

The Prevalence of Hypertensive Disorders of Pregnancy in Shiraz, Southern Iran

MJ Zibaenezhad, M Ghodsi, P Arab, N Gholzom

Cardiovascular Research Center, Shiraz University of Medical Sciences, Shiraz, Iran

Background: One of the most important complications during pregnancy is hypertension which is responsible for a widespread range of harms in mothers and fetuses. This investigation was designed to study the prevalence of hypertensive disorders during pregnancy in Shiraz, Iran.

Methods: This is a descriptive cross-sectional study, and comprised all pregnant women referred to Hafez and Zeinabieh hospitals affiliated to Shiraz University of Medical sciences. Prevalence of various groups of hypertensive disorders of pregnancy, age proportion and method of delivery were recorded during one year period.

Results: Of a Total of 24196 pregnant women, 563 individuals (2.32%) were hypertensive and the prevalence of chronic hypertension, preeclampsia and eclampsia were 2.13%, 0.17%, 0.03% respectively. Moreover, 45.8% of all patients with Hypertension disorders of pregnancy experienced caesarian section method of delivery.

Conclusion: Results of present study showed that the prevalence of hypertension in the pregnant women in Shiraz is much lower compared with the acceptable universal estimations and many countries.

Keywords: Hypertension, Pregnancy, Prevalence

Introduction

Hypertensive disorders of pregnancy (HDP) are among the main public health issues worldwide.¹ HDP considered as major causes of morbidity and mortality both in mother and fetus.¹⁻³ It is estimated that globally 6-8% of pregnancies are complicated by hypertension regarding population and the diagnostic criteria.⁴⁻⁶ Hypertensive disorders account for 10-15% of all maternal death in developing as well as some developed countries, namely 18% in United States. Furthermore they are known as the second commonest cause of perinatal mortality in industrialized countries.⁶⁻⁸ National High Blood Pressure Education Program Working Group on high Blood Pressure in Pregnancy in 2000 defined four groups of hypertension in pregnancy as follows: 1) chronic hypertension (blood pressure ≥ 140 mm Hg systolic or ≥ 90 mm Hg diastolic before pregnancy or diagnosed before 20th

week of gestation, as well as newly diagnosed hypertension during pregnancy that does not resolve post partum), 2) gestational hypertension (transient hypertension of pregnancy if preeclampsia is not presented at the time of delivery and blood pressure returns to normal by 12-week post partum), 3) preeclampsia-eclampsia (blood pressure $\geq 140/90$ in association with proteinuria ≥ 300 mg in 24 h urine), occurrence of seizures in women with preeclampsia known as eclampsia; , 4) preeclampsia superimposed on chronic hypertension marked by detection of proteinuria ≥ 300 mg in 24 h urine in women with blood pressure 140/90 before pregnancy or diagnosed before 20th week of gestation in absence of proteinuria.⁹

Studies have shown that chronic hypertension responsible for only 30% of hypertensive disorders during pregnancy and about 70% of cases were diagnosed as gestational hypertension and/or preeclampsia.¹⁰ In addition, up to 22% of women with chronic hypertensive and 50% of those with gestational hypertension could eventually progress to preeclampsia.^{11,12} Basically, preeclampsia is a syndrome character-

Correspondence:

MJ Zibaenezhad

Cardiovascular Research Center, Faghihi Hospital, Zand Street, Shiraz, Iran.

Tel/Fax: +98-711-2343529

Email: zibaem2@sums.ac.ir

ized by vasoconstriction, metabolic changes, endothelial dysfunction, activation of the coagulation cascade, and increased inflammatory response.¹³ The convoluted features of preeclampsia could cause many potentially life-threatening outcomes including eclampsia with tonic-clonic seizures,¹⁴ HELLP syndrome characterized by hemolysis, elevated liver enzymes, low platelet count,¹⁰ placental ablation, disseminated intravascular coagulation, intracranial hemorrhage, acute hepatic and renal failure,³ cardiovascular and cerebrovascular diseases both in mother and baby^(5, 15), preterm birth, Intrauterine fetal growth restriction (IUGR) and stillbirth.¹⁶⁻¹⁸ As accurate recognition of hypertensive disorders during pregnancy could result in efficient control of possible serious complications, we designed this study to assess the prevalence and outcomes of hypertension in pregnancy in Shiraz, south of Iran.

Patients and Methods

This is a descriptive, prospective, cross-sectional study which was carried out during one year period between June 2004 and June 2005 in Obstetric clinics of two major referral hospitals (Hafez and Zeinabieh) affiliated to Shiraz University of Medical Science, Shiraz, Iran.

