

Changes in the incidence of pregnancy-induced hypertension in 2007 versus 2017 in the “Prof. Dr. Panait Sîrbu” Clinical Hospital of Obstetrics and Gynecology, Bucharest

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Abstract

Pregnancy-induced hypertension is a common disease with important effects in maternal and fetal morbidity and mortality. The continuous study of its evolution in the population can help us to highlight new risk factors, the possible natural growth trend of the disease in pregnant women and the curative measures that can be taken. The purpose of this study is to observe the changes in the incidence of pregnancy-induced hypertension and its complications at a distance of 10 years. In order to achieve this goal, two study groups were compiled, including the births from 2007 and those from 2017 at the “Prof. Dr. Panait Sîrbu” Clinical Hospital of Obstetrics and Gynecology. The main findings of the study revealed an increasing trend of the incidence of pregnancy-induced hypertension, an apparent stagnation of the HELLP incidence, and a decrease in eclampsia.

Keywords: hypertension in pregnancy, preeclampsia, eclampsia, HELLP syndrome

Rezumat

Hipertensiunea indusă de sarcină este o patologie frecvent întâlnită, cu efecte importante în morbiditatea și mortalitatea materno-fetală. Studiul continuu asupra evoluției acesteia în populație ne poate ajuta să evidențiem noi factori de risc, eventuala tendință naturală de creștere a bolii la gravide și măsurile curative care se pot lua. Scopul studiului de față rezidă în observarea modificării incidenței hipertensiunii induse de sarcină și a complicațiilor acesteia la o distanță de 10 ani. Pentru atingerea scopului s-au folosit două loturi de studiu cuprinzând nașterile din cadrul Spitalului Clinic de Obstetrică-Ginecologie „Prof. Dr. Panait Sîrbu” în 2007 și 2017. Principalele rezultate ale studiului relevă o tendință de creștere a incidenței hipertensiunii induse de sarcină, o aparentă stagnare a incidenței HELLP și o scădere a cazurilor de eclampsie.

Cuvinte-cheie: hipertensiune în sarcină, preeclampsie, eclampsie, sindrom HELLP

Submission date:
25.09.2018
Acceptance date:
20.11.2018

Modificări în incidența hipertensiunii induse de sarcină în 2007 versus 2017 în Spitalul Clinic de Obstetrică și Ginecologie „Prof. Dr. Panait Sîrbu” București

Suggested citation for this article: Botezatu B, Mitran M, Barbu A, Velicu O, Brătilă E. Changes in the incidence of pregnancy-induced hypertension in 2007 versus 2017 in the “Prof. Dr. Panait Sîrbu” Clinical Hospital of Obstetrics and Gynecology, Bucharest. Ginecologia.ro. 2018;22(4):12-15.

Introduction

Pregnancy-induced hypertension is a common pathology complicating between 3% and 10% of all pregnancies, with important effects on maternal and fetal morbidity and mortality. The continuous study of its evolution in the population can help us highlight new risk factors, the possible natural growth trend of the disease in pregnant women and the curative measures that can be taken.

The blood pressure of a pregnant woman undergoes changes during pregnancy. The first trimester of pregnancy is accompanied by a decrease in blood pressure

caused by active vasodilation, obtained through the action of local mediators such as prostacyclin and nitric oxide. This reduction in blood pressure predominantly changes the diastolic pressure, with a decrease of 10 mmHg often seen between 13 and 20 weeks of gestation⁽¹⁾.

Blood pressure continues to decrease until 22-24 weeks, when a physiological threshold is reached. After this time, there is a slow, gradual increase in blood pressure up to the levels prior to the pregnancy, characteristic to each patient.

Another change is the lowering of blood pressure immediately after birth, increasing then in the first

five days of postpartum. Even women whose blood pressure has shown normal values during pregnancy may experience transient hypertension in the first postpartum period, perhaps reflecting a degree of vasomotor instability.

High blood pressure in pregnancy (HBBP) occurs when the “physiological threshold” of oscillations is exceeded and is manifested by systolic arterial pressure (SAP) >140 mmHg or diastolic arterial pressure (DAP) >90 mmHg for the first time in pregnancy after the 20th week, the blood pressure returning to normal after 12 weeks postpartum^(2,3).

