RESEARCH ARTICLE **(Open Access)**

Study about the incidence of preeclampsia in pregnant women

LULZIME KOKIÇI[1], MIRELA LIKA[2] (ÇEKANI)

[1]"IDA" Clinic Biochemical Laboratory, Shkodër, Albania

[2]Department of Biology, Faculty of Natural Sciences, Tirana University, Albania

*Correspondin author email: lulzime_kokici@yahoo.com

Abstract

Preeclampsia is a clinical syndrome peculiar only during pregnancy. From the data obtained in the maternity of the regional hospital of Shkodra city, department of obstetrics, for the period 2007-2012, are resulted 13.994 paved mothers. Among this number 246 women are affected by preeclampsia, thus the value of incidence is 1.76%. Of the total number of paved mothers in the department of obstetrics for the period 2007-2012, 5.557 belong to Shkodra city, by these 71 women are affected by preeclampsia with the incidence 1.28%. From rural areas of Shkodra there are 7.223 paved women with 149 cases of preeclampsia by the incidence 2.06%. The number of mothers paved in the department of obstetrics, from the other districts of Albania, was 1.214 with 26 cases of preeclampsia by the incidence 2.14%. According the analysis based on the age of mothers, from 246 cases of preeclampsia, 38.6% belong to the mothers under 24 years of age, 48.4% from the mothers 25-34 years of age and 13% from the mothers over 35 years of age. The incidence rate of preeclampsia has a value of 1.63% in the age groups of mothers 15-24 years and 11.1% in the age groups of mothers over 44 years. This fact suggests that there is a link between the mother's age and the incidence of preeclampsia.

Keywords: Incidence of preeclampsia, pregnant woman, risk factors of preeclampsia, health care.

Introduction

Preeclampsia presents a transient but potentially dangerous complication during pregnancy. It embraces a wide spectrum of signs and symptoms that may develop alone or in combination. Elevated blood pressure, proteinuria, edema, persistent headache are some of the most important signs for the diagnosis of the disease [12].

Of placental origin it is cured only by delivery, so in the developed countries preeclampsia is an important cause of premature delivery. These result in infant morbidity substantial healthcare expenditure [9]. Although the causes of preeclampsia remain uncertain [5], epidemiologic features of the condition have led to speculation about immunologic causes.

They are some risk factors for the preeclampsia:

- Women aged > 40 had approaching twice the risk of developing preeclampsia, whether they are primiparous or multiparous [1]. Nationwide United States data suggest that the risk of preeclampsia is increased by 30% for every additional year of age past 34 [13].
- The risk of preeclampsia is at least twice as high during first pregnancy as during or later pregnancies [7].
- Women who have preeclampsia in a first pregnancy have seven times higher the risk of preeclampsia in a second pregnancy [3].
- When a women is pregnant with twins her risk of preeclampsia is nearly triples [4].
- Women with a body mass index > 35kg/m^2 before pregnancy had over four times the risk of preeclampsia compared with women with e body mass index of 19-27 kg/m^2 [2].
- Genetic factors are partially responsible, because both maternal and paternal family history of disease predispose to preeclampsia [8].
- Pre-existing medical condition as chronic hypertension, chronic renal disease, sickle cell disease, diabetes and autoimmune disease [6].

Worldwide, the incidence of preeclampsia rages between 2% and 10% of pregnancies. The variation in incidence rates is driven by the diversity of definition WHO estimates the incidence of preeclampsia to be seven times higher in developing countries (2.8%) than in developed countries 0.4% [14]. In the United States, Canada and Western Europe range from 2-5%. Rates from African countries such as South Africa, Egypt, Tanzania and Ethiopia vary from 1.8-7.1% [10].

Material and Methods

In this study are analyzed 13.994 pregnant women with clinical cases; from which are studied 246 mothers with preeclampsia based on the elevated blood pressure and the proteinuria with value much higher than the norm.

The data for this study were collected by using the medical card of the paved mothers in the obstetrics ward of the maternity in the regional hospital of Shkodra city for the period 2007-2012.

For each year studied is received information for the total number of paved pregnant women, the number by preeclampsia, the age and the birthplace of them.

The pregnant women are divided in four age groups, while based on their birthplace is made the division in three groups: the mothers from the city of Shkodra, the mothers from the rural area of Shkodra region and the mothers from the other districts (city and villages).

