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THE ASSOCIATION BETWEEN ADVANCED MATERNAL AGE AND STILLBIRTH RISK

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ABSTRACT

Background: Pregnancy at advanced maternal age (AMA) has become more common over the last decades. The association between adverse perinatal outcomes and AMA has been a matter of controversy in several studies. **Objective**: the aim of the study is to investigate the impact of maternal age on stillbirth risk of singleton pregnancies without fetal defects. **Materials and Methods**: This is prospective study conducted in the Department of Obstetrics and Gynaecology in Tishreen University Hospital –Lattakia-Syria from November 2019 to November 2020. All pregnant women who aged 20 to 49 years were included in the study. **Results:** A total of 1560 pregnant women were included in the study, Mean maternal age was 28.7 ± 6.2 years with 254(16.3%) women in the group of age 35-39 years and 81(5.2%) women≥ 40 years, stillbirths were recorded in 32(2%) cases at a rate 20.5 per 1000 delivery. Maternal age was an independent risk factor for stillbirth, compared to the reference, group age ≥ 40 years had a significantly higher risk of stillbirth than group of age 35-39 years (HR: 2.73;95% CI:0.64-11.7 vs HR:2.01;95% CI:0.63-6.4, P:0.04). Other risk factors of stillbirth were: Smoking (HR: 2.46; 95% CI:1.12-5.4, P:0.02), nulliparous women (HR:3.61;95% CI:1.6-8,P:0.001), pre-existing hypertension(HR: 2.87 ;95%CI:1.2-6.49,P:0.01)and pre-existing diabetes mellitus (HR: 4.6 ;95% CI:1.9-11,P:0.0005). The risk for stillbirth was higher in older nulliparous women than older multiparous. **Conclusion:** AMA is an independent risk factor for stillbirth. Therefore, it is better for health care providers to counsel couples who seek to have the first child at advanced age about the risks of pregnancy in this period.

KEYWORDS: Advanced maternal age, stillbirth, outcome, risk factor.

INTRODUCTION

In the last decades, the rate of pregnancies at advanced maternal age(AMA) has increased steadily giving rise to concern about the impact of AMA on pregnancy outcomes.[1,2] Pregnancy at AMA ,defined as childbearing in a woman over 35 years of age, is associated with several adverse maternal and fetal outcomes such as preeclampsia, gestational diabetes, chromosomal defects and stillbirth.[3]

The World Health Organization(WHO), defines stillbirth as a baby born with no signs of life at or after 28 weeks of gestation.[4] It is estimated that worldwide 3.2 million babies are stillborn annually, out of which nearly 98% are reported from low and middle income countries.[5,6] AMA is associated with a progressive increase in the risk for stillbirth even after adjusting for potential confounding variables such as genetic abnormalities or underlying medical conditions.[7] Preventing stillbirths is of great importance in improving global child health.[8] The absence of local studies prompted us to carry out this research to investigate the association between AMA and stillbirth.

MATERIALS AND METHODS

Study design and data collection

We studied all singleton pregnant women aged 20 to 49 years at the time of delivery and gestational age >28 weeks who admitted to the Department of Obstetrics and Gynaecology from November 2019 to November 2020 in Tishreen University Hospital –Lattakia-Syria. Pregnant women with multiple gestations and fetal defects were excluded. Subjects were classified into five groups according to maternal age at delivery: 20-24 years,25-29 years, 30-34 years, 35-39 years, ≥40 years. The group of women aged 20-24 years was used as the reference group for all comparisons. The demographic information included age, parity, co-morbidities,

complications of pregnancy (including hypertension, diabetes) were recorded.

Statistical Analysis

Statistical analysis was performed by using IBM SPSS version20. Basic Descriptive statistics included means, standard deviations (SD) Frequency and percentages.

Differences of distribution examined using chi- square test or Fisher exact test if it need. A Cox proportional hazards analysis was performed for analysis of independent risk factors of stillbirth with respective 95% confidence intervals (CI 95%) Statistical significance was accepted at a P value of <0.05

RESULTS

A total of 1560 singleton gestations without reported congenital anomalies who admitted to the Department of Obstetrics and Gynecology from November 2019 to November 2020, mean maternal age was 28.7 ± 6.2 years, stillbirths were recorded in 32(2%) cases at a rate 20.5 per 1000 delivery. The baseline characteristics of the patients are as given in table(1).

