

Outcomes of Twin Gestations for One Hijri Year at the Main Public Maternity in Jeddah, Saudi Arabia

WALEED A. MILAAT PhD*
*Department of Community,
Medicine and Primary Health Care,
Faculty of Medicine & Allied Sciences,
King Abdulaziz University, Jeddah, Saudi Arabia*

ABSTRACT. Twin pregnancies are considered as one of the high risk pregnancies. The rate of twin gestation counted in this hospital study in Jeddah, Saudi Arabia, is found to be 0.9% or 1 in 110 pregnancies and the perinatal mortality rate for twin gestation was found to be high compared to other hospitals in other countries (172 per 1000 births). The characteristics of mothers and outcomes in twin pregnancy were described. High gravidity and the presence of previous abortion were associated with increased chances of perinatal deaths. Breech presentations of babies and their low birthweight were accompanied with more perinatal death. There was no sex or order of twin (first or second twin) preference in birthweight or perinatal death. The results confirm the extra risks carried by twin gestation and explore these risks factors in a mixed maternal population in a busy hospital in Jeddah.

KEY WORDS: Twin pregnancies, perinatal mortality, risk factors, developing country, Saudi Arabia, still-births.

Introduction

Twin pregnancy is considered as one of the high risk pregnancies and the outcome of these pregnancies are more prone to complications during pregnancy and labor as well as to higher perinatal mortality rates and congenital anomalies^[1-4]. Biological and hereditary factors of the mother also play a role in determining these outcomes.

**Mailing Address:* Dr. Waleed Milaat, P.O. Box 984, Jeddah, 21421 Saudi Arabia.

In this study, we will describe the pattern of twin gestation in the main hospital in Jeddah and identify some characteristics of the mothers and the outcomes of these pregnancies during one Hijri (lunar) year.

The Hospital

The Maternity and Children Hospital (M&CH) in Jeddah is the main maternity care hospital of the Ministry of Health (MOH) in the city as it receives > 73% of the deliveries that occurred in the MOH facilities in the city and delivers around 14000 infants annually^[5]. The perinatal mortality rate (PNMR) of this hospital was 40.8 per 1000 births for the 1408 Hijri year.

Methodology

A retrospective review of the hospital records of each twin pregnancy delivered in the hospital during the 1408 Hijri year was conducted and the available maternal characteristics, namely, age, nationality, gravidity (number of pregnancies counting this twin pregnancy as one) and number of previous abortions were coded by the author in a standard form. Sex of the outcome, his or her birthweight recorded by the delivering doctor to the nearest 50 grams, life status, presenting part and mode of delivery were also taken. Unfortunately, causes of perinatal death were not standardized in these records and there was a lot of missing information in the death reports in most of these cases. Also, information concerning various intrauterine growth indicators, gestation age at birth and APGAR scores at 1 and 5 minutes were also deficient in the files. The available data were checked and analyzed for frequency distribution tables, cross tabulations, correlation and comparison of various groups means using the SPSS package.

Results

Total deliveries in the hospital during the 1408 Hijri year (corresponds to the period between 25.8.87 to 12.8.88) were 13,785 deliveries. A total of 125 twin pregnancy were delivered in the M&CH for that year making a rate of 9 per 1000 deliveries or a twin delivery for each 110 deliveries. The genotypes of these twins were not identified as monozygote or dizygote twins because no examination or genetic testing for zygosity were done on any of them.

Perinatal Mortality

Forty three out of the 250 twin births (125 twin pregnancies) died in the perinatal period making a perinatal mortality rate (PNMR) of 172 per 1000 twin births of which 52% were still births and the rest were early neonatal deaths (ENND). An additional male baby died in the nursery during the late neonatal period (8th day of life) and the rest went home alive. There was no significant difference in perinatal deaths between first and second twins but still births were little higher in second twin (62% of total, $P = 0.3$). Intrauterine death of one twin, monofetal death, was noted only in 3 cases in which two were in the first born babies.

Mother Age

Mothers of twin pregnancies aged between 16 and 49 years with a mean age of 28.3 years (SD = 5.6 y). Perinatal mortality occurred mainly in the age group 25-29 y, the highest PNMR in the 40 and more age group and the lowest in the 30-34 years (Table 1).

