Prevalence of Preeclampsia in Hormozgan Province

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Original Article

Abstract

Introduction: Preeclampsia is a potentially life-threatening disease during pregnancy diagnosed by hypertension and proteinuria after 20 weeks of gestation. The etiology and pathogenesis remain mysterious and poorly understood. It is a major cause of maternal and neonatal death and morbidity worldwide, affecting nearly 5-10% of all pregnancies. In this study we, aimed to determine the prevalence of preeclampsia in southern Iran, various districts of Hormozgan province, in order to outline existing high risk disease-areas headed for early diagnosis of the disease.

Methods: A retrospective cross-sectional study was carried out on 1033 ethnic-matched unrelated pre-eclamptic subjects out of 17792 pregnant women who had delivery from September 2012 to March 2013 in Hormozgan province. Demographic and clinical features of the study subjects were collected using well-structured questionnaire. Statistical analysis was performed using SPSS. Chi-Square test was used and $P<0.05$ was considered statistically significant.

Results: Preeclampsia prevalence was generally 5.8% in Hormozgan. 41% and 59% of pre-eclamptic women were nullipara and multipara, respectively. 62% of the deliveries were done by Cesarian section. Individual frequency distribution of preeclampsia in each studied cities were 18.8% in Bandar Khamir, 13.7% in Bashagard, 12.1% in the province cities ranged from 3.1% in Kish to 18.8% in Bandar Khamir.

Conclusion: Our study showed a similar frequency distribution as the world prevalence for pre-eclampsia. Early detection of high risk subjects for pre-eclampsia and subsequent perinatal care should be considered in some areas of the province. Planned intervention could manage and decrease the rate of pre-eclampsia and its complications effectively.

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Introduction:

Preeclampsia is potentially one of the most life-threatening disorders during pregnancy which is characterized by hypertension and proteinuria after 20 weeks from gestation. About 75'000 mothers and 500'000 newborns lose their lives because of preeclampsia complications (1). The prevalence of the disease is 2-7%in the western countries, but its prevalence may increase up to three times in different geographical regions and various races (2).

The risk factors of preeclampsia include diabetes, obesity, positive family history, chronic renal diseases, hypertension, antiphospholipid syndrome and multifetal pregnancy of mothers (3). Despite many years of research, the etiology and the methods for early diagnosis of the disease have not been specified yet. Studies show that placenta has the main role in the pathogenesis of the disease where one of the causes of the disease can be placental hypoxia (4, 5). On the other hand, genetic causes have also been suggested due to the higher prevalence of preeclampsia in sisters and daughters of those suffered from the disease.

At present, there is no definitive treatment for preeclampsia, and the intensive healthcare for the suffered women may lead to protect the maternal and fetal health. On the other hand, early diagnosis of the disease is of high importance.

Since the prevalence of preeclampsia is different from one race to another (6) and there is no history of similar studies in Hormozgan province, crucial to be informed of the exact prevalence and distribution of the disease in the province which may result in the identification of high risk regions and subsequently early diagnosis of the disease and prevention of maternal and fetal complications..

Methods:

This is a retrospective cross-sectional descriptive study using the data recorded at hospitals with gynecology department and healthcare centers in Hormozgan province. The studied samples included 1033 individuals with the diagnosis of preeclampsia selected from 17792 pregnant women referred to the healthcare centers for delivery from October 2012 to March 2013.

The diagnosis criteria included blood pressure $\geq$140/90 mmHg along with either proteinuria $\geq$300 mg in 24-hour urine or proteinuria$\geq$1+ urine test strip in pregnant women after 20 weeks gestation.

Healthcare staff (midwives and family health professionals) at healthcare centers as well as medical records staff of hospitals of Hormozgan province filled out a researcher-made form for recording required information for each patient using both statistical information available at the healthcare centers and patient medical records at hospitals. The variables investigated in this study included age, place of residence, gravida, history of abortion, history of stillbirth, history of hypertension in the previous pregnancy, history of chronic hypertension, type of delivery, weight of newborn, gestational age, stillbirth history in the last pregnancy and hospitalization of newborn.

After collection, data were coded and then analyzed by SPSS software. The distribution map of different parameters was prepared by the use of Geographical Information Systems (GIS) techniques. Descriptive methods were used for data analysis.