The mothers who have a blood pressures >140/90mmHg combined with proteinuria gives sufficient information to diagnosis them with preeclampsia [11].

The collected data are elaborated in the mathematical- statistical aspect and the results are presented in figures and graphs, which have served us to discuss and get out the conclusions.

Results and Discussion

In the table 1 are given the data for the number and percent of the paved pregnant women in the maternity of Shkodra city, the cases and the incidence of the women affected by preeclampsia divided according to the years for the period 2007-2012.

Table 1. Data for the number of paved mothers and preeclampsia cases in Shkodra maternity

Years	*Nr of mothers*	*% of mothers*	*Nr of cases by preeclampsia*	*% of cases by preeclampsia*	*Incidence of preeklampsia in (%)*
2007	2.349	16.8	53	21.5	2.26
2008	2.255	16.1	30	12.2	1.33
2009	2.293	16.3	26	10.6	1.13
2010	2.276	16.3	47	19.1	2.07
2011	2.185	15.6	28	11.4	1.28
2012	2.636	18.8	62	25.2	2.35
Total	**13.994**	**100**	**246**	**100**	**1.76**

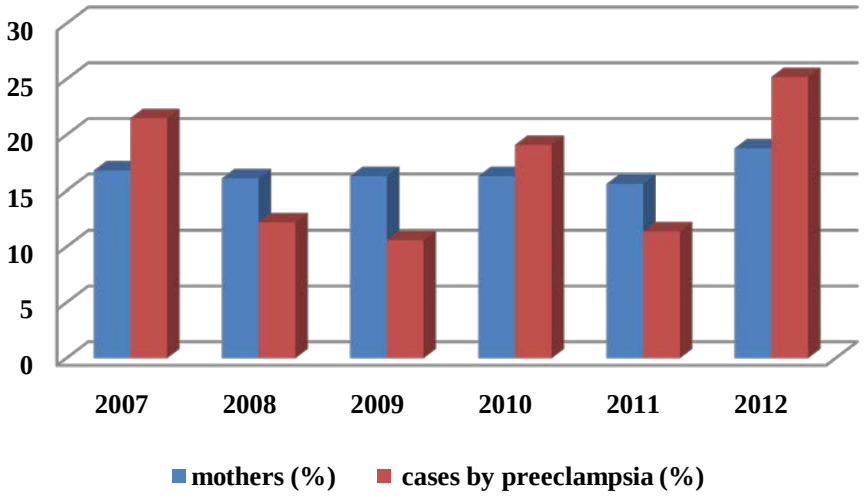

Figure1. Distribution of the paved mothers and the preeclampsia cases during the years

By the collection of the data from the annual medical card in the obstetric department of Shkodra maternity resulted that were made 13.994 hospitalizations for the period 2007-2012 and from them 246 cases were with preeclampsia by the incidence 1.76%.

The percent of the paved mothers resulted almost equal in all the years taken in our study while the percent of the mothers by preeclampsia varies most from one year to another without any particular regulation.

In the tables 2, 3, 4, are given the data about the incidence of preeclampsia of the mothers from the city, villages of Shkodra and the other localities for each of the year studied.

Table 2. The preeclampsia incidence in the mothers from Shkodra city

Years	*Mothers from the city*	*Preeclampsia cases from the city*	*Incidence of preeclampsia (%)*
2007	991	21	2.12
2008	933	6	0.64
2009	918	8	0.87
2010	936	14	1.5
2011	795	7	0.89
2012	984	15	1.52
Total	**5.557**	**71**	**1.28**

Table 3. The preeclampsia incidence in the mothers from the villages of Shkodra

Years	*Mothers from the villages*	*Preeclampsia cases from the villages*	*Incidence of preeclampsia (%)*
2007	1.116	25	2.24
2008	1.087	22	2.02
2009	1.161	16	1.38
2010	1.162	27	2.32
2011	1.198	15	1.25
2012	1.499	44	2.94
Total	**7.223**	**149**	**2.06**

Table 4. The preeclampsia incidence in the mothers from the other districts of Albania

Years	*Mothers from the other districts*	*Preeclampsia cases from the other villages*	*Incidence of preeclampsia (%)*
2007	242	7	2.89
2008	235	2	0.85
2009	214	2	0.93
2010	178	6	3.37
2011	192	6	3.13
2012	153	3	1.96
Total	**1.214**	**26**	**2.14**

