

ASSESSMENT OF THE INCIDENCE OF THE PREDISPOSING, TRIGGERING AND POTENTIAL FACTORS IN THE PREGNANCY-ASSOCIATED HYPERTENSION – RETROSPECTIVE STUDY

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ABSTRACT. The Pregnancy-induced Hypertension (PIH) or the gestational hypertension represents the increase of the blood pressure over 140 mmHg for the systolic pressure and over 90 mmHg for the diastolic one after the 20th week of pregnancy which does not associate proteinuria or other signs of preeclampsia. The pregnancy induced hypertension represents the most frequent pathology by the complications it generates, jeopardising both the pregnant woman’s and foetus’s lives. The study has been developed on the analyse of the observation charts for the pregnant women with various forms of hypertension in pregnancy, that went to the Arad County University Clinical Emergency Hospital during 2009-2013, in order to identify the most common factors of this pathology.

KEYWORDS: pregnancy induced hypertension, chronic hypertension, predisposing factors, retrospective study

INTRODUCTION

The pregnancy induced hypertension (HT), with its sub-categories (gestational HT (PIH), preeclampsia(PE), eclampsia, preeclampsia superposed on chronic HT), is one of the important complications that may occur during the pregnancy. (Report of the National High Blood Pressure Education, 2000.)

The hypertension complicates 2-3% of the pregnancies. National High Blood Pressure Education Program Working Group on High Blood Pressure in Pregnancy classifies the hypertensive disorders in pregnancy in 4 categories that is: chronic hypertension, preeclampsia and eclampsia, preeclampsia superposed on chronic hypertension and gestational hypertension. (Michael P Carson and et al.,2015).

The gestational HT is defined by values of the SBP > 140mm Hg and/ or DBP > 90 mm Hg occurred for the first time during the pregnancy, after 20 weeks of amenorrhea at a patient previously known as with normal blood pressure; at least at 2 measurements of at least 6 hours, not being accompanied by proteinuria or other signs of preeclampsia and which disappears in

less than 12 postpartum weeks. (P Rachael James et al., 2004)

The preeclampsia is characterised by SBP >140 mm Hg or DBP >90 mm Hg occurred for the first time during the pregnancy, after 20 weeks as gestational age of amenorrhea at a patient with previously normal pressure associating proteinuria >0,3 g/24 hours.

Eclampsia means the preeclampsia complication and associates the occurrence of “grand mal” convulsion at a patient which is known with preeclampsia and whose convulsions cannot be deferred to other causes (epilepsy, trauma, intoxications, vascular causes, etc.).

The preeclampsia superposed on chronic HT comprises the occurrence, for the first time during the pregnancy, of proteinuria>0.3g/24 hours at a patient known with chronic HT, at gestational age >20 weeks of amenorrhea, or by the increase of BP (SBP > 160 mm Hg and/ or DBP>110 mm Hg), of the proteinuria (0,3g/24 hours) or of thrombocytes <100.000/mm³ at a patient known with HT and proteinuria before the 20 weeks of amenorrhea.

The HELLP syndrome:

- Indirect bilirubin >1.2 mg/dl
- LDH>600 UI/l
- SGOT, SGPT increased
- Thrombocytes < 100.000/mm³

The chronic hypertension: TAS>140 mmHg and/or TAD>90 mmHg which can be: pre-existing to the pregnancy, diagnosed during the pregnancy, but before the 20 weeks of amenorrhea, diagnosed later than the 20 weeks of amenorrhea, but persisting longer than 12 postpartum weeks.

The exceptions for the occurrence of the disease sooner than the 20 weeks of the amenorrhea are the molar degenerescence or the anti-phospho-lipid syndrome, the relapses being given by the change of the paternity of the preeclampsia supra-added on pre-existing vasculo-renal disorders. (Acog, 2002.; Preeclampsia foundation, 2010)

The hypertension during the pregnancy represents the most frequent pathology by the complications it causes, jeopardising both mother's and foetus's lives. (Acog, 2013)

The preeclampsia prevalence in the countries in development varies from 1.8% la 16.7%. There are more challenges in predicting, preventing and treating the preeclampsia.(K. O. Osungbade1et al., 2011)

Previous studies reported that women with history of gestational diabetes have a risk of 66% up to 85% higher for cardiac disease, heart attack and/ or cerebral vascular stroke (womenshealth.gov/resources/images/womenshealth-logo.png).

