

Obstetric Outcome of Subsequent Pregnancy Following Intrauterine Death

Anwar N.AI –Bassam* MBChB,CBGO
 Sarmad S. Khunda* FRCS, FRCOG
 EKhlas Hussam* MBChB

Summary:

Background : Intrauterine foetal death is defined by World Health Organization (WHO) as ‘death prior to complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy; the death is indicated by the fact that after such separation the fetus does not breath or show any other evidence of life.

Objective: The aim of the study is to assess obstetric outcome in the subsequent pregnancy in comparison with that following live birth in first pregnancy.

Patients and methods: A cross sectional, observational study carried out in department of Obstetrics and Gynaecology of Baghdad Teaching Hospital. during the period from March 2008 to April 2009 The studied group include 53 women in their second pregnancy whom first pregnancy were ended by vaginal delivery of a dead foetus and 489 women delivered a live birth in first pregnancy (labelled as control group).

Results: Women in the studied group ($n=53$) were at increased risk of miscarriage ($p=0.005$), preeclampsia ($p=0.004$), low birth weight ($p=0.0001$), induction of labour ($p=0.0004$), emergency CS ($P=0.003$), Elective CS ($p=0.027$), stillbirths ($p=0.0006$) as compared with the control group.

Conclusion: While the majority of women with previous stillbirth have alive birth in the subsequent pregnancy, they are a high –risk group with an increased incidence of adverse maternal and neonatal outcomes.

Keywords: Intrauterine death, obstetric outcome, stillbirth, subsequent pregnancy.

*Fac Med Baghdad
 2011; Vol. 53, No. 3
 Received Feb., 2011
 Accepted Sep. 2011*

Introduction:

Intrauterine foetal death is defined by World Health Organization (WHO) as ‘death prior to complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy; the death is indicated by the fact that after such separation the fetus does not breath or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles (1). If the gestational age is not known, foetal weight may be used to distinguish a stillbirth from miscarriage and weight used varies from ≥ 350 to ≥ 500 g (2) In Iraq the foetal weight for considering the difference between stillbirth and miscarriage has been decided by the Ministry of health in January 2011 as foetal weight ≥ 750 g.(Order D.A.F.5/2/2 in 18/1/2011). Pregnancy carries with it a degree of anxiety in the majority of women ,even those who have had a positive pregnancy experience in the past (3) _ Each year ,over three million stillbirths occur worldwide and in general the stillbirth incidence is between 0.15% and 10% (. 4) pregnancy following an experience of intrauterine death does not only induce fear of an adverse outcome in the minds of women and their carers, but also might in fact confer greater risk to the pregnancy, although the evidence

on this is conflicting (5). The majorities of pregnancies have no complications and result in the birth of a healthy child. Some pregnancies end prematurely and some even develop normally to term and end tragically during the birthing process. A pregnancy loss can be devastating at any stage for the expectant parents (6) Many previous studies concluded that stillbirths are difficult to prevent because the risk factors have not been adequately identified. Despite efforts to identify the aetiological factors contributing to foetal death, a substantial part of foetal deaths are still classified as unexplained foetal demise (6) In this study we aimed to compare pregnancy outcome in two groups in their second pregnancy (who were therefore matched for parity); those who had a stillbirth in their first pregnancy, with those who had a live birth in their first pregnancy, and to test the hypothesis that stillbirth in an initial pregnancy predisposes women to adverse obstetric outcome in next pregnancy.

Patients and Methods:

This study is a cross sectional, descriptive study, conducted at the department of obstetrics and gynaecology of Baghdad Teaching Hospital from March 2008 to April 2009.

Inclusion Criteria: The study includes pregnant ladies in their second pregnancy (G2 P1), who delivered, their first singleton babies of 28

*Baghdad Teaching Hospital, Medical city complex.

completed weeks of gestation and more, vaginally, then conceived spontaneously within 6-12 months afterward. All causes leading to stillbirth including maternal medical diseases were included in the main analysis. Exclusion Criteria: The study excludes multiparous pregnant women. Those whom first pregnancy was a multiple pregnancy, and those whom first pregnancy ended by a miscarriage or ended by abdominal delivery. The cases that were missed during the period of antenatal follow up were also excluded from the study. The study enrolls (53) women who had had a stillbirth in their first pregnancy (between 28-40 weeks of gestation) these formed the study group, and (489) women who had experienced an initial live birth formed the comparison group (control group), all returned with a second pregnancy and managed as outpatients in their 1st, 2nd, or 3rd trimester of pregnancy with regular antenatal care till delivery, or managed as inpatients because of labour pain or complication of

pregnancy. Detailed history was taken from all pregnant women and for the studied group with previous stillbirth (at 28 -40 weeks of gestation). Full information was obtained (including the previous investigations and images that were done in the first pregnancy) to clarify the cause of foetal death and if the patient have had inadequate or unproved information's the cause of foetal death labelled as unclassified. Social and demographic factors were recorded with age, educational level, occupation, and smoking status being considered in this study. Obstetrical outcome variables studied were: Miscarriage, Ante partum haemorrhage, mode of delivery including induction of labour and caesarean deliveries (both emergency and elective C/S).