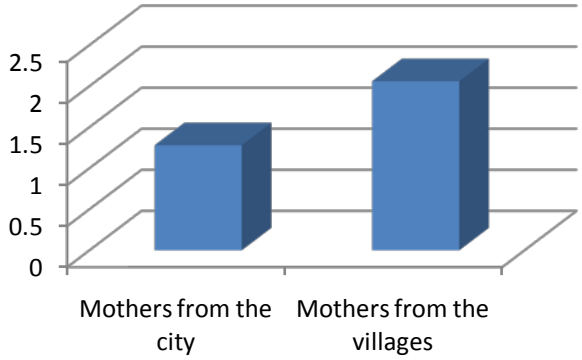

Figure 2. Distribution of the incidence of preeclampsia according to the birthplace of mothers

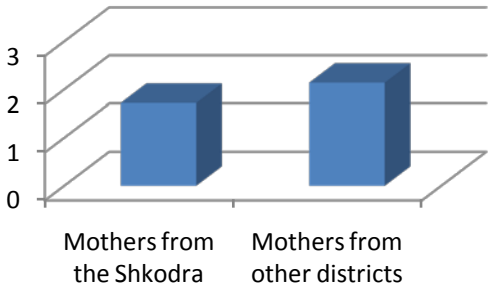

Figure 3. Distribution of the incidence of preeclampsia according to the birthplace of mothers

Based on the data in the table results that from the total number of mothers paved in the department of obstetrics, 5.557 belong to Shkodra city, by these 71 women are affected by preeclampsia with the incidence 1.28%, from rural areas of Shkodra there are 7.223 paved women with 149 cases of preeclampsia by the incidence 2.06%. As we can see from the figure 2 the incidence values have considerable differences between the city and country of Shkodra.

Given that Shkodra is the urban center of the north of Albania there are a lot of paved mothers from the other localities. The total number of them was 1.214, by these 26 cases of preeclampsia by the incidence 2.14%.

The incidence value for Shkodra district (city, country) is calculated 1.72% while for the other localities 2.14%. It results a high incidence value of preeclampsia for mothers from the other localities than for mothers of Shkodra district (fig3). This can be justified by fact that mothers who have problems during the pregnancy introduce a high security to be cured in the hospital of Shkodra city than in the hospital of their region.

Table 5. Incidence of preeclampsia according to the maternal age groups

Age Groups	*Nr of mothers*	*% of mothers*	*Nr of cases by preeclampsia*	*% of cases by preeclampsia*	*Incidence of preeclampsia (%)*
15-24	5.809	41.5	95	38.6	1.63
25-34	6.906	49.3	119	48.4	1.72
35-44	1.261	9	30	12.2	2.37
45-55	18	0.13	2	0.8	11.1
Total	**13.994**	**100**	**246**	**100**	**1.76**

As we can observe from the table 5, by 256 cases of preeclampsia, 95 cases (38.6%) belong to mothers under 24 years of age, 119 cases (48.4%) from the mothers 25-34 years of age and 32 cases (13%) from the mothers over the 35 years of age. According to maternal age groups in table 5, there is a deviation of the cases distribution by preeclampsia from the total distribution of admissions in the maternity. Thus the

percentage of mothers with preeclampsia for age groups over 34 years old is greater than the percentage of total admissions, respectively 13% and 9.13%.

We should emphasize that the high percentage of cases with preeclampsia in mothers under 35 years of age (87%), have been linked with the large number of maternity admissions in this age and this is confirmed by the low incidence of preeclampsia in this age group.

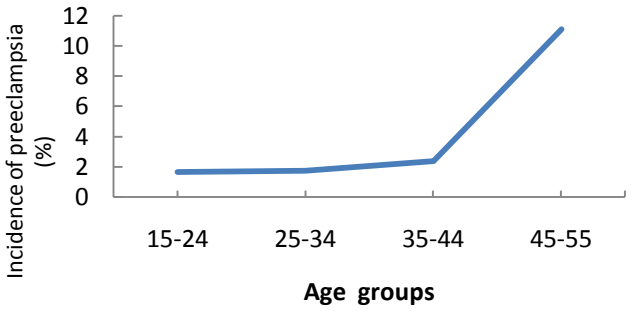

Figure 4. Variation of the preeclampsia incidence according to the maternal age

The link that may exists between the incidence of preeclampsia and the mother's age taken in our study is present clearly in the Figure 3. We can notice that the graph increases slowly until the age groups of mothers 35-44 years and after this point its increase considerably by the advance age.

