластической болезнью были исключены из нашего исследования.

В период этого исследования (12812) беременных женщин родили своих детей. Среди них (271) или (2,1%) была диагностирована преэклампсия, после анализа данных, которые были собраны в этом исследовании, следующие факторы риска способствуют возникновению преэклампсии: бедность (61,5%), низкий уровень образования (97%), средний возраст составил 32 года, 20,9% были первородящими, остальные были женщинами с высоким паритетом, (41,6%) относились к классу избыточного веса, (51,2%) к классу ожирения по классификации ИМТ. и (1%) женщины были с личным анамнезом СД и (3%) с прошлым анамнезом АГ. Согласно данным, которые мы собрали, это показывает, что весна и лето были сезонами с меньшим количеством случаев преэклампсии (17,3%), с другой стороны, осень и зима были сезонами с наибольшим количеством случаев преэклампсии (82,6%).

Ключевые слова: *преэклампсия, заболеваемость, изменение климата, ПВГ.*

INTRODUCTION

As we know Pre-Eclampsia is one of the most important Complication of the last trimester of pregnancy that affect 2-8 % of all pregnant women, it is a multisystemic disorder of unknown etiology characterized by pregnancy induced hypertension (Bp ≥140 /90 mmHg) with proteinuria more than > 0.3g after 20th weeks of gestation in previous normotensive and normoproteinuric women. Some amount of the edema is normal during pregnancy thus edema exclude from the diagnostic criteria. [1] Pre-Eclampsia is one of the leading causes of maternal morbidity and mortality globally, as estimated by WHO the occurrence of Pre-Eclampsia is seven fold higher in developing countries as compared to developed countries. Several nutritional factors have been studied as possibly related to these changes. [2]

Pre-eclampsia can cause several problems and complications, including placental abruption, HELP syndrome (hemolysis, elevated liver enzymes and thrombocytopenia), and renal

failure, in different organs of the body. If not diagnosed and treated, early preeclampsia–eclampsia can become further maternal and fetal death [3]

A low calcium diet has been shown to be associated with an increased incidence of Pre-Eclampsia and a number of studies show a reduction in the occurrence of Pre-Eclampsia after calcium supplementation. In contrast, one recently published study with a large number of patients revealed that calcium has no effect on incidence, blood pressure or fetal outcome. [2]

Many studies show a reduction of Pre-eclampsia in women who uses PUFA (polyunsaturated fatty acids) Fatty acids are involved in the prostaglandin metabolism, thus an imbalance of PGI2 and TXA2 leads to an antiaggregatory effect in the pregnant women. [3]

The prevalence of Pre-Eclampsia ranges between 1.8 - 16.7% in developing countries. Several studies have demonstrated that Pre-Eclampsia is linked with the failure of the trophoblastic invasion of maternal spiral arteries which leads to higher vascular resistance of uterine arteries and lower uteroplacental blood flow. [4]

In cohort research at south Korea researchers pointed to this finding the occurrence of Pre-Eclampsia is highest in December and lowest in July and august month This descriptive study was conducted on 363 pregnant women referring to Sanandaj Besat Hospital during 2013 - 2014. Data were collected from medical records of pregnant women who were hospitalized because of Pre-Eclampsia and analyzed. The results showed that the mean age of women diagnosed with Pre-Eclampsia was 30.5 ± 6.60 years. The prevalence of Pre-Eclampsia in urban and rural pregnant women was 10% and 4%, respectively the incidence of Pre-Eclampsia was 30% during the winter months. There was no statistically significant relationship between the season of conception and the month of Pre-Eclampsia (P = 0.67). Based on the findings of this study, it can be said that the risk of Pre-Eclampsia in colder seasons much higher than warmer seasons. [5]

Methodology: This is a retrospective study which was conducted in OBS/GYN ward of Nangarhar University Teaching Hospital (NUTH) during the time frame of 01/01/1401 – 29/12/1401. the main objective to evaluate the effects of climate change on occurrence of preeclampsia. We have included all women with more than 2oth weeks' gestation age., that came to the OBS/GYN ward of (NUTH) for the parturition purposes, from the all women that came for Parturition or duo to Pregnancy induced hypertension (PIH) management, some of them needed better management of PIH thus hospitalization was required, for diagnosis after filling special record of obstetrics patient include measurement their weight and height , cheeked blood pressure in both hand in case of high blood pressure some necessary lab examination advised like urine Routine Exam , kidneys Function Test ,Liver Function Profile ,lipid level and ultrasonography for fetal well-being, gestation age and placental pathology. and we received permission from the all-enrolled pregnant women to answer some questions related to this study such as age, parity, personal or family history of preeclampsia and diabetes mulitas, economic and educational state in prepare questioner. then all the data and variable that we collected in our study was analyzed in MS Excel. The women with twine pregnancy, polyhydramnios is and molar pregnancy were excluded.

Result: In this retrospective descriptive study, the main objective was to evaluate the seasonal change effect on occurrence of preeclampsia. All the women that were included in our study admitted and delivered in the time frame of 01/01/1401 – 29/12/1401 at the university

teaching hospital Gyn /Obs ward. During the period of the research (12812) pregnant women delivered their babies. among these women (2,1%) were diagnosed with pre-eclampsia, after the analysis of the data that has been collected from this research following possible risk factors contributes in the occurrence of Pre-eclampsia: poverty (61.5%), low educational background (97%), (20.9%) women were primigravida (79.1%) of them were women with high parity, (41.6 %) include women related to overweight class, 51.2% to obese class of Body Mass Index classification. and (1%) women were recorded with personal history of DM and (3%) HTN.