TABLE 1. Frequency distribution of maternal variables with their perinatal mortality rates.

Variable	Number	%	PNMR / 1000 births	No. of deaths
<i>Age group*</i>				
< 20 y	6	4.9	0	(0)
20 - 24 y	21	17.1	238	(10)
25 - 29 y	49	39.8	163	(16)
30 - 34 y	23	18.7	109	(5)
35 - 39 y	21	17.1	143	(6)
40 & more	3	2.4	667	(4)
Total	123	100	166.7	41
<i>Gravidity**</i>				
1	15	12.7	267	(8)
2	12	10.2	0	(0)
3	21	17.8	71	(3)
4	17	14.4	118	(4)
5	19	16.1	342	(13)
6	13	11.0	346	(9)
> 6	21	17.8	95	(4)
Total	118	100	173.7	41
<i>Abortions***</i>				
None	93	78.8	150.5	(28)
One	14	11.9	178.6	(5)
Two	5	4.2	400	(4)
> two	6	5.1	333.3	(4)
Total	118	100	173.7	41
<i>Nationality</i>				
Saudi	30	24	150	(9)
N. Yamani	29	23.2	190	(11)
Indonesian	11	8.8	182	(4)
Hadrami	10	8	50	(1)
Lebanese	10	8	100	(2)
Tunisian	10	8	300	(6)
Others	25	20	200	(10)
Total	125	100	172	43

*Missing age = 2.

**Missing gravidity = 7.

***Missing abortions = 7.

Gravidity and Abortions

Mothers of twin pregnancies reached up to gravida 14 with a mean gravidity of 4.5 (SD = 2.6). Table 1 shows the frequency distribution of gravidity with their PNMR. Previous abortion was highly correlated to gravidity of the mother as expected ($R = 0.43$, $P < 0.001$) and it was experienced by 21% of mothers out of which 44% had aborted more than once (Table 1).

Nationality of Mothers

Mothers were of various nationalities of which Saudis formed 24% followed by North Yamanis (23.2%) who had the highest number of twin deaths. Other nationalities included 11 Indonesians, 10 Hadramis (previously called South Yaman and joined N. Yamani in United Yaman) (Table 1). The final category in the table included 5 Somalians, 5 Palestinians, 4 from Chad, 4 from Bangladesh, 3 from Ethiopia, 2 from Syria, a Turkish and a Sudanese. Egyptians did not contribute to the twin deliveries in this hospital although they form a sizable portion of expatriates in Jeddah.

Sex Distribution of Twins

Males formed 52% of all twins and no significant difference was found in the sex distribution of first and second twin. Number of perinatal deaths were nearly equal in both sexes (21 males, 22 females).

Presentation of Twins and Their Mode of Delivery

Breech presentation carried double the risk of perinatal death. More than three quarters of babies in twin pregnancies were delivered spontaneously and the rest needed either mechanical intervention such as vacuum extraction and forceps delivery or Cesarean section. PNMR in Cesarean sections did not differ significantly from spontaneous delivery (Table 2).

Table 3 describes the presentation of each pair of twins. Vertex-vertex presentation was the commonest type of presentation for most of the pairs followed by Vertex in the first baby and breech in the second. Breech presentation in both babies carried the highest risk of perinatal mortality of all combinations. There was one case in which the first twin was delivered by forceps and the second needed section as a life saving procedure.

Birthweight

Mean birthweight was 2147.8 gram (SD = 737.3 g) for first twin babies and 2134.6 grams (SD = 752.6 g) for second twin babies. Mean weight for alive first baby was 2408.7 g (SD = 457.3 g, min = 1400 g, max = 3900 g) and 2384.2 g for second alive ones (SD = 495.9 g, min = 900 g, max = 3550 g). There was no significant difference in mean birthweight between first and second twin in all babies ($P = 0.89$) or in the alive ones ($P = 0.71$). Table 2 describes the distribution of birthweight in first and second twins with their corresponding PNMR.

TABLE 2. Frequency distribution of various variables of the babies with their perinatal mortality rates.