Among all pregnant women who referred to obstetric clinics, those with newly detected high blood pressure and/or HDP risk factors were admitted to especial clinics. Potential risk factors included: HDP in previous pregnancies, Body mass index

>30, Pre-existing diabetes, Renal disease or chronic hypertension, maternal age >40 years, family history, multiparous pregnancy, and nulliparity.^{7, 19, 20} An experienced physician of obstetrics evaluated the patients regarding the above-mentioned risk factors and if needed referred them to the cardiologist/internist in charge.

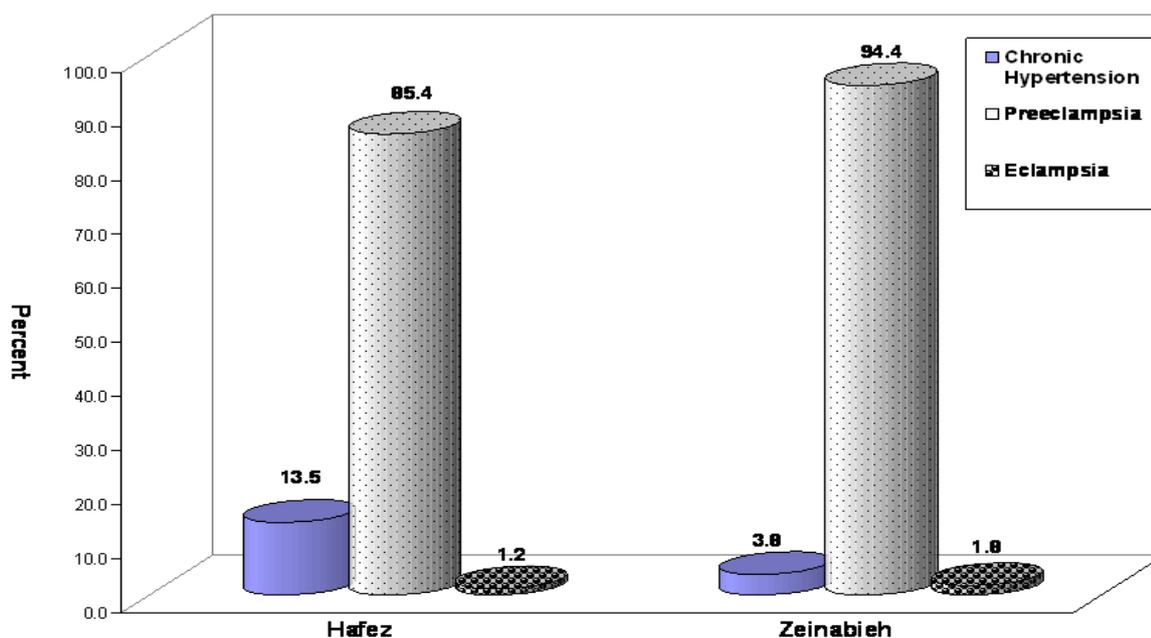
Blood pressure was taken by Richter's mercury sphygmomanometer, the gold standard for measuring blood pressure⁷ with a properly sized cuff and the patient in a seated position. Hypertension disorder of pregnancy was identified in case of systolic blood pressure ≥ 140 mm Hg or diastolic blood pressure ≥ 90 mm Hg on two occasions at least six hours apart.^{9, 21} The Korotkov phase V which is the fading of the blood flow murmur is recognized as the diastolic blood pressure.^{7, 9}

Physical examination, Blood pressure, laboratory tests including CBC, platelet count, ALT, AST, LDH, uric acid, creatinine, proteinuria screened with dipstick /periodic 24-hour urine collections and fetal state specified by non-stress test, ultrasonography were assessed in routine visits by the physician.^{21, 22}

Since dipsticks could be affected by variable excretion, maternal dehydration, and bacteriuria, more than 1+ of protein in dipsticks was an indication for 24- hour urine collection and diagnostic if ≥ 300 mg.^{9, 21}

All the patients with the diagnosis of hypertensive disorder of pregnancy were admitted to the hospital for primary evaluation.

Figure 2. The prevalence of 3 types of hypertensive disorders of pregnancy in Hafez and Zeinabieh hospitals



According to the classification of National High Blood Pressure Education Program,⁹ we studied three groups of HDP consisting of chronic hypertension, preeclampsia and eclampsia to determine prevalence, age proportion and delivery method in two major referral hospitals of Shiraz. The present study was approved by the local ethics committee.

