Being a Mother After 35 Years: Will it be Different?

Ser Mãe Depois dos 35 Anos: Será Diferente?

Bárbara MARQUES✉[1], Francisca PALHA[1], Edgar MOREIRA[1], Sandra VALENTE[1], Margarida ABRANTES[1], Joana SALDANHA[1]

Acta Med Port 2017 Sep;30(9):615-622 ▪ https://doi.org/10.20344/amp.8319

ABSTRACT

Introduction: Advanced maternal age is defined as maternity after 35 years old and is associated with more complications during pregnancy and neonatal period as well as decreased fertility. This study aims to examine the relationship between advanced maternal age and their maternal and fetal consequences, as well as maternal perception of the risk of pregnancy after 35 years old.

Material and Methods: Observational, retrospective and comparative study, between two groups: advanced maternal age group (aged ≥ 35 years) and non-advanced maternal age group (age < 35 years), conducted between March and June 2015. Chi-square test and Fisher's exact test were used and considered significant if $p < 0.05$.

Results: Of the 736 women admitted to the hospital (32.2% with advanced maternal age), 306 were included in the study (153 in each group). In the non-advanced maternal age group there was a greater number of primiparous women ($p < 0.01$). In the advanced maternal age group, more previous miscarriages were observed ($p < 0.001$), as well as a higher use of assisted reproductive techniques ($p < 0.01$), preformed of amniocentesis ($p < 0.001$) and dystocia, including caesarean sections ($p < 0.001$). No association was found regarding the presence of maternal complications in pregnancy, birth defects, need for neonatal resuscitation or prematurity. As for the perception of risk in pregnancy, the non-advanced maternal age group considered it to be superior ($p < 0.05$).

Discussion: Most women of advanced maternal age have term deliveries without complications. Neonatal outcomes seem not to have been influenced by the advanced maternal age.

Conclusion: The consequences of an advanced maternal age pregnancy in this sample did not have the same clinical expression as described in the literature. In the future, advanced maternal age will possibly be considered after age 40.

Keywords: Infant, Newborn; Maternal Age; Pregnancy Complications; Pregnancy Outcome

RESUMO

Introdução: A idade materna avançada corresponde à maternidade depois dos 35 anos. Está associada a maior número de complicações na gravidez e período neonatal e ainda à diminuição da fertilidade. Propôs-se analisar a relação entre idade materna avançada e suas consequências materno-fetais, assim como a perceção materna dos riscos de uma gravidez depois dos 35 anos.

Material e Métodos: Estudo observacional, retrospetivo, descritivo e comparativo entre dois grupos: Grupo idade materna avançada (idade ≥ 35 anos) e Grupo não-idade materna avançada (idade < 35 anos), efetuado entre março e junho de 2015. Utilizado o teste do qui-quadrado e teste exato de Fisher e considerado significativo se $p < 0,05$.

Resultados: Das 736 puérperas internadas (32,2% com idade materna avançada), 306 foram incluídas no estudo (153 em cada grupo). No grupo não-idade materna avançada verificou-se um maior número de primíparas ($p < 0,01$). No grupo idade materna avançada observou-se um maior número de abortos espontâneos prévios ($p < 0,001$) e foi superior o recurso a técnicas de reprodução medicamente assistida ($p < 0,01$), a realização de amniocentese ($p < 0,001$) e o número de partos distócicos, nomeadamente cesarianas ($p < 0,001$). Não se encontraram diferenças em relação à presença de patologia materna na gravidez, malformações congénitas, necessidade de reanimação neonatal ou prematuridade. Quanto à perceção do risco numa gravidez em idade materna avançada, o grupo não-idade materna avançada considerou-o superior ($p < 0,05$).

Discussão: A maior parte das mulheres em idade materna avançada tiveram partos de termo e sem complicações. Os resultados neonatais parecem não ter sido influenciados pela idade materna avançada.

Conclusão: As consequências de uma gravidez em idade materna avançada na nossa amostra não tiveram a mesma expressão clínica que as descritas na literatura. No futuro, a idade materna avançada será possivelmente considerada após os 40 anos.