Variable	Number	%	PNMR/1000 births	No. of deaths
Birthweight				
<i>First baby</i>				
up to 1500 g	23	18.4	879.6	(20)
1501 - 2500 g	69	55.2	29.0	(2)
> 2500 g	33	26.4	0.0	(0)
Total	125	100	176	22
<i>Second baby</i>				
up to 1500 g	24	19.2	833.3	(20)
1501 - 2500 g	63	50.4	0.0	(0)
> 2500 g	38	30.4	26.3	(1)
Total	125	100	168	21
Sex				
Male	129	51.6	162.8	(21)
Female	121	48.4	171.8	(22)
Total	250	100	172	43
Baby presentation*				
Vertex	146	73.4	137.0	(20)
Breech	53	26.6	245.3	(13)
Total	199	100	165.8	33
Delivery mode				
Spontaneous	192	76.8	171.9	(33)
Mechanically assisted	7	2.8	142.9	(1)
Cesarian section	51	20.4	176.5	(9)
Total	250	100	172	43

*Missing = 51 (delivered by C.S.)

TABLE 3. Distribution of presentation methods of vaginally delivered pairs of twins and their PNMR.

Group	First twin	Second twin	% (no. of babies)	PNMR
1.	Vertex	Vertex	55 (110)	127.3
2.	Vertex	Breech	29 (58)	137.9
3.	Breech	Vertex	6 (12)	-
4.	Breech	Breech	10 (20)	500.0

N.B.: Group 2 contain one twin delivery in which the second baby was delivered by cesarian section.

Mean birthweight did not differ significantly between various age groups or various nationalities of the mothers. Nevertheless, North Yamani mothers had the lowest mean birthweight compared to Saudi mothers and mothers of 30-34 years of age had the highest birthweight (Table 4).

TABLE. 4. Mean birthweight in various maternal nationalities and age groups.

Group	First baby		Second baby	
	Mean weight	S.D	Mean weight	S.D
Nationality				
Saudi	2131	598.4	2165.3	660.3
N. Yamani	1937.2	651.7	1928.9	626.6
Indonesian	2040.9	762.2	2063.6	901.4
Hadrami	2221	843.3	2470	413.8
Lebanese	2451	863.1	2155	1052.1
Tunisian	2060	924.3	1938	954.6
Others	2343.6	793.1	2304	796.6
	F = 1.054	P = 0.39	F = 1.045	P = 0.4
Age group				
< 20 y	2066.7	388.2	2073.2	194.1
20 - 24 y	1938.1	700.3	1940.9	750.0
25 - 29 y	2201.8	743.9	2210.8	671.9
30 - 34 y	2277.4	728.6	2234.3	892.0
35 - 39 y	2243.3	808.4	2205.2	819.7
40 & more	1613.3	618.5	1516.7	812.9
	F = 0.945	P = 0.45	F = 0.917	P = 0.47

Discussion

The above results describe first hand findings of some factors related to twin gestation in a hospital setting in Jeddah. It was apparent from the records review that data concerning important variables in these pregnancies such as gestational age, maternal medical diseases, causes of mechanical intervention during labor and the Apgar scores of the outcomes were missing. This illustrates the common problem of incomplete data in the recording system of most hospital studies. In the M&CH, this can be related to the busy nature of the hospital with its poorly organized health information system.

The twin birth rate calculated from this hospital might be the best estimate of Jeddah's rate due to its large number of births. One twin delivery in every 110, or a rate of 9 per 1000 deliveries is lower than that for other Asian countries, (e.g., 11 and 13 per 1000 deliveries for India and Pakistan, respectively), and is far lower than some African countries (e.g., Nigeria's rate from a hospital study of 35.1 per 1000), but not

far from the rate reported for England and Wales of 10 per 1000 or Spain and Scotland (9 per 1000)^[6,7]. The mixture of races and nationalities in these deliveries is an important factor which may affect this rate.

Perinatal mortality rate of twin gestation can be an indicator of the health services delivered to these mothers during pregnancy and labor as well as the neonatal services. It can also reflect the characteristics of these mothers and the complications they experience during labor. The PNMR of twins in this hospital is high compared to that reported in a hospital in Rotterdam of 55 per 1000^[8] or 97 per 1000 in a hospital in Harare^[9].