According to the data that we have collected it shows that Spring and summer were the seasons with less numbers of the Pre-eclampsia (17.3%) on the other hand Autumn and Winter were the seasons with the most numbers of the Pre-eclampsia (82.6%)

Discussion: Seasonal variations in the occurrence of preeclampsia and potential implication of upper respiratory infections in South Kore research, demonstrated that there are seasonal variations in the occurrence of PE in South Korea. Moreover, Additionally, URI may be correlated to the rise of PE. The purpose of this study was to assess the association between upper respiratory infections (URIs) during pregnancy and the onset of preeclampsia (PE), as well as the impact of seasonal variations on PE incidence in East Asian and South Korean populations.

Women in South Korea who gave birth to singletons between 2012 and 2018 were included in this cohort research. After analyzing 548,080 first singleton births, 9311 patients (1.70%) received a PE diagnosis. Multivariate analysis revealed that the following characteristics were associated with a greater risk of PE: older age (≥ 30 years old), poor income, living in the southern region of South Korea, history of cigarette smoking, excessive drinking, higher body mass index, hypertension, or diabetes mellitus. Univariate analysis showed that URI was associated with the incidence of PE (P = 0.0294). The research result showed the occurrence of PE was the highest in December (a OR 1.21; 95% CI 1.10–1.34) and lowest in July and August.

At the other study at the Zimbabwe under name of Seasonal change in the incidence of preeclampsia in Zimbabwe that the aim of researchers was to evaluate the number of women in a southern Zimbabwean area experiencing hypertensive pregnancy problems, as well as to look at changes in the yearly preeclampsia incidence. The pre-eclamptic women treated between January 1992 and August 1995 were counted in three separate hospitals. There was a noticeable variation in the yearly incidence of preeclampsia. These alterations correspond with the seasonal fluctuation in precipitation: there is a rise in the incidence toward the conclusion of the dry season and in the early months of the rainy season. As conclusion the researchers mentioned relationship between climate and occurrence of preeclampsia raises new questions in the pathophysiology of preeclampsia. The effects of temperature and humidity on arteries as well as the synthesis of vasoactive chemicals are potential causes. The pathophysiology may be influenced by the nutritional condition as dry and wet seasons affect agriculture productivity.

At a study under name of Prevalence of preeclampsia and the associated risk factors among pregnant women in Bangladesh, the data regarding preeclampsia and its associated risk factors are scarce or limited in pregnant women in Bangladesh. Thus, our goal was to do a cross-sectional study on a cohort of pregnant women in Bangladesh in order to determine the prevalence of preeclampsia and potential risk factors. A total of 111 individuals were recruited for this cross-sectional study, and they were requested to fill out a standard questionnaire form with their

anthropometric, sociodemographic, and other relevant lifestyle data. Each participant also had blood drawn in order to use established techniques to assess the serum levels of uric acid, creatinine, liver enzymes, and lipid profile. A logistic regression analysis was used to determine the preeclampsia-related variables.

The overall prevalence of preeclampsia was 14.4%. About 10% of the pregnancies were found to have preeclampsia after 20 weeks of gestation without a previous history of hypertension.

On the other hand, the prevalence of preeclampsia that superimposed on chronic hypertension was found to be 5.4%. Preeclamptic pregnancies had considerably lower serum levels of HDL-C and significantly higher serum levels of TC, LDL-C, ALT, and uric acid compared to non-preeclamptic pregnancies. Preeclamptic individuals were more likely to have to take antihypertensive drugs (AOR 5.45, 95% CI [1.09, 27.31]) and to have never had prenatal care (AOR 6.83, 95% CI [1.00, 46.48]). As a result, the current study's findings indicate that pre-eclampsia is rather common among Bangladeshi pregnant women. To minimize and avoid hypertensive pregnancy problems in Bangladesh, some programmatic actions, such hypertension medication, prenatal doctor visits, delivery, and postnatal care services, should be taken into consideration.

During the period of this research (12812) pregnant women delivered their babies. among these (2,1%) were diagnosed with pre-eclampsia, after the analysis of the data that has been collected from this research following possible risk factors contributes in the occurrence of Pre-eclampsia: poverty (61.5%), low educational background (97%), (20.9%) were primigravida (79.1%) of them were pregnant women with high parity, (41.6 %) research include women related to overweight class, (51.2%) to obese class of BMI classification. and (1%) women were recorded with personal history of DM and (3%) HTN. According to the data that we have collected it shows that Spring and summer were the seasons with less numbers of the Pre-eclampsia (17.3%) on the other hand Autumn and Winter were the seasons with the most numbers of the Pre-eclampsia (82.6%). At conclusion can say that preeclampsia usually occurrence increased in cold climate and decreased in Warm climate

In our research the median age for Preeclampsia is 30 years where as this number goes up to 32 years in other researches. The reason for this rise is only the marriage of girls at the late youth stage of life in those countries.

Smoking cigarettes and drinking alcohol are two other causes which were risk factors Preeclampsia in Western countries where as the mentioned factors are not observed in our country.

Based on time factor, our research shows that the highest numbers regarding Preeclampsia are seen in the months of (Jadi, Dalw and Hoot = December, January and February) whereas the lowest numbers are seen in the months of (Saur, Jawza, and Saratan = April, May and June).

Regarding comparison, our research results are approximately the same as other mentioned countries research specially like Korea.

CONCLUSION

In our research according to the data analyzed Spring and summer were the seasons with least numbers of the Pre-eclampsia on the other hand Autumn and Winter were the seasons with the most numbers of the Pre-eclampsia, this strengthen the association of low temperature with

Triggering preeclampsia, on the other word we can say the women received conception on the warm season they deliver their baby in cold season at most of them preeclampsia noted

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