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Stillbirth Rate and Weight at Birth of Quintuplets in Japan

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Abstract. Nation-wide data in Japan on births and prenatal deaths of 16 sets of quintuplets during 1974-1985 were analysed. Among the 16 sets, 3 sets were liveborn, 8 were stillborn, and 5 were mixed, with a stillbirth rate of 0.64 (51/80). Effects of sex, maternal age and birth order on the stillbirth rate were not considered because of the small sample size. Effects of gestational age and birthweight on stillbirth rate were also examined. The mean weight of the 40 quintuplet individuals was 1,048 g.

Key words: Quintuplets, Stillbirth rate, Gestational age, Birthweight

INTRODUCTION

Quintuplet pregnancies occur once in every 15 to 20 million births [3]. In Japan, four sets of quintuplets had been reported from 1901 to 1974 [2,5,6]. In Japan, ovulation-inducing hormones have been used since 1966, and since January 1975 the use of HMG (human menopausal gonadotropin) has been covered by the health insurance system. Imaizumi [3] attributed the higher multiple birth rates since 1974 to the higher proportion of mothers treated with ovulation-inducing hormones.

The present paper deals with the stillbirth rate of quintuplets during the period from 1974 to 1985. It also deals with the effects of maternal age, birth order, gestational age and birthweight on stillbirth rate of quintuplets. Birthweight of quintuples was also analysed during the period from 1979 to 1985.

MATERIALS AND METHODS

Data on quintuplet births were obtained from the birth and fetal death certificate records from 1974 to 1985 by the Ministry of Health and Welfare. The birth certificate record gives information concerning sex, number of previous pregnancies and live births, current address, date of birth, parental age, period of gestation, and weight at birth. On the other hand, data on fetal deaths are available only after the beginning of the 13th week of fetal life. The certificate record includes information on parental age, sex of the fetus, number of previous pregnancies and live births, period of gestation, weight at birth, place and date of fetal death, and cause of death.

Table 1 - Sex composition, survival states, maternal age, and gestational age in quintuplet births, 1974-1985

Year	Sex composition ^a	Survival states at birth ^b	Maternal age (years)	Gestational age (weeks)
1974	UUUUU	SSSSS	33	12-15
1975	MFFMF	LLLSS	30	28-31
	MMMFF	SSSSS	26	20-23
1976	MMFFF	LLLLL	27	36-39
	MUUUU	SSSSS	29	20-23
1977	MMMMF	LLSSS	29	24-27
	MMFFF	SSSSS	28	20-23
	MMMFF	SSSSS	30	20-23
1979	MMFFF	LLLLS	31	29
1980	MMFFF	LLLLL	27	33
	MFMFF	LLSSS	30	33
1981	MMMFF	LLLLL	34	34
	MMMFF	SSSSS	25	29
1982	MFFFF	SSSSS	30	23
	MFFFF	SSSSS	35	22
1983	MMFMF	LLLSS	30	28

^a U: Sex unknown.

^b L: Liveborn; S: Stillborn.

RESULTS

Table 1 shows sex composition, survival states at birth, maternal age and gestational age of 16 sets of quintuplets born from 1974 to 1985. The stillbirth rate of quintuplets was 0.559 (19/34) for males, 0.622 (23/37) for females, and 1.000 (9/9) for unknown sexes. Overall stillbirth rate was 0.638 (51/80). The difference between both sexes was not significant at the 5% level. The stillbirth rate by maternal age was also computed. Mothers are divided into three age groups: 25-29, 30-34, and 35-39 years. The corresponding stillbirth rates were 0.66 (23/35), 0.58 (23/40), and 1.00 (5/5), respectively. The difference between the former two groups was not significant at the 5% level.

Table 2 - Stillbirth rate of quintuplets according to birth order, 1974-1985

	1st born	2nd born	3rd born	4th born	5th born	Total
Number of live births	9	10	8	7	5	39
Number of stillbirths	7	6	8	9	11	41
Total	16	16	16	16	16	80
Stillbirth rate	0.438	0.375	0.500	0.563	0.688	0.638

Table 3 - Stillbirth rate of quintuplets according to gestational age, 1974-1985

Gestational age (weeks)	Number of live births	Number of stillbirths	Total	Stillbirth rate
12-15	0	5	5	1.000
16-19	0	0	0	
20-23	0	30	30	1.000
24-27	2	3	5	0.600
28-31	10	10	20	0.500
32-35	12	3	15	0.200
36-39	5	0	5	0.000
Total	29	51	80	0.638
Mean gestational age (weeks)	32.26	23.23	26.50	

Table 2 shows the stillbirth rate of quintuplets according to birth order. The stillbirth rate decreased from the first to the second birth, and then increased with birth order.

Table 3 shows the stillbirth rate of quintuplets according to gestational age. The stillbirth rate was 1.00 for the gestational age under 23 weeks and decreased with gestational age. The mean gestational age in quintuplets was 32.26 weeks for live births and 23.23 weeks for fetal deaths.

Table 4 - Stillbirth rate of quintuplets according to birthweight, 1979-1985

Birthweight (g)	Number of live births	Number of stillbirths	Total	Stillbirth rate
Under 500	0	5	5	1.000
500-900	0	9	9	1.000
1,000-1,400	12	6	18	0.330
1,500-1,900	7	1	8	0.125
Total	19	21	40	0.525

Table 4 shows the stillbirth rate of quintuplets according to birthweight. The stillbirth rates were 1.00 (14/14) for birthweight less than or equal to 900 g, 0.33 (6/18) for birthweight between 1,000 g and 1,400 g, and 0.13 (1/8) for birthweight over 1,500 g, respectively. Mean birthweight was 1,630 g in the group where all members were liveborn (two sets), and it was 853 g where one or more were stillborn (6 sets). Mean birthweight was similar in 10 males and 7 females (1,410 g vs 1,422 g) among the liveborn and was higher in 7 males than in 14 females (743 g vs 700 g) among the stillborn. Mean birthweight of the total of 40 quintuplet individuals was 1,048 g.

DISCUSSION

Information about mothers treated with ovulation-inducing hormones are not obtained from data on 16 sets of quintuplets. Excluding unknown sexes, all sets of quintuplets were unlike-sexed. Accordingly, there were no monozygotic quintuplets. As quintuplet birth were uncommon, the greater part of these quintuplets might be obtained from mothers treated with ovulation-inducing hormones in Japan.

According to Imaizumi [4], the stillbirth rates were 0.11 for twins and 0.26 for triplets during the period from 1974 to 1985. The corresponding rate of quadruplets was 0.32 (100/317) (unpublished). In the present study the corresponding rate of quintuplets was 0.64. Therefore, the stillbirth rate in multiple births decreased to one sixth in twins, to two fifths in triplets, to one half in quadruplets and quintuplets during the period from 1974 to 1985.

The stillbirth rates for twins and triplets were significantly higher in males than females during the period from 1974 to 1985 [4]. On the other hand, the stillbirth rate of quadruplets was slightly higher in males (0.30) than females (0.25) during the same period, but the difference was not statistically significant (unpublished). Similarly, the stillbirth rate of quintuplets was similar for both sexes during the same period.

Effects of maternal age and birth order on the stillbirth rate of quintuplets were not indicated because of the small sample size. On the other hand, the stillbirth rate of quintuplets decreased with gestational age and birthweight.

According to Asaka et al [1], mean birthweight of the total of 264 triplet individuals was 1,725 g, and that of 20 quadruplet individuals was 1,275 g in 1974. In the present study, mean birthweight of the total of 40 quintuplet individuals was 1,048 g during the period from 1979 to 1985.

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