Gravidities of 3, 4, 5 and 6 in twin pregnancy were found to be important risk factors of perinatal mortality in both first and second twin. Previous abortions was also related to death in first baby. A Nigerian study by Fakeye^[7] documented a similar relationship. It is clearly evident that, the level of high gravidity seen in developing countries still plays a major role in determining perinatal deaths in both single and multiple pregnancies and should be always considered as an important risk factor.

There was no sex difference noted in this study in determining the chances of complications and perinatal death in twins as seen in singleton deliveries. The same was also noted by Berman^[10] in his study of 103 females and 108 males twin in which he found no difference of gestation, birthweight or neonatal death between sexes in twins.

Jeddah's data suggested also no significant difference in birthweight or perinatal mortality between first and second twin. This controversial point still shows in various studies and need further investigation. Crowther^[9] found a significant rise of PNMR in second twin in a series of 799 twin deliveries in Harare. Fakeye^[7] also reported a PNMR of 195 per 1000 in second twin compared to 116 in first in an 18 months study of 622 twins in Nigeria. They related this finding to lower birthweight and increased neonatal complications in the second twin. Nakano^[11], on the other hand, found no particular difference in birthweight or PNMR in first and second twin but only a higher Apgar score and favorable umbilical blood gas analysis in the first twin. Another Canadian study of 341 pair of twins found no difference in the PNMR or complication of both babies^[12]. The point of preference of first twin on the second one is mainly dependent on neonatal data on umbilical blood gas and Apgar scores in addition to neonatal complications. Very little information is available in literature to test this preference in relation to intrauterine variables such as heart rates, lung surfactant and placental sufficiency.

Breech presentation in twins showed double the risk of perinatal death (Table 2) and the highest PNMR in twins is shown in breech-breech combination compared to vertex-vertex presentation (Table 3). This picture is also documented in other studies. In a comparative study of breech presentations in single and twin pregnancies, Buekens^[13] found that PNMR is equally high in breech presentation of both types of pregnancies. This emphasizes the need for careful management of breech presentation in twins as well as in singletons.

Babies in twin pregnancy are prone to increased risk of prematurity, low birth-weight, birth asphyxia and lower Apgar scores in addition to higher rates of placenta previa compared to singletons^[4]. Osbourne^[14] related a high reduction of PNMR in twin pregnancy in Dundee (from 116 to 16 per 1000) to the effect of increased rate of Caesarian section. Whether the application of Caesarian section in the M&CH had reduced a potentially high PNMR, will need a search of the indications of these sections and the possible risks on those twins. Twin babies delivered with Caesarian section in this hospital carried the same risk of perinatal death as spontaneous vaginal deliveries, but indications for these sections were not complete in their records. Hence, we can't conclude the effect of Caesarian section on these babies.

Conclusion

This review of twin pregnancies in Jeddah describes the pattern and the characteristics of mothers and babies in these pregnancies, their PNMR and the risk factors involved.

In general, PNMR for twin pregnancies in Jeddah is high and risk factors identified were consistent with those in previous literature. Main risk factors identified in Jeddah for determining perinatal death in twins are low birthweight, high gravidity which is more common in Arab countries, breech presentation and the experience of previous abortions. North Yamanis also carried high risk of perinatal death compared to Saudis with lower mean birthweight. Sex of the outcome and his/her order did not show important effect on his/her birthweight or the chance of survival.

Twin gestation should always be considered as a potentially high risk one during antenatal care and labor. Continuous expert monitoring during labor, especially for breech presentations, might work to reduce labor complications and reduce avoidable perinatal deaths.