Results:

This study investigated all women with preeclampsia (1033 cases) in Hormozgan province from October 2012 to March 2013. The prevalence of preeclampsia in the province was 5.8%. The prevalence of the disease in different cities of the province from the highest to the lowest was as 18.8% in Bandar Khamir, 13.7% in Bashagard, 12.1% in Haji Abad, 9.8% in Bandar Jask, 8.9% in Bandar Lengeh, 5.7% in Roudan, 5.4% in Bandar Abbas, 5.3% in Minab, 5.2% in Bastak, 3.5% in Parsian, 3.4% in Qeshm and 3.1% in Kish (Figure 1-A).

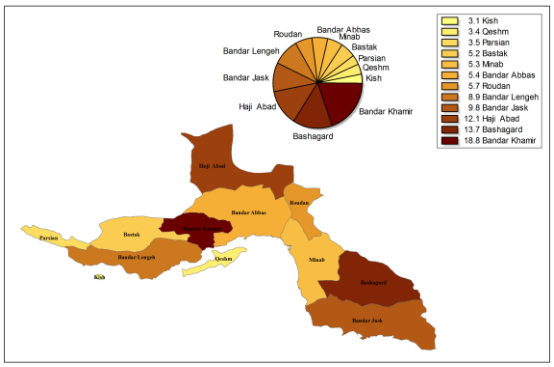

Figure1-A. Prevalence of preeclampsia in Hormozgan province

The mean age of mothers with preeclampsia was 28±6.6 years old (Maximum: 48 and Minimum 14 years old). Most of the cases were multipara (59.1%) and the rest (40.9%) were nullipara. Caesarean delivery (61.5%) was more than vaginal mode of delivery (38.5%) as shown in Figures 1-B and 1-C.

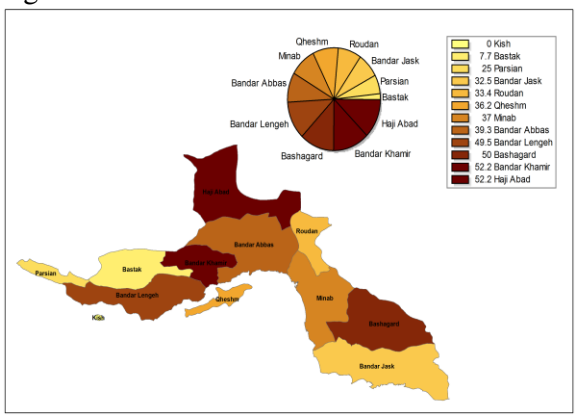

Figure1-B. Normal vaginal delivery in women with preeclampsia

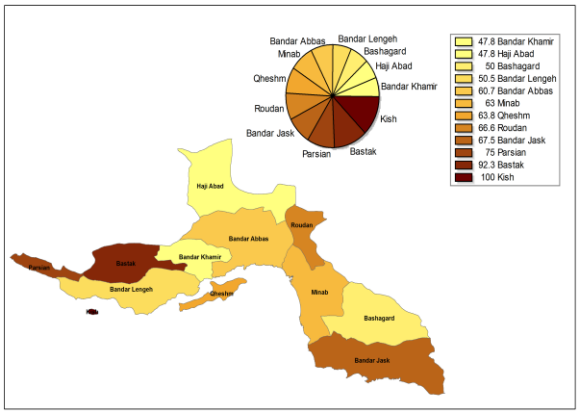

Figure1-C. Caesarean in women with preeclampsia

Deliveries before 37th week were observed in 35.4% of cases. Most of cases (68.5%) were grouped as late onset preeclampsia and 31.5% as early onset. The percentage of deliveries which led to preeclampsia in rural areas (8.7%) was more than deliveries in urban healthcare facilities. Stillbirth was observed in 1% of deliveries in urban facilities while it was 4.6% in rural facilities. There was a significant difference between the rural and urban facilities stillbirths (P=0.002). There was no significant difference between rural and urban women with preeclampsia and low birth weight deliveries (P=0.842). Moreover, no significant difference was observed while comparing hospitalization of newborns with the place of residence of mothers: cities or villages (P=0.856).

The most common complications of preeclampsia included low birth weight delivery (21.4%), hospitalization of newborns after birth due to causes such as RDS, prematurity, neonatal jaundice and sepsis (10.06%) and stillbirth (2.3%), as depicted in Figures 2-A, B and C. The results showed that 13.1% of women had history of pregnancy induced hypertension (PIH), 6.4% of cases had history of chronic hypertension, 15.1% had the history of abortion and 6% with the history of stillbirth in their previous pregnancy (Table 1).