As shown below, stillbirth rates were higher in women >35 years, nulliparous women (3.3% vs 0.9%, p:0.001), in presence of smoking (4.1% vs 1.7% , p:0.02), pre-existing diabetes mellitus (7.4% vs 1.7%, p:0.0001) and hypertension (4.8% vs 1.7%, p:0.008).

Table 1: Demographic characteristics of the study population by comparison of the two group.

Variables	Group1 pregnancies with stillbirth N=(32)	Group2 pregnancies with live birth N =(1528)	P-value
Maternal age group(years)			
20-24	5(1.4%)	356(98.6%%)	
25-29	8(1.7%)	462(98.3%)	
30-34	9(2.3%)	385(97.7%)	0.5
35-39	7(2.8%)	247(97.2%)	
≥40	3(3.7%)	78(96.3%)	
Smoking			
Present	9(4.1%)	209(95.9%%)	0.02
Absent	23(1.7%)	1319(98.3%)	
Obstetric history			
nulliparous	24(3.3%)	693(96.7%)	0.001
multiparous	8(0.9%)	835(99.1%)	
Co-morbidities			
Hypertension			
Present	8(4.8%)	159(95.2%)	0.008
Absent	24(1.7%)	1369(98.3%)	
Diabetes mellitus			
Present	7(7.4%)	87(92.6%)	0.0001
absent	25(1.7%)	1441(98.3%)	
Gestational complications			
Gestational hypertension			
Present	15(2.6%)	562(97.4%)	
absent	17(1.7%)	966(98.3%)	0.2
Gestational hypertension			
Present	10(2%)	479(98%)	
absent	22(2.1%)	1049(97.9%)	0.9
Neonate sex			
Male	15(2%)	749(98%)	
female	17(2.1%)	779(97.9%)	0.8

A Cox proportional hazards analysis was performed for analysis of independent risk factors for stillbirth. As shown below(Table 2) ,compared to the reference, group age ≥ 40 years had a significantly higher risk of stillbirth than group of age 35-39 years(HR: 2.73;95% CI:0.64-11.7 vs HR:2.01;95% CI:0.63-6.4, P:0.04). The HRs for Smoking(HR: 2.46; 95% CI:1.12-5.4, P:0.02), nulliparous women (HR:3.61;95% CI:1.6-8,P:0.001), hypertension(HR: 2.87 ;95%CI:1.2-6.49,P:0.01)and diabetes mellitus(HR: 4.6 ;95% CI:1.9-11,P:0.0005). Older nulliparous women have higher risk for stillbirth(HR: 4.39 ;95% CI:0.69-27.7,P:0.1 in nulliparous women ≥40 vs HR: 1.8 ;95% CI:0.16-21.1,P:0.6 in multiparous women ≥40.

Table 2: Cox proportional hazard analysis for all stillbirths.

Variable	HR(95% CI)	P value
Age group		
20-24	Reference	
25-29	1.23[0.39-3.8]	0.71
30-34	1.66[0.55-5]	0.36
35-39	2.01[0.63-6.4]	0.23
≥40	2.73[0.64-11.7]	0.04
Obstetric history		
multiparous	Reference	0.001
nulliparous	3.61[1.6-8]	
Smoking(present)	2.46[1.12-5.4]	0.02
Hypertension(present)	2.87[1.2-6.49]	0.011
Diabetes mellitus(present)	4.6[1.9-11]	0.0005

DISCUSSION

This prospective study has demonstrated that 21.5% of deliveries were from women≥35 years, and stillbirth rate was 20.5 per 1000 delivery which increased with increasing maternal age. Maternal age was an independent risk factor for stillbirth, and presence of smoking, hypertension, diabetes mellitus in addition to nulliparous women were risk factors for stillbirth. The mechanism responsible for this increasing in stillbirth is placental dysfunction which accounts for around 65% of stillbirths.[9] Placentas from older mothers(≥ 35 years) are less efficient in the sense that fetal/placenta weight ratio was lower than placentas from women under 30 years old, and they seem to be bigger in size in which the increased size could be an adaptive mechanism trying to make up for placental dysfunction.[10,11]

In comparison with the previous studies, there were differences in the incidence of stillbirth between studies, in which the rates were lower in developed countries. Maternal age was an independent risk factor for stillbirth.