Palavras-chave: Complicações na Gravidez; Idade Materna; Recém-Nascido; Resultado da Gravidez

INTRODUCTION

Pregnancy in women aged 35 years or older was defined as advanced maternal age (AMA).[1-3]

In Portugal, mean maternal age at first birth has been increasing over the past few years from 25.4 years in 1994 to 27.4 years in 2004 and to 30 years in 2014. These data are in line with a 2.1-year increase found in mean maternal age at first birth every ten years over the past 40 years.[4]

An increasing percentage of AMA mothers attending a perinatal hospital in the Lisbon area has been found over the past few years and in 2014 a total of 681 children were born to mothers aged 35 and older, corresponding to 31% of the number of births.[5]

AMA is associated to a higher number of complications during pregnancy and the neonatal period. Maternal ageing made the presence of hypertension and diabetes mellitus more common, such as the presence of stillbirth and miscarriage, chromosomal abnormalities, birth defects, multiple pregnancies, intrauterine growth restrictions, preeclampsia, abnormalities of the placenta and caesarean-sections, as described by different studies. AMA is also

1. Serviço de Neonatologia. Departamento de Pediatria. Hospital Universitário de Santa Maria. Centro Académico de Medicina de Lisboa. Lisboa. Portugal.
✉ Autor correspondente: Bárbara Marques. barbaralsmarques@hotmail.com

Recebido: 16 de outubro de 2016 - Aceite: 11 de abril de 2017

associated with more neonatal complications, namely a higher incidence of low birth weight, preterm birth and the need for admission to the Neonatal Intensive Care Unit (NICU).[1,2,6-9] A 1.54 [95% confidence interval (CI) 1.095-2.16] relative risk for cerebral palsy has been found in children born to mothers aged over 39, when compared to mothers aged 20-29, according with the recent report of the Portuguese National Surveillance Program of Cerebral Palsy at the age of 5 (*Vigilância Nacional de Paralisia Cerebral*) with children born between 2001 and 2007.[10]

The detrimental effect of maternal ageing on fertility is a well-known reality.[2] Decreasing number of ovarian follicles and chromosomal quality have been found with maternal ageing.[11] The presence of increasingly improved techniques of medically-assisted reproduction made pregnancy feasible at a later age, even though these are highly expensive and not always leading to a healthy pregnancy outcome. In case of pregnancy, it is often associated with higher neonatal morbidity, namely due to multiple pregnancy, prematurity and low birth weight.[2,11,12]

Childbearing postponement is associated with different reasons. Factors such as safe and efficient contraception, higher education level, professional career, financial security and the search for stable relationships often lead to childbearing postponement, mainly in developed countries.[2,13]

However, women usually have a different approach from healthcare professionals to late pregnancy. Older women usually think of AMA based on their own expectations and experience, in addition to the expectations and experience of other AMA women they know, while healthcare professionals tend to produce a more focused and medically-related assessment.[3,14]

This study was mainly aimed at the analysis of the relationship between advanced maternal age and its effects on maternal and neonatal outcomes. It also aimed at the assessment of the participant's awareness regarding the risk of pregnancy over the age of 35.

MATERIAL AND METHODS

This was a retrospective, descriptive, comparative and observational study involving two groups of mothers and newborn infants admitted to the postnatal unit at a perinatal hospital in the Lisbon area between 1 March and 30 June 2015 and the analysis of their medical data.

A convenience sample has been obtained, including a group of mothers aged 35 and older (AMA group) and a group of mothers aged under 35 having given birth upon each mother on the first group (non-AMA group).

Mothers admitted to the unit, aged 35 or older at birth and having signed a written informed consent were included into the AMA group, while mothers admitted to the unit, aged under 35 at birth and having signed a written informed consent were included into the non-AMA group. Newborn infants remained together with their mothers (rooming-in) at the unit or were admitted to the NICU. The absence of an informed consent and incomplete questionnaires were the study exclusion criteria.

Data were obtained by responding to a questionnaire carried out during the initial medical examination of the newborn infant and by the analysis of the Healthy Pregnancy Book (*Boletim de Saúde da Grávida*) and medical records of both the mother and newborn infant.

Data on maternal history (age, nationality, level of education, occupation, marital status, medical history, smoking, drinking and drug use, paternal history (age, nationality, education level, occupation), obstetric history (obstetric score, miscarriages), data on the current pregnancy (planning, infertility outpatient attendance, assisted reproductive techniques, monitoring, pregnancy pathology, medication, third-trimester serological tests and ultrasound, biochemistry screening and amniocentesis), data regarding the newborn infant (multiple birth, mode of birth, gestational age, Apgar score, gender, somatometric parameters at birth, birth complications, birth defects, need for resuscitation), breastfeeding and maternal perception of the risks of pregnancy over the age of 35 (security, reasons for postponement of childbearing). Pre-existing chronic conditions have been considered as pre-existing maternal diseases according with the definition of the World Health Organization.