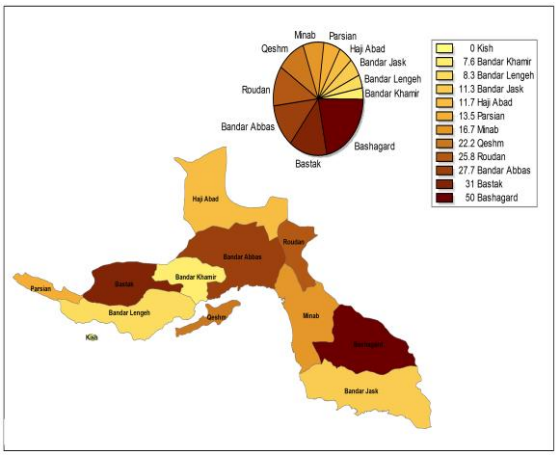

Figure 2-A. Low birth weight in newborns born by women with preeclampsia in Hormozgan province

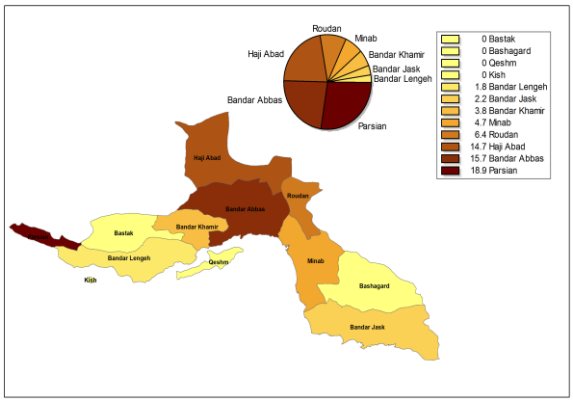

Figure 2-B. Hospitalization of newborns born by women with preeclampsia

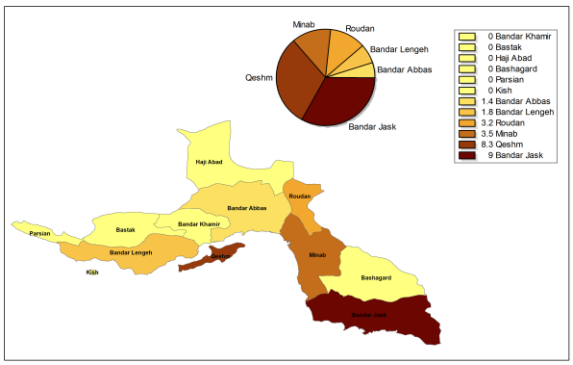

Figure 2-C. Stillbirth in women with preeclampsia in Hormozgan province

Table 1. Problems of mothers with preeclampsia

Problem	Frequency	Percentage (%)
Abortion	161	15.1
Pregnancy induced hypertension	136	13.1
Chronic hypertension	67	6.4
Stillbirth	62	6

Conclusion:

In the present study, we investigated the prevalence and the distribution of preeclampsia in Hormozgan province. The prevalence of preeclampsia in Hormozgan province was 5.8% within the global range but in some of the urban areas in Hormozgan province such as Bandar Khamir, Bashagard, Hajiabad and Jask it was up to three times more. Zibaeinejad et al (7) reported the prevalence of preeclampsia 2.13% in Shiraz (Fars province) and Amiri showed that the prevalence was 5.7% in Kerman (Kerman province) in 2009 (8). Comparing the prevalence of preeclampsia in Hormozgan and the two other southern provinces (Fars and Kerman), it is shown that preeclampsia is more prevalent in Hormozgan.

The present study was the first research investigating the prevalence of preeclampsia in all cities of the province. It is also a comprehensive study because it included all data recorded at healthcare facilities throughout the province regarding women with preeclampsia.

The type of delivery in 61.5% of cases was caesarean. In a city like Bastak, 92.3% of deliveries were by caesarean. In a similar study in Tehran, 77% of deliveries were by caesarean (9). Amiri et al reported that 79.9% of women with preeclampsia had delivery through caesarean (8). Since induction of labor and vaginal delivery is the best choice for mothers, early diagnosis of preeclampsia could help avoid unnecessary caesareans and subsequent complications.

According to reference books of gynecology, the incidence of preeclampsia in multipara women is less than nullipara ones (10). In our study, 40.9% of women were nullipara and 59.1% of them were multipara. Amiri showed that the frequency of preeclampsia in multipara women was 58.6% in Kerman (8). In a study by Kashanian et al 23.6% of the women were nullipara and parity above 3 was protective factor for preeclampsia (9). Duckitt et al showed that nulliparity increases the risk of preeclampsia (RR 2.91 CI 1.28- 6.61) (11). In our study,a significant relationship was observed between stillbirth by mothers with preeclampsia and the place of residence (rural and urban).

