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Fertility in Twins

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Abstract. From the 474 twins born in 1950 in 100 Flemish cities and towns in Belgium, 85% reached the age of 20 yr, against 37% in Austria a hundred years ago. More female than male twins are married ($P = 0.03$), in particular nonidentical female twins ($P = 0.02$). Fertility seems to be lower in male, especially male-male twins ($P < 0.03$), and most strikingly so in identical male twins ($P = 0.05$). There seems to be no influence of premature birth or low birthweight.

Key words: Twins, Fertility, Birthweight, Duration of gestation

INTRODUCTION

Many studies deal with the fertility of mothers and siblings of twins. However, little is known about the fertility of twins themselves. We were interested in the fertility of twins starting from the hypothesis that infertility would be more common in male than female twins due to the fact that twins have a lower birthweight and a higher risk of premature birth, which in turn might be responsible for higher percentage of infertility due to the noncompleted descent of the testicles at birth.

MATERIALS AND METHODS

A questionnaire was sent in 1988 to the parents of all twins, registered at birth in 1950 in 100 Flemish towns and cities (the first 50 and the last 50 alphabetically listed), asking for information on the duration of gestation, the birthweight of both twins, and the number of offspring of each twin. The parents were also asked to

RESULTS

A total of 15.5% of male and 14.4% of female twins died before the age of 20 yr (mostly shortly after birth or during the first year of life).

Within the group of twins who reached the age of 20 yr, the percentage of unmarried twins were 15.3% (males) and 8.4% (females). The sex difference ($P = 0.03$) is most striking in nonidentical twins ($P = 0.02$).

In the group of married twins, 11.2% of male and 6.1% of female twins remained without children, the difference being statistically not significant.

In relation to the sex of the cotwin, the sex difference for childlessness was significant ($P < 0.03$) for male-male twins vs female-female twins; in cases of cotwin of the opposite sex, the difference was negligible.

In relation to zygosity (based only on questionnaire data) the sex difference for childlessness was significant ($P = 0.05$) for identical but not for nonidentical twins. Within both male and female groups, the difference in fertility between identical and nonidentical twins was not significant.

It was remarkable that 42.9% of the female twins had a birthweight of less than 2,500 g vs 31.1% in male twins. The sex difference in childlessness in twins with low birthweight is however not significant.

In contrast with birthweight, prematurity (≥ 4 weeks) was almost equal in male (20.9%) and female (19.7%) twins. Childlessness was very rare in premature twins in both sexes.

DISCUSSION

In the past, some observations suggested that cryptorchism would be more frequently encountered in identical twins [1,3,10]. The presence of congenital absence of Wolffian ducts [6], or Klinefelter's syndrome [5,8] and of Laurence-Moon-Biedle syndrome [2] in identical twins had been reported. The finding of an identical twin with Young's syndrome, ie, obstructive azoospermia and chronic sinobronchial disease, provides support for a genetic basis for Young's syndrome [9].

In cattle, there exists a free-martin phenomenon, which means that a female twin fetus will be sterilized by a hormonal effect from a male cotwin. The free-martin effect is, however, unknown in man. Already in 1844, it was proven by Simpson [7] in the U.K. that the fertility of female twins is not affected by the sex of the cotwin. Simpson reported that, of 123 married females born cotwin with males, only 11 (8.9%) remained without children. They were as productive as females in general.

In 1879, Göhlert [4] from Graz in Steiermark (Austria) reported that only 151 out of 410 twins (37%) reached the age of 20 yr. In a series of 98 married twins, 28.5% remained without children (22.5% in male twins, 32.7% in female twins). At that time, the infertility rate in the general population was considered to lie between 11% and 20%.

Weinberg [11], from Stuttgart, reported in 1902 that in a series of 110 female twins, 12% of the females born with a male cotwin remained childless, vs 9% of those born with a female as cotwin.

Data collected by the Genealogical Society of the Mormons in Salt Lake City on 6,049 twins, born in the 18th and 19th century, revealed that 7.8% of male married twins had no children vs 7.2% in male sibs of twins [12].

From the married female twins, 15.8% had no children, vs 18.0% in female sibs of twins. In relation to the sex of the cotwin, 7.5% male-male twins were married without children, vs 14.3% for female-female twins.

In cases of different sex, the percentages were almost identical (8.2% for males and 17.6% for females). It must be noted that among male twins, 9% had two or more wives, while only 3% among female twins had two or more husbands. The larger proportion of women with no children was considered by the author to be the result of bias due to the difficulty of doing genealogical research on women. It is possible that a record of a woman's marriage may be found but information on her children may be less easily obtained.

In our study on 474 twins born in 1950 in 100 Flemish cities and towns, more female than male twins are married ($P = 0.03$), especially nonidentical female twins ($P = 0.02$). In the group of married twins, more male twins are still without children at the age of 38 yr (11.2% vs 6.1%), although this difference borders but does not reach significance ($P = 0.09$). However, the sex difference is significant ($P < 0.03$) in male-male vs female-female twins, and most strikingly so in identical twins.

Low birthweight or prematurity cannot be held responsible for the observed sex difference. The higher percentage of noncompleted descent of the testicles at birth in twins with low birthweight or premature birth cannot explain the sex difference in fertility.

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