Preeclampsia is one of the most important complications of HBBP, the major cause of mortality and maternal-fetal morbidity. Specialty literature indicates a 5-7% incidence of preeclampsia in the general population of pregnant women. The mechanisms of preeclampsia are incompletely elucidated, the most accepted theory being that of the ineffective trophoblastic invasion of the spiral arteries of the uterus⁽⁴⁾.

Eclampsia develops consecutively to preeclampsia, with specific symptoms, which anticipate seizures, such as confusion, photophobia, persistent migraines, epigastric pain or right hippocampus. It is a medical emergency, with serious complications, such as cerebral haemorrhage, acute renal failure, aspiration pneumonia, cardiac arrest. The only curative treatment of eclampsia is birth. According to the American College of Obstetricians and Gynecologists (ACOG), eclampsia is defined by the presence of grand mal seizures, newly developed in a pregnancy diagnosed with preeclampsia, which can manifest itself before, during or after the termination of labor. If the symptoms occur more than 48-72 hours postpartum or if seizures occur during antiepileptic treatment with magnesium sulphate, differential diagnosis should be done with arteriovenous malformation, an aneurysm rupture or idiopathic convulsion^(4,5).

HELLP syndrome – whose name comes from the main associated changes: hemolysis, elevated liver enzymes and low platelets – may be associated with

preeclampsia or may develop independently. The causes of the syndrome are incompletely elucidated. The pathological changes occur as a result of vasospasm, changes in vascular tone and coagulation defects, leading to endothelial lesions, platelet activation, and consequently the activation of the coagulation cascade^(6,7).

This study aims to observe the changes in the incidence of pregnancy-induced hypertension and its main complications at a distance of 10 years in a third-degree maternity.

Materials and method

All the births of 2007 and 2017 at the “Prof. Dr. Pănaite Sîrbu” Clinical Hospital of Obstetrics and Gynecology were investigated, establishing the number of pregnant women with pregnancy-induced hypertension or complications.

HTAIS and complications cases (preeclampsia, eclampsia, HELLP syndrome) in 2007 vs. 2017

All pregnancies were studied, the first group was from 2007, with a total of 3412 pregnant women, of whom 198 (5.57%) were diagnosed with HBBP or complications, and the second group was from 2017, with a total of 3699 births, out of which 367 (9.94%) cases had HBBP or complications (preeclampsia, eclampsia, HELLP syndrome) – Figure 1.

The incidence of HTAIS (including preeclampsia, eclampsia, HELLP syndrome) by age group

The group studied from the year 2007 showed ages between 19 and 42 years old. The mean age at which HBBP occurred (with or without complications) was 36 years old (Figure 2).

Of the total of 367 patients aged 14 to 45 years old, corresponding to 2017, an average of 32 years old for HBBP appearance (with or without complications) was calculated, 4 years lower than the average of 2007 (Figure 3).

Table 1 Introduction criteria^(8,10)

HBBP	Preeclampsia	Eclampsia	HELLP syndrome
SAP>140 mmHg or DAP>90 mmHg for the first time after 20 weeks of pregnancy	SAP>140 mmHg and/or DAP >90 mmHg	SAP>140 mmHg and/or DAP>90 mmHg	Hemolytic anemia
Blood pressure comes back to normal after 12 weeks postpartum	Serum creatinine >1.2 mg/dL	Grand mal seizures	Bilirubin over 1.2 mg/dL and LDH over 600 UI/L
	Platelets<100.000/mm ³		Hepatic enzymes elevated: AST over 72 UI/L and LDH over 600 UI/L
	Proteinuria>0.3 g/24 h		Platelets<100.000/mm ³
	Increased LDH		

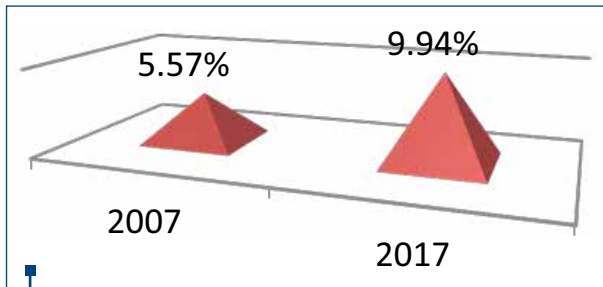


Figure 1. Percentages of patients who had HBBP in the total of pregnant patients corresponding to 2007 and 2017, respectively

The role of parity in the occurrence of HBBP (including cases of preeclampsia, eclampsia and HELLP syndrome)

In both groups, HBBP prevalence (with or without complications) was higher in primiparous than in multiparous. For 2007, 85.7% of pregnancies developing HBBP (with or without complications) were primiparous, the percentage decreasing discretely to 73.9% in 2017 (Figure 4).