Maternal age at birth was considered as an independent variable. The need for assisted reproductive techniques, maternal pathology during pregnancy, ultrasound abnormalities, twin pregnancy, the use of amniocentesis and the mode of birth were assessed as maternal outcomes of pregnancy after age 35, while prematurity, the need for neonatal resuscitation, the presence of birth defects, low birth weight and the need for admission to the NICU were considered as neonatal outcomes. The outcomes of pregnancy after age 40 were also assessed in two subgroups within the AMA group.

Microsoft Excel 2010® and SPSS® (Statistical Package for Social Sciences), version 22.0 for Windows (SPSS Inc. Chicago) software were used for data analysis. Chi-square and Fisher's exact test were used for comparative and descriptive analysis and a p-value <0.05 has been considered as statistically significant.

A written informed consent has been obtained from all the mothers involved in the study and this was approved by the Ethics Committee of the institution in which it took place, according with the Helsinki Declaration of the World Medical Association and the International Committee of Medical Journal Editors (ICMJE).

RESULTS

In total, 736 mothers were admitted during the study period and 32.2% (n = 237) were aged 35 and over. A total of 153 mothers were included in each group (64.6% of the total AMA group mothers were aged 35 and over). A median maternal age of 37 was found in the AMA group (maximum: 44 years) and 30 in the non-AMA group (minimum: 15). Median paternal age of 38 was found in the AMA group (range 25-57) and 31 in non-AMA group (range 18-64).

The characteristics of our group of patients are shown in Table 1. A statistically significant difference in the total number of pregnancy losses has been found between both groups ($p < 0.01$), namely regarding the number of stillbirths, which was higher in the AMA group ($p < 0.001$). No statistically significant differences were found between both groups as regards the number of elective terminations of pregnancy or those due to medical reasons, the presence of maternal chronic conditions or the use of contraception, even though a trend towards a lower use has been found in the AMA group ($p = 0.083$).

A higher education level has been found in the AMA group and more than half of the mothers in this group held a university degree. In addition, non-significantly higher percentage of employed parents at birth has been found in this group.

A higher number of single mothers has been found in the non-AMA group ($p < 0.01$) and a trend for mothers in the AMA group to be married has been found ($p = 0.067$). Most patients in this group lived with their child's father ($p < 0.05$).

Higher number of vaginal births has been found in non-AMA group of patients (Table 2) ($p < 0.01$) while higher number of caesarean-sections has been found in the AMA group ($p < 0.001$). Higher number of primiparous mothers was found in the non-AMA group ($p < 0.01$) while assisted reproductive techniques have been significantly more used in the AMA group ($p < 0.01$), as well as the number of amniocenteses ($p < 0.001$). No statistically significant differences were found regarding the number of multiple births.

No statistically significant differences were found between both groups as regards the presence of maternal pathology during pregnancy, the presence of ultrasound abnormalities and the number of natural births.

No statistically significant differences were also found between both groups as regards prematurity, the need for neonatal resuscitation, the presence of birth defects, the number of low birth weight infants, the need for admission to the NICU and breastfeeding in the hospital.

More pathologies were found in newborn infants admitted to the NICU, even though evenly distributed among both groups and no statistically significant differences were found. Four out of the five newborn infants from the AMA group who were admitted to the NICU were preterm infants, four needed for neonatal resuscitation and were low weight birth. In addition, one of the four newborn infants in the non-AMA group who were admitted to the NICU was a preterm infant, one needed for neonatal resuscitation, one presented with a birth defect (diaphragmatic hernia) and one was low birth weight.

Occupational or socio-economic reasons mainly explained for postponed pregnancy in the group of AMA mothers (30.3%), followed by personal and marriage problems (23.2%), childbearing desire (16.2%) and conception issues and infertility (15.5%) (Table 4).

Different maternal awareness of the risks of childbearing before *vs.* after age 35 has been found in both groups when the awareness of maternal or foetal risk, the availability to take care of the baby or the sense of responsibility and experience were assessed (Table 5). Higher awareness of a more important risk associated with a later-age pregnancy has been found in non-AMA mothers ($p < 0.05$), while greater tiredness related to taking care of the baby ($p < 0.01$), even though with greater sense of responsibility and experience ($p < 0.01$) has been found in AMA mothers.