For the mothers age groups 25-34 years the incidence results 1.72%, for the age groups 35-44 years there is an increase of the incidence value until 2.37%, while over 45 years the incidence increase evidently till up to 11.1%.

Conclusion

The above results allow us a clearer view of the incidence of preeclampsia for the period 2007-2012 for mothers paved to the obstetric ward of the maternity of Shkodra city. The cases observed with this syndrome from the total number are 246 with the incidence 1.76%.

The incidence value of preeclampsia is higher in mothers from the villages of Shkodra than in mothers from the city of Shkodra. This statement requires that in these areas needs to do a hard work for the recognition of this disease in order that pregnant women performed regular consulates to the gynecologist.

In this study the incidence of preclampsia in the mothers from Shkodra district (city, village) is lower compared with the mothers that came from the other localities of Albania. This fact shows that in regional hospital of Shkodra city is presented a considerable number of mothers from other districts that during pregnancy are associated with problems.

The mother's age is an important factor, for which we confirmed that with advancing maternal age the cases of preeclamsia increase. Therefore, to reduce the incidence of preeclampsia should be reduced the maternal age below the 35 years.

Given the fact that preeclampsia is one of the main causes of mortality and morbidity in the newborn it is necessary that mothers should receive complete information on this syndrome, which occurs only during the pregnancy.

This enable that mothers under the supervision of the respective doctors manage the disease in the best way possible.

References

1. Bianco A, Stone J, Lynch L, Lapinski R, Berkowitz G, Berkowitz RL: **Pregnancy outcome at age 40 and older**. Obstet Gynecol 1996; 87:917-22.
2. Bianco AT, Smilen SW, Davis Y, Lopez S, Lapinski R, Lockwood CJ: **Pregnancy outcome and weight gain recommendations for the morbidly obese woman**. Obstet Gynecol 1998; 91:97-102.
3. Campbell DM, MacGillivray I, Carr-Hill R: **Pre-eclampsia in second pregnancy**. Br J Obstet Gynaecol 1985; 92:131-40.
4. Coonrod DV, Hickok DE, Zhu K, Easterling TR, Daling JR: **Risk factors for preeclampsia in twin pregnancies: a population-based cohort study**. Obstet Gynecol 1995; 85:645-50.
5. Dekker GA, Sibai BM: **Etiology and pathogenesis of preeclampsia: current concepts**. Am J Obstet Gynecol 1998;179:1359-75.
6. Duckitt K: **Risk factors for pre-eclmapsia at antenatal booking: systematic review of controlled studies**. BMJ 2005; 330: 565.
7. Eskenazi B, Fenster L, Sidney S: **A multivariate analysis of risk factors for preeclampsia**. JAMA 1991;266:237-41.
8. Esplin MS, Fausett MB, Fraser A, Kerber R, Mineau G, Carrillo J, Varner MW: **Paternal and maternal components of the predisposition to preeclampsia**. N Engl J Med. 2001; 344:867–872.
9. Liu A, Wen SW, Bottomley J, Walker MC, Smith G: **Utilization of health care services of pregnant women complicated by preeclampsia**

in Ontario. Hypertens Pregnancy. 2009; 28:76–84.

10. Mahaba HM, Ismail NA, El Damaty SI and Kamel HA: **Pre-eclampsia: epidemiology and outcome of 995 cases**. *The Journal of the Egyptian Public Health Association*, vol. 76, no. 5-6, pp. 357–368, 2001.
11. National High Blood Pressure Education Program: **Working Group report on high blood pressure in pregnancy**. Am J Obstet Gynecol 1990; 163:1691-712.
12. Roberts JM, Redman CW: **Pre-eclampsia: more than pregnancy-induced hypertension**. Lancet 1993;341:1447-51.
13. Saftlas AF, Olson DR, Franks Al, Atrash HK, Pokras R: **Epidemiology of preeclampsia and eclampsia in the United States**, 1979-1986. Am J Obstet Gynecol 1990; 163:460-5.
14. WHO: **Coverage of Maternity Care: A Listing of Available Information.** World Health Organization, Geneva, Switzerland, 2004.