# HYPOTHESIS OF AN OVULAR REGULATION OF PREGNANCY WEIGHT-GAIN

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*A retrospective study of 127 twin pregnancies has been carried out, considering the relation between maternal weight-gain and zygosity of the ovum. At 28 weeks of gestation, the maternal weight-gain distribution goes on according to a bimodal curve, the analysis of which shows that each pike corresponds to one twin-pregnancy variety. Whatever the considered term might be (28-32-36 weeks), the maternal weight-gain is higher in DZ than in MZ pregnancies, and it should be pointed out that toxemic pregnancies, in each group, have nothing to do with this difference. This maternal weight-gain difference may reflect the known quality difference between MZ and DZ ova. The data lead to set up the more general hypothesis of an ovular regulation factor of the maternal weight-gain, in addition to classic data such as the own fetal weight, its annexes, and maternal diet.*

We present here a retrospective study of 127 multiple pregnancies registered at Maternité de Port-Royal from 1966 to 1971.

We have investigated the possible relationship between maternal weight-gain during pregnancy and zygosity of the ovum.

Weight increase has been considered at 28, 32 and 36, more or less 2 weeks, from the first day of last normal menstruation.

Zygosity of the ovum has been assessed according to the following very strict criteria: (1) unlike-sexed twins are definitely DZ; (2) like-sexed twins, mono or diamniotic with monochorionic placenta, can be regarded as MZ (as established by Corney et al. 1968, Edwards and Cameron 1968, Nylander 1969).

We have excluded from this study all dichorionic diamniotic like-sexed twins whose zygosity cannot be fully ascertained. Retrospectively, complete and accurate data (that is to say: pre-pregnancy-weight, weight-gain, and zygosity) are known for sure in 47 cases at 28 weeks. Some new patients having been gathered to the cohort, complete data are known in 51 cases at 32 weeks.

At 36 weeks, complete data are known in only 31 cases, some patients having been delivered in the meantime.

## RESULTS

At 28 weeks of gestation (Fig. 1), the maternal weight-gain distribution curve has a bimodal shape, suggesting the existence of two separate factors. As shown on Fig. 2, each pike of this curve corresponds to one twin pregnancy variety.

Moreover, as it can be seen on Fig. 3 and Table 1, there is constantly, at 28 weeks as well as at 32 and 36 weeks, a difference between MZ and DZ pregnancy weight increase.

In our work, this difference in maternal weight gain is statistically significant at 28 weeks only, probably because of the small number of cases involved in this study.

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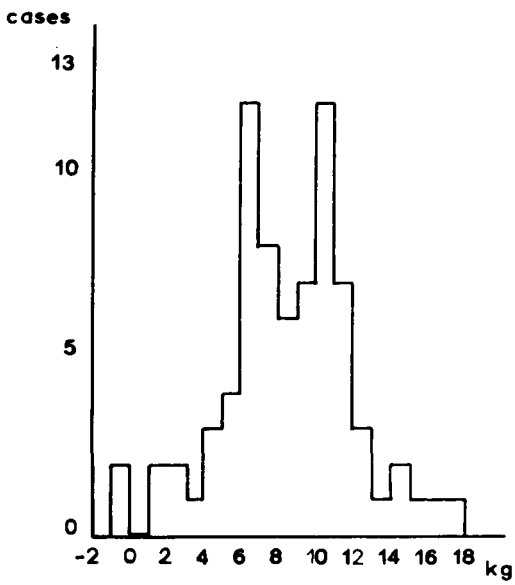


Fig. 1. Weight gain at 28 weeks: $m = 8.5 \pm 0.8$ kg.

