



Preterm Deliveries in Twin Pregnancies in Aberdeen

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The incidence of preterm delivery was 28.2% of all twin deliveries. Preterm delivery was common in monozygotic twins due to a high incidence of spontaneous rupture of the membranes. In addition, preterm delivery was associated more often with boy rather than girl infants.

Key words: *Zygoty, Spontaneous rupture of membranes, Spontaneous onset of labor, Fetal sex*

INTRODUCTION

Preterm labor is one of the most common complications of twin pregnancy; little is known of the cause of this compared to singleton pregnancies. It has not previously been determined whether preterm labor is more likely to occur in monozygotic rather than dizygotic twins; moreover, zygoty has not been taken into account in the assessment of the treatment of preterm labor.

MATERIALS AND METHODS

Six hundred and twenty-four twin pregnancies in the Aberdeen area between 1968 and 1977 have been studied to determine the incidence of preterm labor. Preterm labor was defined as labor occurring before 37 completed weeks (term minus 21 days). Zygoty and placentation were determined in all instances. Zygoty studies utilized genetic markers and were performed at the Galton Laboratory, London [2].

RESULTS

Preterm deliveries were divided into those with spontaneous onset of labor, those with spontaneous rupture of the membranes, and those in which labor had been induced or a Caesarean section performed (Table 1). The reasons for the termination of pregnancy by Caesarean section or induction of labor are detailed in Table 2, with proteinuric pre-eclampsia clearly the most common indication.

In 37 cases of preterm labor either Isoxuprine or Ritodrine were given (Table 3). Successful treatment (15 or 40.5%) occurred if labor and delivery were halted for 7 days or more. There was no significant difference in the success rate in the monozygotic

TABLE 1. Preterm Delivery of Twin Pregnancies of Known Zygosity and Placentation in the Aberdeen Area 1968-1977

	No.	%
Total twin deliveries	624	100
Preterm deliveries	176	28.2
Type:		
Induction of labor or caesarean section	31	5.0
Spontaneous onset of labor	72	11.5
Spontaneous rupture of membranes	73	11.7

TABLE 2. Reasons for Termination by Caesarean Section or Induction of Labor in 31 Twin Pregnancies

Proteinuric preeclampsia	22
Antepartum hemorrhage	6
Acute hydraminos	2
Previous Caesarean section	1

TABLE 3. Outcome of Treatment With β -Sympathomimetic Agents in Twin Pregnancies

	Zygosity			Placentation	
	Total	Monozygotic (MZ)	Dizygotic (DZ)	Monochorionic (MCh)	Dichorionic (DiCh)
Number of pregnancies	37	16	21	11	26
Treatment successful ^a					
No.	15	7	8	3	12
%	40.5	43.8	38.1	27.3	46.2

^aLabor halted for 7 days or more.

compared to dizygotic twin pregnancies, but there was a suggestion that dichorionic twin pregnancies were treated more successfully than the monochorionic; however, the numbers were too small to determine significance.

When zygosity was considered it was found that monozygotic pregnancies were more likely ($P < 0.05$) to have preterm labor than dizygotic pregnancies in all preterm twin deliveries (Table 4). On subdividing preterm deliveries by the different causes it was found that in those in which labor was induced or Caesarean section performed, there was no difference between the monozygotic and dizygotic twin pregnancies. Similarly, in those with spontaneous onset of premature labor, there was no difference by zygosity. However, there were twice as many ($P < 0.01$) preterm deliveries associated with spontaneous rupture of the membranes in the monozygotic pregnancies as in the dizygotic twin pregnancies.

When the effect of placentation on preterm delivery was considered (Table 5), no significant differences were found between the monochorionic and the dichorionic pregnancies in the total number of cases, in the spontaneous preterm labors, or in the spontaneous ruptures of membranes. There were, however, more ($P < 0.05$) monochorionic than dichorionic twins delivered preterm by Caesarean delivery or by induction of labor.

As it has been shown by Hall and Carr-Hill [1] that labor occurs at an earlier stage in singleton pregnancies when the babies are boys rather than girls, the sex of twins was examined in relation to preterm labor (Table 6). There was a preponderance of boys in the preterm deliveries; this applied both to preterm onset of labor and to spontaneous rupture of membranes. Except in the group with spontaneous onset of labor, the boy/girl combination is the least likely to be associated with preterm delivery.