A total of 24 AMA mothers were aged 40 and older (15.7%) and a higher number of terminations of pregnancy either due to medical reasons ($p < 0.05$) or voluntary ($p < 0.05$) has been found in this group. A lower use of contraception has also been found in mothers after age 40 ($p < 0.05$). A more frequent use of amniocentesis has been found in the subgroup of mothers after age 40 ($p < 0.01$).

DISCUSSION

Childbearing age has been gradually increasing in developed countries, due to clinical, personal, social or

Table 1 – Characteristics of the study population

	AMA group n (%)	Non-AMA group n (%)	*p*
Total terminations of pregnancy	70 (45.7%)	41 (26.8%)	< 0.01
Miscarriage	49 (32.0%)	17 (11.1%)	< 0.001
VTP	18 (11.8%)	22 (14.4%)	NS
TTP	4 (2.6%)	1 (0.6%)	NS
Maternal chronic condition	51 (33.3%)	43 (28.1%)	NS
Contraception			
Used	94 (62.2%)	104 (71.7%)	NS
Hormonal method	74 (49.0%)	86 (59.3%)	NS
Barrier method	13 (8.6%)	16 (11.0%)	NS
Other	7 (4.6%)	2 (1.4%)	NS

IVG: voluntary termination of pregnancy; TTP: therapeutic termination of pregnancy; AMA: advanced maternal age; NS: non-significant

Table 2 – Social framework of our group of patients

	AMA group n (%)	Non-AMA group n (%)	*p*
Maternal habits			
Smoking	21 (13.7%)	28 (18.3%)	NS
Alcohol	1 (0.7%)	4 (2.6%)	NS
Medication	33 (21.6%)	22 (14.4%)	NS
Drugs	1 (0.7%)	0 (0.0%)	NS
Maternal nationality			
Portuguese	132 (86.3%)	124 (82.1%)	NS
African	11 (7.2%)	14 (9.3%)	NS
Brazilian	4 (2.6%)	2 (1.3%)	NS
Slavic	6 (3.9%)	4 (2.7%)	NS
Other	0 (0.0%)	7 (4.6%)	< 0.01
Maternal level of education			
Basic education	24 (15.8%)	36 (23.5%)	NS
Secondary education	46 (30.3%)	52 (34.0%)	NS
Higher education	82 (53.9%)	65 (42.5%)	< 0.05
Paternal level of education			
Basic education	23 (15.3%)	38 (25.7%)	< 0.05
Secondary education	53 (35.3%)	52 (35.1%)	NS
Higher education	74 (49.4%)	58 (39.2%)	NS
Employed mother	126 (82.3%)	112 (73.2%)	NS
Employed father	140 (92.7%)	131 (87.9%)	NS
Maternal marital status			
Single	1 (0.7%)	10 (6.5%)	< 0.01
Living as a couple	66 (43.1%)	75 (49.0%)	NS
Married	84 (54.9%)	68 (44.4%)	NS
Divorced	2 (1.3%)	0 (0.0%)	NS
Family household			
Living alone	2 (1.3%)	7 (4.6%)	NS
Living with child's father	151 (98.7%)	143 (93.5%)	< 0.05
Living with her parents	0 (0.0%)	3 (1.9%)	NS

AMA: advanced maternal age; NS: non-significant

occupational reasons and the complications and risks associated with an AMA pregnancy have been described by different studies.[1,6-9,12-14] However, maternal perception of the risks of later-age pregnancy is unclear.[3,13-15]

A 32.2% of total births throughout the four-month study period were to mothers aged 35 and older (n = 237), in line with what has been found in 2015 at the same hospital (32%)[5] and also nationwide.[16]

The fact that only live births were included in the study has significantly biased the results regarding some of the variables, namely the use of assisted reproductive techniques, the presence of maternal pathology during pregnancy, the presence of ultrasound abnormalities, the presence of multiple pregnancy and the use of amniocentesis. The assessment of all AMA pregnancies over the beginning and not confined to the moment of birth would be relevant and would allow more accurate results regarding the number of pregnancy losses and more accurate knowledge on the complications of AMA pregnancies. However, the design of the study did not allow