The perinatal outcomes were preterm delivery for those between 28-37 completed weeks of gestation, low birth weight; to those were less than 2500g at time of delivery, Stillbirth and early neonatal death.

Results:

The cause distribution of stillbirth in the first pregnancy is presented in figure (1):-

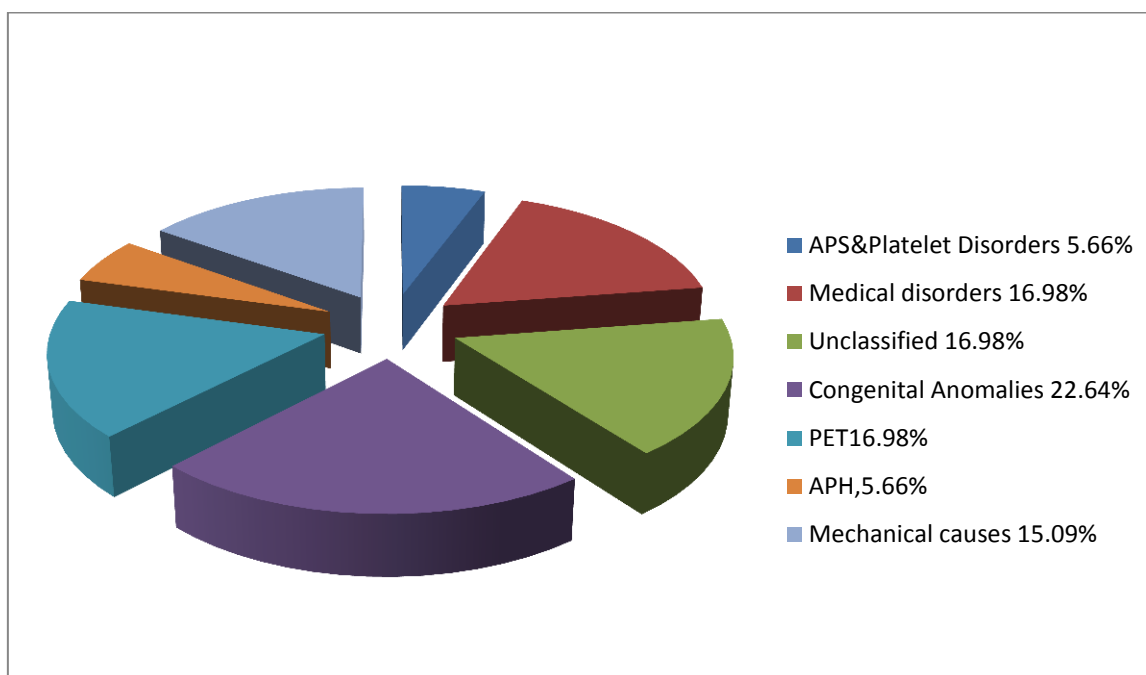


Figure (1): (APS=Antiphospholipid syndrome, PET=Preeclampsia, APH=Antipartum haemorrhage)

Medical disorders include two cases insulin dependent diabetes (3.77%), one case gestational diabetes (1.89%), one case chronic hypertension (1.89%), one case renal disease (1.89%), one case thyrotoxicosis (1.89%), and three cases sepsis and infection (5.66%). Mechanical causes include four cases of intrapartum asphyxia of a cephalic presented foetuses (3 of them were home deliveries and 1 was delivered in the hospital 7.55%), two of the cases were breech deliveries (home deliveries 3.77%), and two were presented with cord prolapsed (3.77%).