In order to determine whether zygosity or the babies' sex combinations were associated with the premature onset of labor, the pregnancies were divided by sex of baby and zygosity. In the monozygotic twins (Table 7) there is a preponderance of boy/boy com-

TABLE 4. Preterm Delivery by Zygosity in Twin Pregnancies

	All	Monozygotic (MZ)	Dizygotic (DZ)
Twin pregnancies	624	240	384
Term deliveries	448	160 (66.7%)	288 (75.0%)
Preterm deliveries	176	80 (33.3%)	96 (25.0%)
Type:			
Induction or Caesarean section	31	16 (6.6%)	15 (3.9%)
Spontaneous premature labor	72	25 (10.4%)	47 (12.2%)
Spontaneous rupture of membranes	73	39 (16.3%)	34 (8.9%)

TABLE 5. Preterm Delivery by Placentation in Twin Pregnancies

	All	Monozygotic (MZ)	Dizygotic (DZ)
Twin pregnancies	594	119	475
Term deliveries	418	76 (63.8%)	342 (72.0%)
Preterm deliveries	176	43 (36.1%)	133 (28.0%)
Type:			
Induction or Caesarean section	31	11 (9.2%)	20 (4.2%)
Spontaneous premature labor	72	17 (14.3%)	55 (11.6%)
Spontaneous rupture of membranes	73	15 (12.6%)	58 (12.2%)

TABLE 6. Preterm Delivery and Sex of Twins

	Sex of twins			B/G	
	BB	BG	GG	Total	Ratio
All twins	223	198	203	644/604	1.07:1
Preterm deliveries	74	45	57	193/159	1.21:1
Type:					
Induction or Caesarean section	13	6	12	32/30	1.07:1
Spontaneous premature labor	28	24	20	80/64	1.25:1
Spontaneous rupture of membranes	33	15	25	81/65	1.25:1

B: boy; G: girl.

TABLE 7. Sex of Babies in Monozygotic Preterm Twin Deliveries

	Sex of twins		
	BB	GG	Ratio
All MZ twins	130	110	1.18:1
Preterm total	49	31	1.58:1
Type:			
Induction or Caesarean section	8	8	1.00:1
Spontaneous premature labor	17	8	2.13:1
Spontaneous rupture of membranes	24	15	1.60:1

B: boy; G: girl.

TABLE 8. Sex of Babies in Dizygotic Preterm Twin Deliveries

	Sex of twins			B/G	
	BB	BG	GG	Total	Ratio
All DZ twins	93	198	93	384/384	1.00:1
Preterm total	25	45	26	95/97	0.98:1
Type:					
Induction or Caesarean section	5	6	4	16/14	1.14:1
Spontaneous premature labor	11	24	12	46/48	0.96:1
Spontaneous rupture of membranes	9	15	10	33/35	0.94:1

B: boy; G: girl.

pared with girl/girl with regard to preterm deliveries, both with spontaneous premature labor and spontaneous rupture of membranes. There is no sex difference in those where labor was induced or Caesarean section performed. On the other hand, in the dizygotic twins (Table 8) there was no preponderance of boys over girls in either all of the twins or in those with preterm deliveries.

DISCUSSION

Preterm delivery occurs more commonly in monozygotic compared to dizygotic twins (33% vs 25%, respectively). This difference is not associated with the spontaneous onset of labor, but is due mainly to the high incidence of spontaneous rupture of membranes in monozygotic compared to dizygotic twins (16% vs 9%, respectively).

Preterm delivery of twins is associated more often with boy rather than girl infants. In monozygotic but not in dizygotic twins the boy/boy combination is more likely to be associated with both spontaneous rupture of membranes and with spontaneous onset of labor.

The reason for the more common onset of preterm labor in monozygotic twinning might possibly be related to the occurrence of hydramnios. The more common occurrence in the boy/boy combination possibly is hormonal in origin, but nevertheless it is curious that it is no more commonly associated with preterm labor than the girl/girl combination in dizygotic twinning.

Further studies of the factors involved in the preterm delivery of twins could possibly elucidate the causes and indicate rational approaches to prevention and treatment.

REFERENCES

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