Results

A total of 24196 pregnant women were studied in obstetric clinics of Hafez and Zeinabieh hospitals during one year period. Of these 563 (2.32%) patients had hypertension regarding the above-mentioned criteria. HDP was detected in 171 patients referred to Hafez hospital while the number of HDP patients was 392 in Zeinabieh hospital.

Based on the standard classification of hypertensive disorders of pregnancy,⁹ number of patients in three groups of chronic hypertension, preeclampsia and eclampsia in Hafez hospital were 23,146 and 2 respectively. The corresponding values in Zeinabieh hospital were 15,370 and 7 in that order. Furthermore, among all HDP patients, 38 cases had chronic hypertension, 516 preeclampsia and nine women experienced eclampsia (Fig. 1).

The prevalence of preeclampsia in all recorded pregnancies during the period of study was 2.13%. Also chronic hypertension and eclampsia accounted for 0.17% and 0.03% of total pregnancies respectively.

The age proportion of chronic hypertension, preeclampsia and eclampsia was described in Table 1. Finally, the prevalence of cesarean section among hypertensive patients under study was 45.8% in both centers.

Table 1. Age proportion of 3 types of Hypertensive disorders of pregnancy

Type of HDP	Age	
	<30 y	≥30 y
Chronic Hypertension	47.4%	52.6%
Preeclampsia	65.7%	34.3%
Eclampsia	77.8%	22.2%

HDP= Hypertensive disorders of pregnancy

Discussion

This investigation was designed to assess the prevalence of hypertensive disorders of pregnancy, age proportion and delivery methods in major referral hospitals of Shiraz, south of Iran.

Hypertension is the most common medical problem with unknown etiology during pregnancy. HDP related maternal and neonatal complications result in significant devastating effects in public health.^{4, 21, 23, 24}

The overall prevalence of hypertensive disorders of pregnancy in this study was 2.32 % which was comparable with 6-8% of the worldwide estimations as well previous reports of 3.8% by Ventura et al. in United States and 3.3% by Zareian in Iran.^{6,9}

Different results in a number of investigations (7.5% in Brazil and 8.49% in Turkey) might represent the effect of some demographic factors such as racial variation, age, number of previous pregnancies and socioeconomic status on the prevalence of HDP.^{10,25}

About 2-5% of all pregnancies were complicated by preeclampsia with several lethal complications.^{7,26} Craici and colleagues reviewed various studies and showed that women with a history of preeclampsia are at increased risk for cardiovascular diseases in their lifetimes.⁵ Preeclampsia was detected in 2.13% of all pregnancies in the present study that was similar to previously reported studies as well as to its proportion among different types of HDP.^{5,26}

Chronic hypertension (1-5%) and eclampsia (0.03-0.1%) are indicated as the next prevalent groups of hypertensive disorders of pregnancy.^{10,24, 27} The frequency of chronic hypertension in our study was 0.17% of all recorded pregnancies and eclampsia comprised only 0.03% of HDP patient in total which was comparable to noted statistics

The probable effect of maternal age on developing HDP was studied in multiple studies. The results explained that although increasing age of pregnant women raised the risk of chronic hypertension but could not be considered as an independent risk factor of preeclampsia.²⁸⁻³⁰ Similarly, the frequency of chronic hypertension appear to be higher in woman aged ≥30 yrs. Also preeclampsia and eclampsia were apparently higher in younger pregnant women (<30 yrs) as Yucesoy et al, showed in their recent investigation.¹⁰ However it seems warranted carrying out a larger study on independent risk factors of HDP especially in Iran.

In spite of numerous researches, the initiating events and exact treatment of preeclampsia are still unknown. Currently delivery is the only definite cure for preeclampsia. There are standard guidelines verifying the route of delivery in HDP patients,^{9,31} and multiple studies have shown the advantages of vaginal delivery mainly in severe preeclampsia, but it seems that the rate of caesarian section is increasing worldwide.³²⁻³⁴ and some researchers described high prevalence (57.6%-79%) of caesarian section.^{10,35-37} The frequency of caesarian section in the present study was 45.8%, which is virtually similar to 34.3% reported by Gangly in 2007.³⁸

In conclusion, regardless of the significant global improvement in public health and in Iran, much more attempts are required to efficiently reduce undesirable maternal and fetal outcomes. Considering the lack of definite therapeutic approach for hy-

pertensive disorders of pregnancy, early detection, monitoring, and supportive care might be the best ways to help both mothers and babies.

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