Table (1): The comparison of the socio-demographic characteristics in the (studied group) and control group with their risk on stillbirth

	Stillbirths(n=53)		Live births (n=489)		OR (95% C.I.)	P value
	No	%	No	%		
Age < 18 years	8	15.09	63	12.88	1.31(0.51-3.02)	
18-35 years	39	73.58	403	82.41	-	
>35 years	6	11.33	23	4.71	2.70(0.84-7.34)	
Mean±SD (Range)	24.6±5.6 (14-42)		24.2±12.4 (15-40)			0.103
Educational level: Illiterate	39	73.5	297	60.7	6.43 (1.03-265.82)*	0.033*
Primary	11	20.8	79	16.2	6.82 (0.93-299.56)	
Intermediate & Secondary	2	3.8	64	13.1	1.53 (0.08-92.16)	
College & Higher	1	1.9	49	10.0	-	
Occupation: Employee	12	22.6	71	14.5	1.72 (0.78-3.54)	
Housewives	41	77.4	418	85.5	-	0.119
Smoking Smoker	10	18.87	41	8.38	2.54 (1.06-5.61)*	0.013*
Not	43	81.13	448	91.62	-	

* =Significant *p* value**Table (2): Obstetrical Complications in Second (current) Pregnancy in the two groups.**

Complications	Still birth(n=53)		Live births (n=489)		OR (95% C.I.)
	No	%	No	%	
Miscarriage	6	11.32	16	3.27	4.79(1.41-14.14)*
Preeclampsia	7	13.20	20	4.09	4.47(1.46-12.2)*
Antepartum haemorrhage	2	3.77	10	2.04	2.56(0.26-12.85)*
Induction of labour	5	9.43	8	1.64	7.99(1.90-29.6)*
Elective Caesarean section	5	9.43	16	3.27	4.00(1.06-12.5)*
Emergency CS (placental abruption, foetal distress, failure to progress)	7	13.20	9	3.89	9.94(2.88-32.3)*

*Significant *P* value**Table (3): The foetal outcome in (current) pregnancy in the two groups.**

Foetal outcome	Still birth (n=53)		Live birth(n=489)		OR(95%CL)
	No.	%	No.	%	
Stillbirth	6	11.32	12	2.45	6.39(1.81-19.99)*
Prematurity	4	7.55	22	4.50	2.32(0.54-7.52)
Low birth weight	8	15.09	12	2.45	8.52(2.75 – 24.7)*
Early neonatal death	1	1.89	6	1.23	2.13(0.04-18.5)
No complications	34		437		

*significant *P* value**Discussion:**

Extremes of maternal age are an important risk factor for stillbirth (7, 8, 9) this is in contrast to the result of our study that does not demonstrate a significant difference between the two groups, this may be a result of early ages of marriage and childbearing in our society. There are studies found that uneducated pregnant women were at higher risk of intrauterine foetal death than those with higher education (10, 11).this is comparable to our study. The findings regarding risk associated with smoking agree with most published researches (12, 13) that demonstrated smoking association with several adverse pregnancy outcomes, including stillbirth. Studies of natural conception in smokers have found an increased risk of spontaneous miscarriage, ectopic pregnancy, preterm premature rupture of membrane, prematurity, placental abruption, intrauterine growth restriction, stillbirth and neonatal death. Though the mechanisms have not been

completely elucidated, vasoconstrictive and antimetabolic properties of cigarette smoke (such as nicotine, carbon monoxide, and cyanide) may lead to placental insufficiency and embryonic and foetal growth restriction and demise. Frias AE Jr, et al (13) has found that there is a higher risk for subsequent pregnancy loss and recurrent foetal death in a women with prior foetal death in their previous pregnancy and this was comparable to the results of the current study that demonstrates that miscarriage is an obstetric complication that may significantly complicate a pregnancy following a history of stillbirth and this reflects the shared causes of intrauterine foetal demise (whether early or late in pregnancy). This study shows that the risk of low birth weight, preeclampsia and intervention at delivery (induction of labour, elective CS, and emergency CS) are more common following a history of stillbirth and this was comparable to other studies (14,15,16). These findings might reflect an

underlying impaired placental function and development that might have existed in the first pregnancy, albeit subclinically, contributing to the stillbirth and accordingly increases the risk of intervention at delivery (14,15,16). Other obstetrical complication, namely placental abruption was significantly increased following previous history of intrauterine foetal death in the studies of M Black, et al. and Robson S, et al. (15, 16) which is in contrast to the current study that does not demonstrate a significant risk of these complication and this may be due to our studied group being not large enough to demonstrate a statistically significant difference. Stillbirth, which is an important adverse pregnancy outcome and was evident with a recurrence rate of 11.32% in the study group. Most of those cases (66.7%) have had medical disorders, and (16.7%) of cases have congenital anomalies, resulting in increased risk of stillbirth in the subsequent pregnancies as it is shown in our study and is comparable to Reddy UM, M. Black, et al and Sharma, et al studies (17,15,16). The cases with casual causes for stillbirth, as those resulting from mechanical causes, does not show increased risk of recurrence of stillbirth in subsequent pregnancies that's in our study and is comparable to other studies (18, 17). Unexplained stillbirth ("unclassified" as the cause of stillbirth is not fully evaluated) was accounted for 16.7% of recurrent stillbirth in this study and when recurred was associated with maternal medical disorder (PET), which again may reflect a subclinical or undiagnosed placental insufficiency in their previous pregnancy resulting into stillbirth. Bhattacharya S. et al. and Robson S, et al (14, 16) study had found that prematurity and early neonatal death were a significant perinatal risks following a history of prior stillbirth which was in contrast to the finding of this study that demonstrates no significant risk between the two groups and again it could be due to our studied group being not large enough to demonstrate a statistically significant difference.