References

- [1] **Specallacy WN.** Antepartum complication in twin pregnancy. *Clin Perinatol* 1988 Mar; **15**(1): 79-86.
- [2] **McCulloch K.** Neonatal problems in twins. *Clin Perinatol* 1988 Mar; **15**(1): 141-58.
- [3] **Clayton SG.** Multiple pregnancy. In: **Clayton SG, Lewis TLT, Pinker G eds. Obstetrics by Ten Teachers.** London: Edward Arnold; 1980: 177-185.
- [4] **Ghai V, Vidyasagar D.** Morbidity and mortality factors in twins. An epidemiologic approach. *Clin Perinatol* 1988 Mar; **15**(1): 123-40.
- [5] **Ministry of Health.** *Annual Health Report of 1406 Hijri Year.* Riyadh: King Saud University Press, 1407 H: 127-128 (Arabic).
- [6] **Nylander PPS.** The phenomenon of twinning. In: **Barron SL, Thomson AM, eds. Obstetrical Epidemiology.** London, New York, Paris: Academic Press; 1983: 143-66.
- [7] **Fakeye O.** Perinatal factors in twin mortality in Nigeria. *Int J Gynaecol Obstet* 1986 Aug; **24**(4): 309-14.
- [8] **Pijpers L, Jahoda MG, Vosters RP, Niermeijer MF, Sachs ES.** Genetic amniocentesis in twin pregnancies. *Br J Obstet Gynaecol* 1988 Apr; **95**(4): 323-6.
- [9] **Crowther CA.** Perinatal mortality in twin pregnancy. A review of 799 twin pregnancies. *S Afr Med J* 1987 Jan 24; **71**(2): 73-4.

- [10] **Berman SM, Binkin NJ, Hogue CJ.** Assessing sex differences in neonatal survival: a study of discordant twins. *Int J Epidemiol* 1987 Sep; **16**(3): 436-40.
- [11] **Nakano R, Takemura H.** Birth order in delivery of twin. *Gynecol Obstet Invest* 1988; **25**(4): 217-22.
- [12] **Thompson AA, Lyons TL, Makowski EL.** Outcomes of twin gestations at the University of Colorado Health Science Center, 1973-1983. *J Reprod Med* 1987 May; **32**(5): 328-39.
- [13] **Buckens P, Lagasse R, Puissant F, Leroy F.** Do breech presentations in twins and singletons run different risks? *Acta Genet Med Gemellol* 1985; **34**(3-4): 207-11.
- [14] **Osbourne GK, Patel NB.** An assessment of perinatal mortality in twin pregnancies in Dundee. *Acta Genet Med Gemellol* 1985; **34**(3-4): 193-9.

دراسة حملات التوائم لسنة هجرية في مستشفى الولادة العام بمدينة جدة

وليد ملعاط

قسم طب المجتمع والرعاية الصحية الأولية ، كلية الطب والعلوم الطبية
جامعة الملك عبد العزيز ، جدة - المملكة العربية السعودية

المستخلص . تعتبر حملات التوائم من الحملات التي تحمل نسبة كبيرة من الخطورة على الأمهات والمواليد . ولمعرفة حجم هذه الحملات فقد تم حساب نسبة ولادات التوائم في دراسة بمستشفى الولادة والأطفال العام في جدة لعام ١٤٠٨ هـ وقد وجد أنها تمثل ٩٪ من الولادات في هذا المستشفى أو بمعدل ولادة واحدة لكل ١١٠ ولادات . كما لوحظ أن وفيات ما حول الولادة لهذه الودلات أكبر بكثير مما يوجد في المستشفيات الأخرى في العالم حيث بلغت ١٧٢ لكل ١٠٠٠ ولادة توأم . وقد تمت دراسة الخواص العامة للأمهات الحوامل بالتوائم والولادات والمواليد خلال مدة الدراسة . تبين من خلال البحث أن ارتفاع عدد الحملات السابقة لهؤلاء الأمهات ، ووجود حملات سابقة انتهت بالإجهاض ، كانا ذا علاقة عالية بوفيات ما حول الولادة ، وكذلك كانت نوعية مجيء المولود بالمقعد ونقص وزنه (أقل من ٢٥٠٠ جرام) . ومن ناحية أخرى ، لم تكن هناك علاقة بين نوعية جنس المولود ولا ترتيبه في الولادة مع هذه الوفيات . إن نتائج هذه الدراسة تؤكد زيادة الخطورة المحتملة في حملات التوائم ، وتلقي الضوء على مختلف عوامل الخطر في هذه المستشفى ذات الكثافة التشغيلية الكبيرة في مدينة جدة .