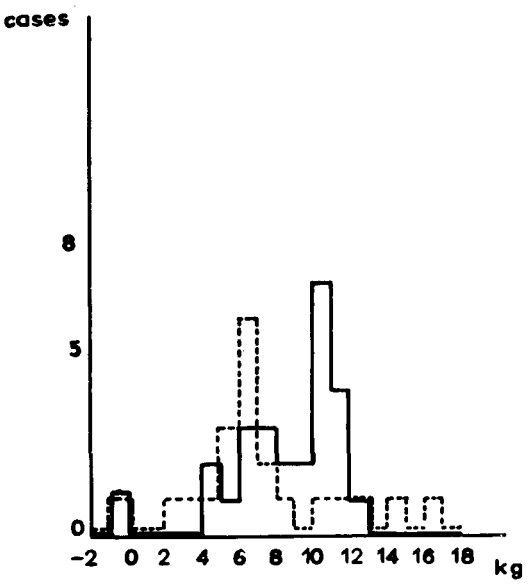


Fig. 2. Weight gain at 28 weeks: —— TwDZ, $m = 8.3 \pm 1.5$ kg; - - - - - TwMZ, $m = 7.3 \pm 1.7$ kg.

However, one could think that toxemia, which is quite common in twin pregnancy, is responsable for this difference in weight increase. Table 2 shows that the number of toxemic pregnancies in each group, and the subsequent overweight one could expect, do not influence the mean values, and are insufficient to explain our results.

Therefore, we consider this maternal weight-gain difference as possibly reflecting the well-known quality difference between MZ and DZ ova. We think that the low maternal weight gain of MZ twin pregnancies could be related to poor quality of the ovum and considered as an expression of impairment in ovular physiology.

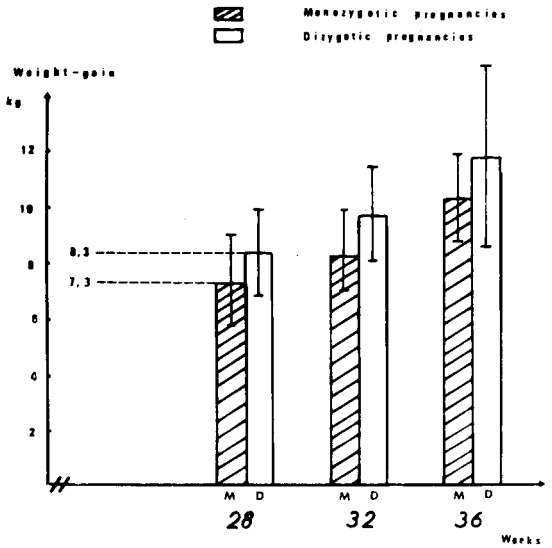


Fig. 3. Mean maternal weight-gain in twin pregnancies according to zygosity.

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Table 1. *Mean maternal weight-increase in MZ and DZ pregnancies*

| | 28 weeks | 32 weeks | 36 weeks |
|---|---|---|---|
| No. of cases | 47 | 51 | 31 |
| MZ twins | $7.3 \pm 1.7$ kg | $8.3 \pm 1.4$ kg | $10.2 \pm 1.5$ kg |
| DZ twins | $8.3 \pm 1.5$ kg | $9.6 \pm 1.6$ kg | $11.8 \pm 2.7$ kg |
| | $p \leq 0.05$ | *ns* | *ns* |

Table 2. *Mean weight-gain at 28 weeks: influence of toxemia*

| | Toxemic pregnancies | | | | Non toxemic | |
|---|---|---|---|---|---|---|
| | Pre-pregnancy weight (kg) | Weight at 28 weeks (kg) | Weight-gain (kg) | Mean weight-gain (kg) | Mean weight-gain at 28 weeks (kg) | *t*-test |
| MZ | 56.5 | 69.0 | 12.5 | 12.5 | $7.3 \pm 1.7$ | *ns* |
| DZ | 52.0 | 63.6 | 11.6 | | | |
| | 48.0 | 59.2 | 11.2 | $7.5 \pm 3.8$ | $8.3 \pm 1.5$ | *ns* |
| | 105.0 | 104.8 | 0.2 | | | |
| *t*-test | | | | *ns* | $p < 0.05$ | |

In this regard, low pregnancy weight increase of mothers of small-for-date babies, and on the opposite, excessive weight gain often observed in molar pregnancies could have the same meaning.
In the prospect of twin study as a possible contribution to Science, our results lead us to set up and propose the more general hypothesis of an ovular factor taking part in the regulation of maternal pregnancy weight gain, beside classical and already well-known factors.
Further investigation is going on.

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