In the present study, 21.4% of newborns weighed less than 2500 grams. In Canada, Xiong et al showed that newborns were born before 37th week by mothers with preeclampsia weighed less than the newborns from non-preeclamptic mothers with the same gestational age (12).

The history of at least one abortion in the studied women was 15.1%. In a study in Kerman, 13.5% of women had the history of abortion (8). With regard to hypertensive diseases, 13.1% of the studied women had the history of PIH in previous gestation and 6.4% of the cases shown with the history of chronic hypertension. In a study in Kerman it was shown that 16.7% of the preeclamptic women had the history of PIH in the

previous gestation and 14.3% the history of chronic hypertension (8). Afshar reported that 24.13% of preeclamptic cases had history of chronic hypertension in Ilam (13).

Based on the current study, the prevalence of preeclampsia in Hormozgan province was calculated 5.8% which was within the global limit. Since it was observed that the prevalence preeclampsia in some of cities of the province was three times as global limit, the maternal and fetal dangerous complications of the disease may be reduced by identification of high risk regions in the province and improving the quality of healthcare during pregnancy through appropriate management of the disorder.

Our study showed a similar frequency distribution as of the world prevalence for pre-eclampsia. It is noteworthy that early detection of high risk women for pre-eclampsia and subsequent perinatal care should be considered in some areas of the province. Planned intervention could manage and decrease the rate of pre-eclampsia and its complications effectively.

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شیوع پره اکلامپسی در استان هرمزگان

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چکیده

مقدمه: *پره اکلامپسی از شایع ترین و جدی‌ترین اختلالات دوران بارداری است که با فشارخون بالا و دفع پروتئین بعد از هفته ۲۰ بارداری مشخص می‌شود. این بیماری ۱۰-۵ درصد از بارداری‌ها را درگیر می‌کند. اما شیوع آن می‌تواند در مناطق مختلف جغرافیایی و نژادهای گوناگون تا ۳ برابر بیشتر باشد. این مطالعه با هدف تعیین شیوع پره اکلامپسی و چگونگی پراکندگی آن در سطح استان هرمزگان انجام شد.*

روش کار: *این مطالعه مقطعی توصیفی از اطلاعات ثبت شده در کلیه بیمارستان‌های واحد بخش زنان و کلیه مراکز بهداشتی استان هرمزگان انجام شد. نمونه مورد مطالعه شامل ۱۰۳۳ نفر بود که از میان ۱۷۷۹۲ زن باردار که از ابتدای مهرماه ۱۳۹۱ تا پایان اسفندماه همان سال در کلیه مراکز سطح استان زایمان نموده بودند و یا پس از مراجعه به مراکز بهداشتی سطح استان تشخیص پره‌اکلامپسی برای آنها داده شده بود، انتخاب شدند. اطلاعات با استفاده از نرم‌افزار SPSS 20 مورد تجزیه و تحلیل آماری قرار گرفتند.*

نتایج: *شیوع پره اکلامپسی در استان هرمزگان ۵/۸٪ بود. ۴۱٪ زنان نولی پار و ۵۹٪ مولتی پار بودند. ۶۲٪ زایمان ها به روش سزارین انجام شد. بیشترین شیوع به ترتیب در شهرستان‌های خمیر (۱۸/۸٪)، بشاگرد (۱۳/۷٪)، حاجی‌آباد (۱۲/۱٪)، جاسک (۹/۸٪)، بندرلنگه (۸/۹٪)، رودان (۵/۷٪)، بندرعباس (۵/۴٪)، میناب (۵/۳٪)، بستک (۵/۲٪)، پارسیان (۳/۵٪)، قشم (۳/۴٪) و کیش (۳/۱٪) بود.*

نتیجه‌گیری: *بر اساس مطالعه انجام شده شیوع پره اکلامپسی در استان هرمزگان ۵/۸٪ است که در محدوده آمار جهانی می‌باشد، اما با توجه به شیوع بالاتر در برخی از شهرستان‌های استان، با شناسایی شهرستان‌های پرخطر استان و افزایش کیفیت مراقبت‌های دوران بارداری می‌توان از عوارض خطرناک مادری و جنینی آن کاست.*

کلیدواژه‌ها: *پره اکلامپسی – شیوع – بارداری – ایران*

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