Gordon et al(2013) showed that stillbirth rate was 3.5/1000 , maternal age was a significant independent risk factor for stillbirth(HR 2.41 95% CI 1.8-3.23 for age group≥40 compared to the reference, and other risk factors were smoking HR 1.82(95% CI 1.56-2.12) nulliparity HR 1.23(95% CI 1.08-1.40),and preexisting diabetes mellitus HR 2.65(95% CI 1.63-4.32).[12]

Dongarwar et al found in study conducted in USA (2003-2017) that stillbirth rate was 5 per 1000, and women of advanced age≥40 years had a 40-50% greater risk for stillbirth compared to women 20-29 years of age.[13]

Altijani et al(2018) in India found that stillbirth rate was 10 per 1000, and the risk for stillbirth was increased with maternal age HR1.29(95% CI 1.09-1.51) for age group> 35 year compared to the reference.[14]

Khandait et al in study conducted in India between 1993 -1997 showed that stillbirth rate was 24.5 per 1000 which was significantly associated with increasing maternal age.[15]

CONCLUSION

Increasing maternal age is an independent risk factor for adverse perinatal outcomes.

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REFERENCES

1. Office for National Statistics. Statistical Bulletin for Births and deaths in England and Wales. Office for National Statistics, Newport, UK.http://www. statistics.gov.uk/statbase/ Product.asp?vlnk=14408, 2008.
2. Royal College of Obstetricians and Gynaecologists. RCOG Statement on later maternal age. Royal College of Obstetricians and Gynaecologists: London, http://www.rcog.org.uk/ what-we-do/campaigning-and-opinions/statement/ rcogstatement-later-maternal-age, 2009.
3. Cleary-Goldman J,Malone FD,Vidaver J,Ball RH,Comstock CH. Impact of maternal age on obstetric outcome. Obstet Gynecol, 2005; 105: 983-990.
4. World Health Organization (WHO).Stillbirths. https://www.who.int/maternal-child-adolescent/ epidemiology /stillbirth /en (March 09/2020).
5. GBD 2015 Child Mortality Collaborators. Global,regional,national, and selected subnational levels of stillbirths,neonatal,infant, and under -5 mortality,1980-2015: a systematic analysis for the Global Burden of Disease study 2015.Lancet, 2016; 388: 1725.
6. Lawn JE, Blencowe H,Pattinson R. Stillbirths: Where? When? Why? How to make the data count? Lancet, 2011; 377: 1448.
7. Bateman BT, Simpson LL. Higher rate of stillbirth at the extremes of reproductive age: a large nationwide sample of deliveries in the United States. Am J Obstet Gynecol, 2006; 194: 840.
8. American College of Obstetrician and Gynecologists, Society for Maternal-Fetal Medicine.

Management of Stillbirth:Obstetric care consensus No,10.Obstet Gynecol, 2020; 135: e110.
9. Hauang L,Sauve R,Birkett N,Fergusson D,VAN Walraven C: Maternal age and risk of stillbirth: a systematic review: CMAJ, 2008; 178: 156-172
10. Naeye RL. Maternal age, obstetric complications, and the outcome of pregnancy. Obstet Gynecol, 1983; 61: 210-6.
11. Jaccobsen B,Ladfors L,Milsom I: Advanced maternal age an adverse perinatal outcome. Obstet. Gynecol, 2004; 104(4): 727-733.
12. Adrienne Gordon, Camille Raynes-Greenow, Kevin McGeechan, Jonathan Morris and Heather Jeffery. Risk factors for antepartum stillbirth and the influence of maternal age in New South Wales Australia: A population based study. BMC Pregnancy and Childbirth, 2013; 13: 12.
13. Deepa Dongarwar, Anjali Aggarwal, Kenneth Barning, Hamisu Mohammed Salihu. Stillbirths among Advanced Maternal Age Women in the United States: 2003-2017. International Journal of Maternal and Child Health and AIDS, 2020; 9: 153-156.
14. Altijani N, Carson C, Choudhury SS, *et al*. Stillbirth among women in nine states in India: rate and risk factors in study of 886,505 women from the annual health survey. *BMJ Open*, 2018; 8: e022583. doi:10.1136/ bmjopen-2018-022583.
15. Khandait DW, Ambadekar NN, Zodpey SP, Vasudeo ND. Maternal age as a risk factor for stillbirth. Indian J Public Health, 2000 Jan-Mar; 44(1): 28-30.