Table 3 – Analysis of maternal and neonatal outcomes

	AMA group n (%)	Non-AMA group n (%)	*p*
Maternal outcomes			
Vaginal birth	61 (40.4%)	60 (40.5%)	NS
Assisted vaginal birth	35 (23.2%)	62 (41.9%)	< 0.01
Caesarean section birth	55 (36.4%)	26 (17.6%)	< 0.001
Maternal pathology during pregnancy	60 (39.2%)	52 (34.2%)	NS
Ultrasound abnormalities	21 (13.9%)	14 (9.2%)	NS
Primiparous mother	67 (43.8%)	91 (59.5%)	< 0.01
Multiple birth	6 (3.9%)	9 (5.9%)	NS
Assisted pregnancy	23 (15.1%)	9 (5.9%)	< 0.01
Use of amniocentesis	28 (18.8%)	6 (4.0%)	< 0.001
Foetal outcomes			
Prematurity	13 (8.9%)	10 (6.9%)	NS
Neonatal resuscitation	14 (9.1%)	6 (4.0%)	NS
Birth defects	4 (2.6%)	3 (2.0%)	NS
Low birth weight	10 (6.9%)	11 (7.4%)	NS
Admission to the NICU	5 (3.3%)	4 (2.6%)	NS
Breastfeeding in the hospital	150 (98.0%)	147 (97.3%)	NS

NICU: Neonatal Intensive Care unit; AMA: advanced maternal age; NS: non-significant

Table 4 – Reasons for later-age pregnancy

	AMA group n (%)
Occupational/socio-economic	43 (30.3%)
Personal/marriage problems	33 (23.2%)
Childbearing desire	23 (16.2%)
Infertility	22 (15.5%)
Unplanned pregnancy	17 (12.0%)
Maternal/family disease	4 (2.8%)

Table 5 – Maternal awareness of the differences between childbearing before *versus* after age 35

	AMA group n (%)	Non-AMA group n (%)	*p*
Awareness of higher maternal and foetal risk	42 (27.8%)	57 (39.3%)	< 0.05
Awareness of lower physical availability and greater tiredness to take care of the baby	38 (25.2%)	19 (13.1%)	< 0.01
Awareness of more responsibility, maturity and experience	51 (33.8%)	25 (17.2%)	< 0.01

AMA: advanced maternal age; NS: non-significant

for this analysis and further studies with the collaboration of obstetrics are desirable.

A significantly higher education level has been found in AMA mothers, probably showing a higher investment in the academic and occupational career instead of the personal life, leading to later-age pregnancy, in line with literature.[6,7] This was in fact the main reason described by participants explaining for a later-age pregnancy, in addition to personal and marriage problems.

A higher percentage of mothers in the AMA group lived with their child's father and were more frequently married, probably due to a higher level of education and subsequently to a higher socio-economic level and financial stability. In addition, emotional maturity is one of the main advantages of a pregnancy after age 35, according with AMA mothers.

A more frequent use of amniocentesis and assisted pregnancy in the AMA group which has been found in this study is in line with higher risk for birth defects and decreased fertility rate associated with advanced maternal age.[2,11-15] In addition, it is known that the use of techniques aimed to overcome infertility is associated with increased multiple birth,[17] which was not found in our group of patients. The absence of significant differences between both groups regarding the presence of birth defects or multiple births is probably due to biased results due to the fact that only live births were included in the study.

Later-age pregnancy is associated with risks and complications.[1,6-9,12-14] A statistically significant correlation

Table 6 – Analysis of the social framework and maternal and neonatal outcomes in AMA group mothers