Incidence of preeclampsia in 2007 vs. 2017

The incidence of preeclampsia was registered in a higher percentage in 2017 (27%) compared to 2007 (14.28%), from the total percentage of patients with tensional pathology (Figure 5).

Incidence of patients with eclampsia in 2007 vs. 2017

In the case of eclampsia, there was a decrease of the percentage of pregnant women with this pathology, only 3.12% in 2017 compared to 9.53% in 2007 (Figure 6).

The incidence of HELLP syndrome in 2007 vs. 2017

After selecting and calculating the percentages of the groups, it became apparent that the proportion of the pregnant women who had HELLP syndrome remained roughly unchanged at 10 years (Figure 7).

Discussion

The study reveals the importance of the early diagnosis and preventive medical conduct in HBBP cases. A proper management of pregnant women at risk reduced the percentage of HBBP consecutive complications⁽⁹⁾.

The results are probably due to a correct tracking of pregnancies and the interdisciplinary collaboration (obstetrics-gynecology, cardiology, internal medicine, family medicine), and a decrease in the number of un-investigated patients during pregnancy.

In 2018, the Mayo Clinic proposed preventive treatment with low-doses of acetylsalicylic acid for preeclampsia, starting at 12 weeks of gestation, especially in cases involving risk factors, or calcium supplementation in pre-pregnancy.