A status of insulin-resistance was proved at the patients with preeclampsia, so that the patients with high resistance at insulin present a higher risk to develop PE during the pregnancy. During the last decades, all developed researches did not bring outstanding or significant improvements in the clinicians' strategy to detect the preeclampsia prior to its triggering. (Erica P. et al.,2014)

The known risk factors, frequently associated with the PE are own or family-inherited nulliparous history of PE, pre-existing diabetes mellitus or increased body mass index, multiple pregnancy, mother's age, renal disease, hypertension or increase blood pressure and autoimmune chronic disease.

Other factors that might intervene are thrombophilia and the insulin-resistance, associated with obesity. Identifying other predictive factors in identifying the preeclampsia would increase the capacity for diagnosing the women susceptible to preeclampsia before the debut of the disease and would improve the monitoring and the inclusion in the randomised studies in order to evaluate the prophylactic treatment. (PM Tebeu et al., 2011)

The purpose of this retrospective study was to identify the patients with various forms of HT during the pregnancy, coming to the Department of Obstetrics-Gynaecology of the Arad County University Clinical Emergency Hospital and to identify the most incriminating risk factors for the pregnancy hypertension.

MATERIAL AND METHOD

The patients whose pregnancy was associated to a form of hypertension were selected from the total of the patients delivering in the Department of Obstetrics-Gynaecology of the Arad County University Clinical Emergency Hospital during 2009-2013.

The sample was formed of 809 pregnant women diagnosed with a form of hypertension during the pregnancy and who delivered their babies at the Department of Obstetrics-Gynaecology of the Arad County University Clinical Emergency Hospital, during 2009-2013.

The characterisation of the study group was made based on the analysis of the indicators comprised in the patient's observation chart, comprising the following: age, weight, height, body mass index (BMI), parity, number of fetuses, toxic substances use, environment of origin, activity, studies, blood and RH types, abortions history, personal medical history (HT, DZ), the quality of life, number of pregnancy weeks at the delivery, data on the fetuses at birth (born dead, alive, gender, weight, Apgar scoring, cord or amniotic fluid pathology, presentation).

Fig. 1 PIH incidence for a period of 5 years, in Arad county

TOTAL BIRTHS 2009-2013	13889
PATIENTS WHO GAVE BIRTH, WHILE HAVING VARIOUS FORMS OF HT	809 (5.82%)

RESULTS AND DEBATES

Analysing of the births occurred in the ARAD county, during 5 years, highlights an incidence of hypertension in pregnancy of 4.58-6% with an average of 5.82%. Recent studies, developed in Romania, place the yearly incidence of the cases of preeclampsia ranging from 6 to14%, with a variation of 10-14% at primiparous and of 5.7-7,3% at multiparous, with a significantly increased incidence of the cases of preeclampsia at the pregnant women with twin/multiple pregnancy, at those with PE during the previous pregnancies, at the primiparous younger than

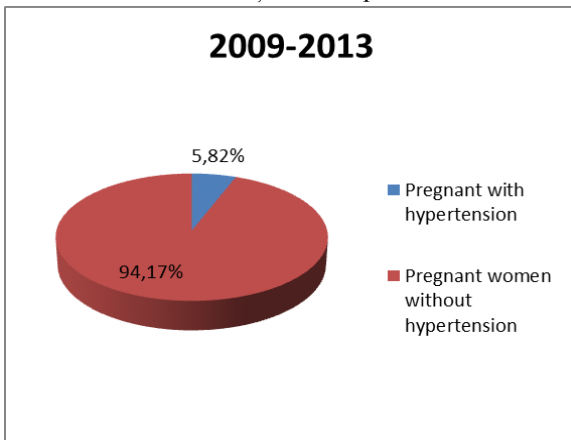
20 years old and older than 35 years old. (Elena Mihalceanu 2015). The hypertension complicates 5-10% of the total of the pregnancies in USA. (Lo JO1 et al., 2013)

The recently performed studies indicate that the prevalence of the pre-existing hypertension is of 1%, while the gestational hypertension complicates 5-6% of the pregnancies, and the preeclampsia 1-2% of them. (Michael P Carson et al., 2015)

Fig. 2 The incidence of the pregnant women with pre-existing hypertension within the pregnancies with hypertension which gives complications to the pregnancy.

Out of the total of 809 pregnant women with hypertension which complicates the pregnancy, 12.23% had pregnancy pre-existing hypertension, and of those, 14.13% had complications during the pregnancy (preeclampsia, eclampsia). The incidence of the preeclampsia complicate the high blood pressure pre-existing to the pregnancy is of 20-25%, according to the speciality literature (Michael P Carson, et al., 2015)

Fig. 3 Incidența pacienților cu hipertensiune în sarcină din totalul nașterilor în perioada 2009-2013



The most frequent form of hypertension was the PIH - 413 cases (58.16%), followed by the two forms of preeclampsia with almost equal frequency, 146 cases (20.56%) of mild preeclampsia and 137 cases (19.29%) of severe preeclampsia, 14 (1.99%) cases of eclampsia and 99 patients with hypertension pre-existent to the pregnancy had also been found.

