



The Twinning Incidence in Nigeria

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The dizygotic twinning rate in Western Nigeria is the highest on record (45–50 per mil maternities). It is suggested that, rather than to peculiarities in the population structure or to genetic factors, such a high incidence might be due to the presence in the diet of estrogen-like substances.

Key Words: Twinning rates, FSH level, Dietary factors, Nigeria

The twinning incidence in many areas in Nigeria is high, and in some parts the rates are the highest on record – eg, Western Nigeria, with 45–50 per 1000 maternities [4]. This rate is approximately four times that in Europe and the United States.

The high twinning rate is due to a high dizygotic (DZ) twinning rate, the monozygotic (MZ) twinning rate (approximately four per 1000 maternities) being the same as in other parts of the world. This has been shown by studies in which the zygosity of individual pairs of newborn twins has been determined by blood groups and placental enzymes [6], and by population studies in which the proportion of MZ and DZ twins has been found by using Weinberg's formula [3].

Various studies have been carried out to elucidate the cause of the high DZ twinning rate [2, 5]. It has been shown that the high incidence is not due to a difference in the maternal age and parity structure of the Nigerian population, as compared with European populations. In fact, when corresponding age and parity groups in the Western Nigerian and British populations were compared, the Nigerian twinning rates were still approximately four times those in the British population. There were, however, marked differences when the incidence was related to social class. In the British population there was no difference in DZ twinning rates between social classes. In the Nigerian population the DZ twinning rate in the lowest social class was very high (approximately 62 per 1000 maternities), whereas that in the highest social class was only about 15 per 1000 maternities.

Further investigations revealed important differences in the endocrinological profile of women in the two populations. The serum FSH levels of twin-prone women (ie, those who have had twins previously) were compared with those of non-twin-prone women (ie, those who have had singletons only) on corresponding days of the menstrual cycle. In the Caucasian (British) population, there were small inconsistent and nonsignificant differences in the mean FSH levels in the two groups of women. In the Western Nigerian population, however, the mean FSH levels were much higher in those women who had

delivered two sets of twins than in those who had delivered one set of twins, and the levels in these women were in turn much higher than in those who had delivered singletons only. The mean FSH levels in the Nigerian mothers of singletons were much higher than in their British counterparts.

Furthermore, a study of inheritance of DZ twinning in the Western Nigerian population revealed differences when compared with similar studies in Caucasian populations. Whereas in studies on Caucasian populations it has been consistently shown that women who were themselves twins had a twinning rate that was twice that in the general population [2, 7], the investigation in the Nigerian population showed that such women had a twinning rate the same as that in the general population.

The findings of small, inconsistent differences in the mean FSH levels in Caucasian mothers of DZ twins when compared with mothers of singletons is consistent with the theory that, in the Caucasian women, environmental factors that would raise serum FSH levels may not be playing a major role in the aetiology of DZ twinning, whereas in Western Nigeria such factors are playing the greater role and therefore causing high FSH levels in general and still higher levels in those women who have had twins. If we assume that the environmental factor is a substance X occurring in the diet which acts in a similar way to clomiphene or other such substance and increases the frequency of double ovulation, this would explain why women who have had twins previously have a higher tendency to twinning if this group of women belong to those whose diet includes substance X in large amounts.

This theory of a major environmental (probably dietary) cause for the high DZ twinning rate in Western Nigeria is further strengthened by the findings related to social class. The Nigerian women in the lowest social class (who eat mainly the local or "native" diet) have a very high twinning rate (62 per 1000 maternities), whereas those in the highest social class (who would eat far more "European diet" than most of the population) have a twinning rate of 15 per 1000 maternities (similar to that in Europe).

The investigation of the inheritance of DZ twinning in Nigeria also suggests that in the Nigerian population it may be environmental factors that are playing the greater role, causing a phenomenally high twinning rate similar to that which would be expected in a population of Caucasian women being treated with fertility pills. This might help to explain why the findings of the investigation in this population do not entirely agree with those of other investigations carried out in Caucasian populations; namely, Nigerian women who are twins themselves do not have a high twinning rate. Therefore, while by comparison with other studies it might be expected that there would be some genetic contribution to the incidence of twinning in the Nigerian population, it would appear that environmental effects are much more important and entirely obscure any genetic differences that may be present.

In recent years, it has been shown that a certain species of yams in Western Nigeria contains oestrogen-like substances [1]. Is it possible that some other plants in Western Nigeria contain other hormone-like substances acting like the fertility pill, which cause high FSH levels and increased DZ twinning in the population? Further studies (epidemiological and endocrinological) are indicated to investigate this possibility.

REFERENCES

1. Hardman N (1969): Pharmaceutical products from plant steroids. *Trop Sci* 11:196.
2. MacGillivray I, Nylander PPS, Corney G (1975): "Human Multiple Pregnancy," Philadelphia: W.B. Saunders.

3. Nylander PPS (1969): The frequency of twinning in a rural community in Western Nigeria. *Ann Hum Genet Lond* 33:41.
4. Nylander PPS (1971): Ethnic differences in the incidence of twinning in Ibadan. *J Biosoc Sci* 3:151.
5. Nylander PPS (1976): Biosocial and clinical studies in twinning in an African and a Caucasian population, M.D. Thesis, University of Aberdeen.
6. Nylander PPS, Corney G (1969): Placentation and zygosity of twins. *Ann Hum Genet Lond* 33:31.
7. Nylander PPS (1978): Causes of high twinning frequencies in Nigeria. *Prog Clin Biol Res* 24, Part B: 35.
8. White C, Wyshak C (1964): Inheritance in human dizygotic twinning. *N Engl J Med* 27:1003.