Conclusion:

A stillbirth in the first pregnancy increases the obstetric complication i.e. miscarriage, preeclampsia, low birth weight and intervention at delivery (induction of labour, elective CS, and emergency CS) in the subsequent pregnancy but did not seem to increase the risk of antepartum haemorrhage, prematurity or early neonatal death in subsequent pregnancy. Recurrence of stillbirth in the subsequent pregnancy mainly depends upon original cause of first stillbirth. In absence of a known risk factor; recurrence of stillbirth does not increase, but it's an evident event in the presences of risk factors like maternal diseases and congenital anomalies. There is a profound effect of smoking on increasing stillbirth risk among women.

Reference:

1. World Health Organization. *Definitions and indicators in Family Planning Maternal and Child Health and Reproductive Health*. Geneva: WHO press, 2001?
2. Jim G. Thornton. *Obstetric statistics. Dewhurst's textbook of obstetric and gynaecology*. Blackwell publishing, 7th edition, 2007.
3. Shaks E, Chaimers I, Leigh-Brown A. *The Scottish stillbirth and infant death survey (SSBIDS)* {www.isdscotland.org/isd/4496.html}. Accessed 6 June 2007.
4. Kimberly B. Fortner, Janyne E. Althaus, et al. *Gestational complication: Foetal demise in utero*. *The Johns Hopkins Manual of Gynaecology and Obstetric*. 3rd ed, 2007 p.120.
5. Lurie S, Eldar I, Glezerman M, Sadan O. *Pregnancy outcome after stillbirth*. *J Repord Med* 2007;52:289-92.
6. Smith GC. *Sex, birth weight, and the risk of stillbirth in Scotland, 1980-1996*. *Am J Epidemiol*. 2000 Mar 15; 151(6):614-9.
7. Huang L, Sauve R, Birkett N, et al. "Maternal age and risk of stillbirth: a systematic review". *CMAJ*. 2008 Jan 15; 178.
8. Smith GC, Pell JP. *Teenage pregnancy and risk of adverse perinatal outcomes associated with first and second births: population based retrospective cohort study*. *BMJ* 2001 Sep 1; 323(7311):476.
9. Fretts RC, Schmittddiel J, et al.; *Increased maternal age and the risk of foetal death*. *N Engl J Med* 1995; 333:953.
10. Pasupathy D, Smith GC. *The analysis of factors predicting antepartum stillbirth*. *Minerva Ginecol* 2005 Aug; 57(4):397-410.
11. Chen J, et al. *Maternal education and foetal and infant mortality in Quebec*. *Foetal and Infant Mortality Study Group of the Canadian Perinatal Surveillance System*. *Health Rep* 1998; 10:53
12. Ortendahl M, Nasman P. "Quitting smoking is perceived to have an effect on somatic health among pregnant and non-pregnant women". *J Mattern Foetal Neonatal Med*. 2008 Apr; 21(4): 239-46.
13. West R. *Helping patients in hospital to quit smoking. Dedicated counselling services are eff* Frias AE, Luikenaar RA, et al. *Poor obstetric outcome in subsequent pregnancies in women with prior foetal death*. *Obstet Gynaecol* 2004; 104:521-6.
14. Bhattacharya S, et al. *Stillbirth increases subsequent pregnancy complications*. *BJOG* 2008; 115:269-74.
15. Black M, Shetty A, et al. *Obstetric outcomes subsequent to intrauterine death in first pregnancy*. *BJOG* 2007; 115(2):269-274.
16. Robson S, Chan A, et al. *Subsequent birth outcomes after unexplained stillbirth. Preliminary population-based retrospective cohort study*. *Aust N Z J Obstet Gynaecol* 2001; 41:29-35.
17. Fretts RC. *Aetiology and prevention of stillbirth*. *Am J Obstet Gynaecol* 2005; 193:1923.
18. Sharma PP, Salihu HM, et al. *Stillbirth recurrence in a population of relatively low risk mothers*. *Paediatr Perinat Epidemiol* 2007; 21(Suppl 1):24-30.