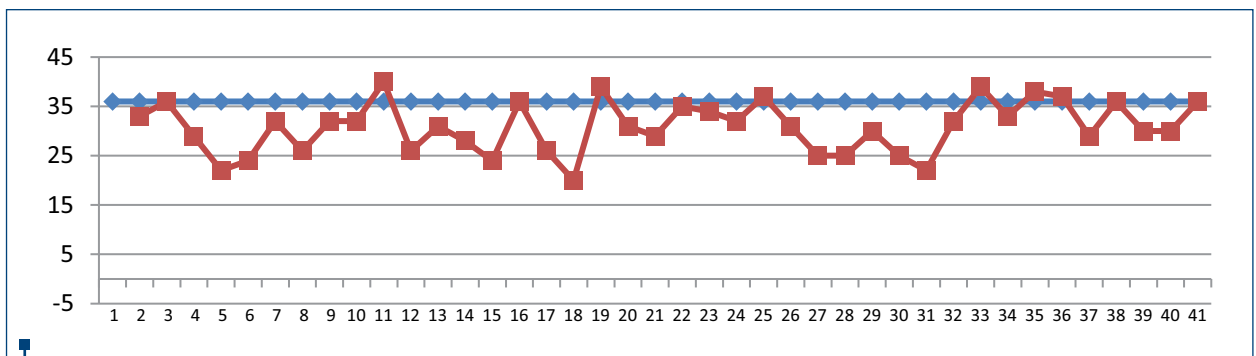


Figure 2. Median of ages for pregnant women with HTAIS in 2007

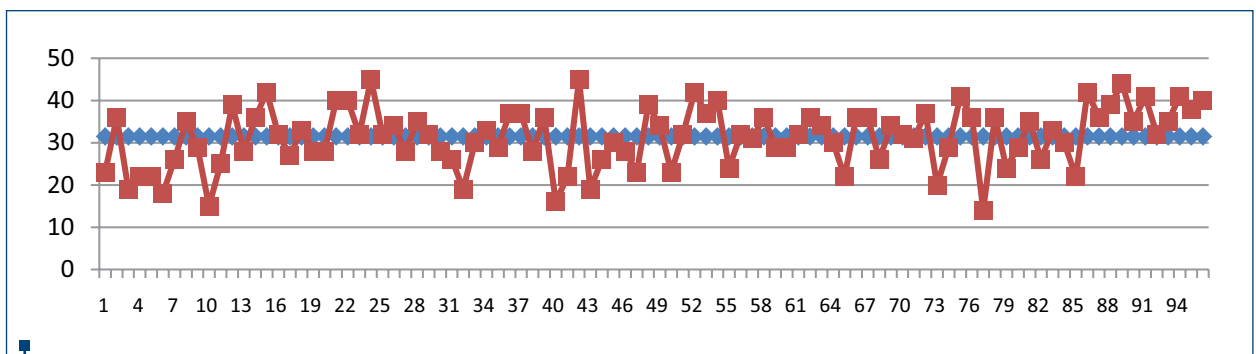


Figure 3. Median of ages for pregnant women with HBBP in 2017

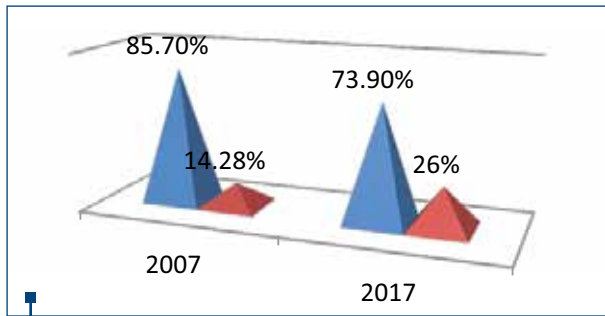


Figure 4. The percentage of primiparous vs. multiparous in the studied groups

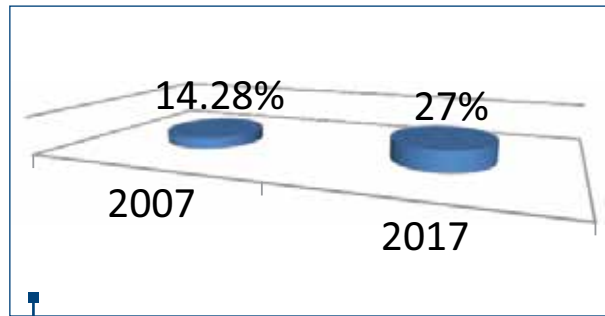


Figure 5. The incidence of patients with preeclampsia

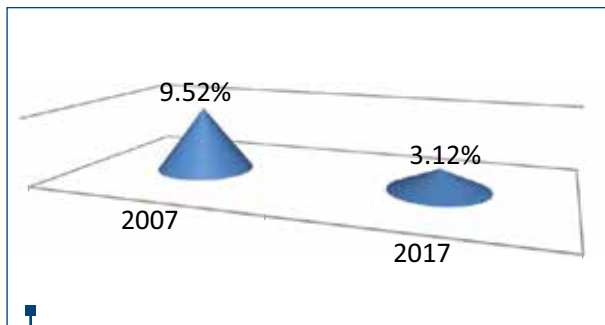


Figure 6. The incidence of eclampsia in 2007 vs. 2017

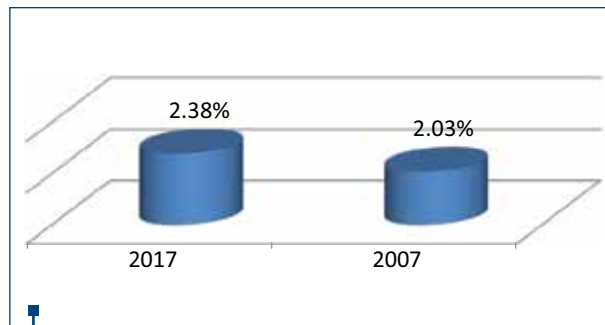


Figure 7. The incidence of HELLP syndrome in 2007 vs. 2017

The European Society of Cardiology Guidelines for the Management of Cardiovascular Diseases During Pregnancy recommends the pharmacological treatment of hypertension during pregnancy only for women with severe hypertension.

In the other cases, a proper screening, changing lifestyle, eating habits and of other environmental factors that can be risk factors are sufficient in the HBBP management.

Conclusions

The study revealed an increasing tendency in HBBP (uncomplicated or associated with proteinuria) largely due to a better antenatal diagnosis and a decrease in the number of uninvestigated patients.

The mean age at which patients developed HBBP is lower in the 2017 age group (32 years old) compared to 2007 (36 years old).

There is a statistically significant increase in patients with hypertension in pregnancy, in those with preeclampsia (14.2% in 2007 vs. 27% in 2017), a stagnation in HELLP syndrome (2.03% in 2007 vs. 2.38% in 2017), and a decrease in cases of eclampsia (9.5% in 2007 vs. 3.10% in 2017).

The patients' compliance with treatment, and the easier access to information and prevention led to a decrease in the number of uninvestigated pregnant women and of complicated cases. ■

Conflict of interests: The authors declare no conflict of interests.

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