	Age 35 - 39 n (%)	≥ 40A n (%)	*p*
Total terminations of pregnancy	53 (41.1%)	17 (70.8%)	< 0.01
Miscarriage	40 (31.0%)	9 (37.5%)	NS
VTP	12 (9.3%)	6 (25.0%)	< 0.05
TTP	1 (0.8%)	3 (12.5%)	< 0.05
Contraception			
Used	84 (66.1%)	10 (41.7%)	< 0.05
Hormonal method	66 (52.0%)	8 (33.3%)	NS
Barrier method	13 (10.2%)	0 (0.0%)	NS
Other	5 (4.0%)	2 (8.3%)	NS
Maternal habits			
Smoking	20 (15.5%)	1 (4.2%)	NS
Alcohol	1 (0.8%)	0 (0.0%)	NS
Medication	28 (21.7%)	5 (20.8%)	NS
Drugs	1 (0.8%)	0 (0.0%)	NS
Maternal level of education			
Basic education	20 (15.6%)	4 (16.7%)	NS
Secondary education	38 (29.7%)	8 (33.3%)	NS
Higher education	70 (54.7%)	12 (50.0%)	NS
Paternal level of education			
Basic education	21 (16.7%)	2 (8.3%)	NS
Secondary education	43 (34.1%)	10 (41.7%)	NS
Higher education	62 (49.2%)	12 (50.0%)	NS
Employed mother	109 (84.5%)	17 (70.8%)	NS
Employed father	119 (93.7%)	21 (87.5%)	NS
Maternal marital status			
Single	1 (0.8%)	0 (0.0%)	NS
Living as a couple	57 (44.2%)	9 (37.5%)	NS
Married	69 (53.5%)	15 (62.5%)	NS
Divorced	2 (1.6%)	0 (0.0%)	NS
Family household			
Living alone	2 (1.6%)	0 (0.0%)	NS
Living with child's father	127 (98.4%)	24 (100%)	NS
Maternal outcomes			
Vaginal birth	49 (38.6%)	12 (50.0%)	NS
Assisted vaginal birth	31 (24.4%)	4 (16.7%)	NS
Caesarean-section birth	47 (37.0%)	8 (33.3%)	NS
Maternal pathology during pregnancy	49 (38.0%)	11 (45.8%)	NS
Ultrasound abnormalities	20 (15.6%)	1 (4.3%)	NS
Primiparous mother	60 (46.5%)	7 (29.2%)	NS
Multiple pregnancy	6 (4.7%)	0 (0.0%)	NS
Assisted pregnancy	17 (13.3%)	6 (25.0%)	NS
Amniocentesis	18 (14.2%)	10 (45.4%)	< 0.01
Foetal outcomes			
Neonatal resuscitation	14 (10.8%)	0 (0.0%)	NS
Prematurity	11 (9.0%)	2 (8.7%)	NS
Birth defects	4 (3.1%)	0 (0.0%)	NS
Low birth weight	8 (6.6%)	2 (8.7%)	NS
Breastfeeding in hospital	127 (98.4%)	23 (95.8%)	NS

IVG: voluntary termination of pregnancy; TTP: therapeutic termination of pregnancy; AMA: advanced maternal age; NS: non-significant

between AMA mothers and the rate of pregnancy losses has been found, in line with literature, as well as with a higher number of caesarean-sections found in this group, which can be associated with the number of caesarean sections carried out in previous pregnancies.[6,9]

No statistically significant correlation has been found in this study between AMA mothers and the presence of birth defects, prematurity, need for neonatal resuscitation or low birth weight infants, unlike what has been found in previous studies.[1,6,8] However, a small number of newborn infants (similar number in both groups) needed to be admitted to the NICU during the study. In fact, the admission to the NICU corresponds to higher morbidity, even though the statistical analysis is inconclusive due to the small number of patients involved.

Little attention has been paid to maternal perception of the risk of later-age pregnancy.[3,13-15] The risks associated with an AMA pregnancy were not valued by most AMA mothers in our study, even though they were aware of the differences between getting pregnant after *vs.* before age 35: childbearing age has been described as a relevant factor when questioned about emotional and physical constraints.

Childbearing age 35 and older is mostly used in literature as AMA definition.[1-3,12,13] However, due to non-significant differences regarding the outcomes of pregnancy before 35 *vs.* age 35-39, different authors have suggested to change AMA definition to age 40 and older.[7,8] Significant differences between before and after age 40 were found in this study regarding the rate of voluntary termination of pregnancy, the use of amniocentesis and the use of contraception. Even though the study has not been aimed at these issues, the results can be explained by the increasing risk of birth defects or the presence of pathology leading to a more frequent use of amniocentesis and termination of pregnancy, as well as by the higher rate of infertility and perceived lower need for the use of contraception. No significant differences were found regarding any other parameters, even though the small number of patients aged 40 and older in this study does not allow for any conclusive results, which would be obtained with a multicentric study.

Non-inclusion of AMA mothers from the beginning of pregnancy, allowing for the assessment of pregnancy losses and stillbirths throughout pregnancy and for a much more accurate assessment of pregnancy in an advanced age, is the main limitation of the study.

The fact that most AMA women in our study had full-term babies with no pre or postnatal complications is worth mentioning. Low morbidity and mortality rates were found in the study, suggesting that most women had a good experience with pregnancy.

