Pregnancy in advanced maternal age: maternal and fetal outcome

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SUMMARY: Pregnancy in advanced maternal age: maternal and fetal outcome.

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The objective of this research is to evaluate maternal and fetal outcome of pregnant women over 40 years. The outcome has been evaluated through the following data: age, nationality, number of deliveries, complications of pregnancy, type of delivery, newborn’s weight and Apgar index. 201 pregnant women have been recruited. 70 women (35%) are primiparae and 131 (65%) are multiparae. The chronic hypertension has been observed in 10 women (5%). The Gestational Hypertension has been observed in 8 women (4%). The Gestational Diabetes Mellitus (GDM) has been observed in 11 women (5.5%). The antepartum haemorrhage has been observed in 7 women (3.5%): 6 cases (3%) due to placenta praevia and 1 case (0.5%) due to separation of normally inserted placenta. 137 women (68%) have been exposed to cesarean section and 64 women (32%) gave birth spontaneously. The cesarean section rate was 76% in the group of primiparae women and 64% in the group of multiparae. The incidence of premature birth was 26% for the primiparae women and 12% for multiparae women. The incidence of children LBW (Low Birth Weight) was 17% in the primiparae and 10% in the multiparae. An iteration of complications has been more elevated compared to the general obstetrician population. In particular the group of primiparae women could have a significant risk of complications.

Key words: Advanced maternal age - Maternal and fetal outcome.

Introduction

A pregnant woman with 40 years or over is considered in Advanced Maternal Age. The number of children born from women in Advanced Maternal Age has risen since 1970 in all Western countries, including Italy. In Italy the average maternal age has risen from 25 to 28 years during the birth of first child between...
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1970 and 1995 and from 28 to 30 years between 1995 and 2009 (1). In 2012 the average age of Italian women was 31.2 years for the birth of first child and the predominance of children born from a woman over 40 was 6.1% (2). Women over 40 frequently present preexisting diseases during pregnancy such as: arterial hypertension and diabetes mellitus (3). The high risks can be: miscarriage, ectopic pregnancy, congenital malformation and (aneuploidies) including trisomies 21, 18, 13 (4). The incidence of gestational diabetes is 7-12% against 4% in the total pregnancies (3). The incidence of gestational hypertension is 5-10% against 5% (5). The incidence of preeclampsia is 5-10% against 3-4% (6, 7). The risk of antepartum hemorrhage caused by abruptio placenta or caused by placenta previa is 9 times higher (8, 9). Furthermore the risks of labour pains induction, abnormal introduction of fetus, lacerations of sphincter and cesarean section. The OR for maternal death rate between 40 and 44 years is 16.2 compared to women between 20 and 29 years (4). The Advanced Maternal Age is a risk factor for low weight during the birth and preterm birth (3, 10). The RR and Mef is 1.88 for women over 40 years during 37th and 41st weeks of gestation, compared to the predominance of 1.5% in the general obstetrician population (11).

Materials and methods

The aim of this study is to evaluate maternal and fetal outcome of pregnancy and birth, in a sample of women in advanced maternal age. This is a retrospective study that has been carried out on 201 women over 40 years. These women have executed birth in the Obstetrics Unit of “Paolo Giaccone” University Hospital in Palermo during 4 years (January 1st 2010 - December 31st 2013). The maternal and fetal outcome has been evaluated through following data: age, nationality, period of birth, type of birth, newborn’s weight and APGAR index.

Results

The sample includes 201 women of 40 years or over. This sample corresponds to 5.8% of all women who gave birth during the period in question. 96% were Italian women and 5% were women with a foreign nationality. The average age was 42 years and 11 patients (5.4%) were in Advanced Maternal Age, actually 45 years over. 70 patients (35%) were primiparae and 131 patients (65%) were multiparae. 10 patients (5%) were affected with chronic hypertension and 8 (4%) developed gestational hypertension with a case of grave preeclampsia. The iteration of hypertensive disorders corresponds to 11.4% in the primiparae group and 7.6% in the multiparae group. 11 cases (5.5) of gestational diabetes mellitus have been observed with on average an identical iteration among the two groups, 7 cases of antepartum hemorrhage (3.5%): 6 cases (3%) caused by placenta previa and 1 case (0.5%) caused by the separation of placenta (normal-
mente inserita). 64 patients (32%) gave birth spontaneously. 137 patients (68%) gave birth through cesarean section: 53 patients (39%) were primiparae and 84 patients (61%) were multiparae. The cesarean section rate was 76% in the group of primiparae and 64% in the group of multiparae (Figure 1). Data for cesarean section have been reported in Table 1.

The multiparae women already exposed at cesarean section were 52. This correspond to 62% of the multiparae exposed at cesarean section. The birth was preterm in 17% of cases, (completed) in 67%, post term in 16%. The average of gestational duration was 39 weeks. The iteration of prematurity has been 26% in the primiparae and 12% in the multiparae. The average of neonatal weight was 3120 g, living out children born from twin pregnancy. 1% of children had a low weight (less than 1500 g), 79% had a normal weight and 8% had a weight of 4 kg and over. The iteration of the children born with low weight was 17% in the primiparae and 10% in the multiparae. Finally, all newborns manifested an APGAR score of 8 and over at 5 min from birth. The only one exception was a child dead from birth. This child was born from a primipara woman with 32 weeks of gestation for separation of placenta.

Discussion

The results of our study have underlined an incidence of birth in advanced age compared to national average (6.1%). The nationality of the women is Italian in 96% of cases according to national data (1). Italian data are agree in principle with the data of Western countries. In United States, the effect of pregnancy in Advanced Maternal Age increased 4 times between 1980 and 2004. In Germany, Denmark, Great Britain and Japan, the effect of birth fluctuated between 5 and 10% for women over 40 years (12-14). The analysis of obstetrical outcome has revealed an important effect of maternal complications such as: gestational hypertension, gestational diabetes, antepartum bleeding and preterm birth, according to the literature (8, 15-17).