Fig. 4 Pregnant women's distribution depending on the form of pregnancy induced hypertension they present.

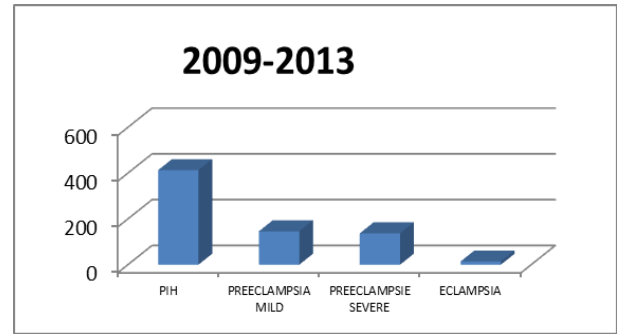
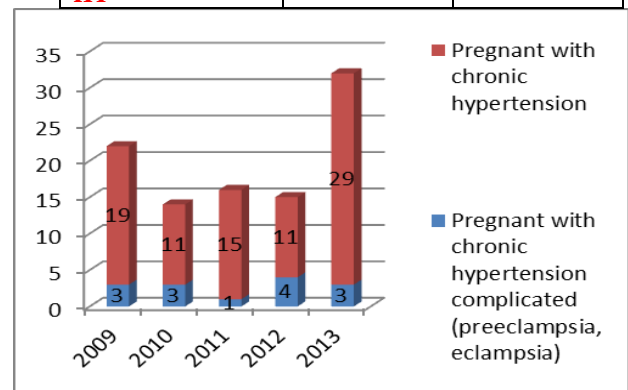


Fig. 6 Patient with pre-existent hypertension, complicated by the pregnancy.

	Pregnant women with pregnancy induced HT	Pregnant women with existing HT
PREGNANT WOMEN WITH HT	710 (87.76%)	99 (12.23%)



The age was not found as a risk factor in PIH in this study, the average age being of 30 ± 6.4 years old. The studies claim that the age over 40 years old is a risk factor for PIH (Lamminpää R ET AL., 2012, Kee-Hak Lim ET AL., 2014)

Another factor of risk for PIH is the primiparous, their incidence being of 416 cases (58.59%).

Some studies claim that primiparous is a risk factor only for the pregnancy induced hypertension, but it is not such for preeclampsia as well (Rogério Fortes Lobato et al., 2008)

Smoking was not found as major risk factor among these patients. The most recent studies claim that smoking is associated to a lower occurrence of preeclampsia during the pregnancy, the study conclusion being that the Carbon monoxide (CO) provides the decree of PE incidence. (Carolina C Venditti et al., 2014)

Most of the pregnant women come from the rural environment 449 cases (63.23%) and 261 (36.77%) from the urban one. 15.63% of the patients with PIH smoked during the pregnancy. Some studies claim that smoking during pregnancy is associated to a lower risk of preeclampsia (Lucinda Anglia et al., 2014) while others claim that the association between smoking during the pregnancy and the PIH varies depending on race/ ethnicity and age. (Jen Jen Chang et al., 2014)

Most of the patients from our study have 0 blood type, and the AB blood type has the lowest frequency among them while the latest studies claim that, compared with the 0 blood type, the women with AB blood type present a higher risk of PIH. (Reshmarani et al., 2014)

Family history of hypertension is a risk factor for PIH, the maternal genetic being stronger in this regard, 52 cases (7.32%) met in this study. The most recent studies also claim a tight correlation between PIH and the family history of hypertension. (Chun Ye et al., 2014)

241 cases (33.94%) gave birth before 37 gestational weeks. At worldwide level, the preeclampsia is responsible for up to 20% of the 13 million premature deliveries occurred each year. (Preeclampsia foundation, 2010)

RESULTS

We have made this study in order to identify the potential risk factors for the hypertension diseases during the pregnancy in Arad County. We have observed that the PIH risk factors are generally in correlation with the speciality literature.

PIH without proteinuria or other signs of preeclampsia was the most frequent form of hypertension met in this study. The primiparous patients have the highest incidence among the patients included in the study, then there is the increase body mass index, the rural environment, the 0 blood type and the family history of hypertension. These risk factors are in correlation with the data reported in specialised literature.

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