The lack of information regarding the risks of an AMA pregnancy should be mentioned and has been found in both groups. Awareness of the risks could change the decision regarding the timing of childbearing and is a growing public health concern that requires further attention.

CONCLUSION

Outcomes of pregnancy in an advanced age did not have the same expression in our group of patients as those described in current literature. The age from which an advanced maternal age pregnancy is currently defined should probably be changed to the age of 40, considering the low prevalence of maternal and neonatal complications found in later-age pregnancies.

ACKNOWLEDGMENTS

The authors wish to acknowledge all healthcare professionals for their contribution to the application of the questionnaires and data collection as well as to all the participants involved in the study.

HUMAN AND ANIMAL PROTECTION

The authors declare that the followed procedures were according to regulations established by the Ethics and Clinical Research Committee and according to the Helsinki Declaration of the World Medical Association and the International Committee of Medical Journal Editors (ICMJE).

DATA CONFIDENTIALITY

The authors declare that they have followed the protocols of their work centre on the publication of patient data.

CONFLICTS OF INTEREST

The authors declare that there were no conflicts of interest in writing this manuscript.

FINANCIAL SUPPORT

The authors declare that there was no financial support in writing this manuscript.

REFERENCES

1. Ciancimino L, Laganà AS, Chiofalo B, Granese R, Grasso R, Triolo O. Would it be too late? A retrospective case–control analysis to evaluate maternal–fetal outcomes in advanced maternal age. Arch Gynecol Obstet. 2014;290:1109–14.
2. Carvalho RM, Araújo C. A gravidez nos extremos da vida reprodutiva. In: Graça LM, editor. Medicina materno-fetal. Lisboa: Lidel; 2010. p. 168-72.
3. Bayrampour H, Heaman M, Duncan KA, Tough S. Advanced maternal age and risk perception: a qualitative study. BMC Pregnancy Childbirth. 2012;12:100.
4. Instituto Nacional de Estatística. Idade média da mãe ao nascimento do primeiro filho (Anos); Anual. Portal do INE. [consultado 2016 jun 26]. Disponível em: https://www.ine.pt/.
5. Unidade Coordenadora Funcional Lisboa Norte. Área Materna e Neonatal. Relatório do Ano 2015. Lisboa. ARS; 2015.
6. Carolan M, Frankowska D. Advanced maternal age and adverse perinatal outcome: A review of the evidence. Midwifery. 2011;27:793–801.
7. Caetano LC, Netto L, Lima Manduca JN. Gravidez depois dos 35 anos: uma revisão sistemática da literatura. Rev Min Enferm. 2011;15:579-87.
8. Delpisheh A, Brabin L, Attia E, Brabin BJ. Pregnancy late in life: a hospital-based study of birth outcomes. J Womens Health. 2008;17:965-70.
9. Jolly M, Sebire N, Harris J, Robinson S, Regan L. The risks associated

with pregnancy in women aged 35 years or older. Hum Reprod. 2000;15:2433-7.
10. Virella D, Folha T, Andrada MG, Cadete A, Gouveia R, Alvarelhão J, et al. Vigilância nacional da paralisia cerebral aos 5 anos de idade - crianças nascidas entre 2001 e 2007. Lisboa: FAPPC; 2016.
11. Liu K, Case A. Advanced reproductive age and fertility. J Obstet Gynaecol. 2011;33:1165–75.
12. Jackson S, Hong C, Wang ET, Alexander C, Gregory KD, Pisarska MD. Pregnancy outcomes in very advanced maternal age pregnancies: the impact of assisted reproductive technology. Fertil Steril. 2015;103:76-80.
13. Johnson JA, Tough S. Delayed child-bearing. J Obstet Gynaecol. 2012;34:80–93.
14. Lampinen R, Vehviläinen-Julkunen K, Kankkunen P. A review of pregnancy in women over 35 years of age. Open Nurs J. 2009;3:33-8.
15. Heffner LH. Advanced maternal age – how old is too old? N Engl J Med. 2004;351:1927-8.
16. Instituto Nacional de Estatística. Estatísticas vitais 2015. Lisboa: INE; 2016.
17. Schmidt L, Sobotka T, Bentzen JG, Andersen AN. Demographic and medical consequences of the postponement of parenthood. Hum Reprod. 2012;18:29-43.