The iteration of hypertensive disorders has been more important among primiparae women; whereas gestational diabetes has not presented significant mutations between two groups (14, 18). The increase of gestational hypertension risk is caused by a minor capacity of maternal organism to adapt at physiological changes. Especially, the increase of risk is caused by an important prevalence of pathological conditions with a minor cardiovascular reserve. Indeed the compliance of blood vessels decreases with advanced age and the flux of arteries decreases slowly. Ferrazzi et al. have revealed that enhanced vascular resistance is interrelated with VEGF reduction age-related (19). The deficit of micro-circulation can decrease the diffusion of oxygen and intracellular PH, with an increase of vascular resistance. Al-Turki et al. (20) explain the age-related increase of carbohydrate intolerance and gestational diabetes, with a progressive endothelial dysfunction and with reduction of functionality of β-cells of pancreas. In a study of Ziadeh et al. (21) emerges a gestational diabetes risk 4% in the primiparae and 6.7% in the multiparae over 40 years compared to the values 1.1% and 1.7% of control group. However, the scientific research underline that there are not significant distinctions between the two groups, as confirmed in our study.

Among the causes of antepartum hemorrhage, multiparity is associated more frequently with placenta previa, and primiparity with placental abruption. Ananth et al. (8) have noticed a risk of placenta previa of 9 times higher in women over 40 compared to women of age lower at 20 years, with the analysis of maternal age effect and equality about hemorrhage risk in pregnancy. Differently, the incidence of placental abruption and bleeding with unknown reason have not shown significant distinctions with advanced age (13). The iteration of preterm birth (17%) has been higher than average, between 6 and 15% of all births. This iteration turned out to be more important between prim-

| Table 1 - Indications for Cesarean Section in the Primiparae and Multiparae Women. |
|-----------------------------------------------|--------------|-------------|
| Indication                       | N. Primiparae | N. Multiparae |
| Fetal suffering                  | 7            | 8           |
| Abnormal presentation            | 7            | 9           |
| Fetal pelvic disproportion       | 4            | -           |
| Antepartum hemorrhage            | 5            | 2           |
| Dynamic dystocia                 | 2            | -           |
| IUGR                            | 2            | -           |
| Diabetes mellitus                | 6            | 5           |
| Gestational hypertension         | 6            | 2           |
| Maternal cardiopathy             | 2            | -           |
| Uterine fibroid                  | 3            | 4           |
| Previous cesarean section        | -            | 52          |
| Self-determination               | 9            | 2           |
| Total                           | 53           | 84          |
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iparue women and this was in compliance with data of different studies (20). The incidence of cesarean section (68%) notably was higher than general obstetric population average of Italy (38%) (22). The iteration was more important for primiparue women compared to multiparue women exposed at primary cesarean section (76% against 24%), in agreement with Luke et al. (23). In fact different studies underline how for primiparue women was more frequent recurring at cesarean section for fetal suffering and dystocia (16, 17). The recourse at cesarean section could be caused by a minor uterine contractility and an altered tissue compliance. Starting from 35 years, muscular myocyte/fibrocellule of myometrium go and meet so (steato-fibrosis) and compliance of myometrial arterioles is gradually reduced because vasal sclerosis causes a partial occlusion. Pirhonen et al. (24) have observed that over 35 years, PL increases gradually thanks to the analysis of impedance index of uterine arteries with laser Doppler velocimetry between 23th and 42nd week of pregnancy. The higher recourse to cesarean section would be caused by a minor collaborative effort from mother over 40 years. Women who start first pregnancy in Advanced Maternal Age seem to be much more inclined to cesarean section, according to a survey of S.I di. P. In this respect, a study carried out by Gareen et al. (25) reveals how the incidence of cesarean section can increase with advanced age either considering a model without covariants, or considering covariants referable at maternal and fetal pathologies, mother’s attitude towards pregnancy, her socio-economic situation, type of conception, ethnic group. A gestational average duration of 39 weeks is revealed lightly lower compared to general average. This datum is coherent with literature. This datum is mainly cleared up with the beginning of complications. In fact the cesarean section has been carried out in 2/3 of cases following hypertensive and hemorrhagic problems observing the way of execution of births before 37 week. Whereas the spontaneous labor is happened in 1/3 of cases after premature rupture of membranes. The iteration of preterm birth has been higher among primiparue compared to multiparue and this was in conformity to the data of different studies (26). The tendency to anticipate birth has determined a slight reduction of low weight from birth. However advanced maternal age is considered an independent risk factor for low birth weight. In our study total incidence of low birth weight has been approximately 12% with significant variations in the two groups. Also in this case, the low birth weight rate was higher between primiparue women. However, this phenomenon was not entirely attributable at increase of preterm births even thought the majority of newborns with a low birth weight were adequate for gestational age. In a majority of cases the low birth weight is connected with SGA newborns. In fact the correlation between advanced maternal age and the increased probability to develop an altered placental functionality can compromise fetal development until determine an important intrauterine growth restriction and guide at birth of small newborns for gestational age (27). Finally, general neonatal outcome evaluated through APGAR index, was positive except for a newborn child for placental abruption.

Conclusions

The clinical surveillance of pregnancy in Advanced Maternal Age has to be based on early diagnosis of chromosome abnormality and malformation of newborn, diagnosis and treatments of obstetrical complications for women over 40. It is important evaluate the total obstetrical risk in operation of equality because being a primipara woman over 40 seem to be a risk factor for a negative obstetrical neonatal outcome (28).

References