hCG levels were calculated for each day of pregnancy with respect to EP, using the three reference methods. Median daily concentrations were very similar when LH surge and LMP were used as reference. The relationship between both ovulation day and ultrasound to LMP was more variable. The spread of the 10th-90th centile range varied; least variability was apparent when using ovulation day, being on average 3 days more when calculated by ultrasound, compared with ovulation day reference estimates of GA. The hCG concentrations related to median levels at the week boundaries (9, 15, 21, and 27 weeks) were used to classify delivery days as 1-2 weeks before ovulation day, 1-2 weeks after ovulation day, or 3+ weeks after ovulation day. The following percentage correct classification of results by week was achieved:

- 2-3 weeks: 96.1% of 2-3 weeks
- 1-2 weeks: 95.9% of 1-2 weeks
- 3+ weeks: 95.2% of 3+ weeks

Therefore hCG can be considered an early, accurate measure of pregnancy duration.

Moreover, pregnancy duration by LH surge and ultrasound correlate well, but are not identical due to a systematic bias in the Hadlock formula.

The range in agreement between LH surge and ultrasound indicate that the ±5 days variability associated with ultrasound is reasonable. LMP is a poor reference of gestational age, as highlighted by the increased variability seen when using it as a reference. hCG can provide an estimate of pregnancy duration in weeks (1-2, 2-3 and 3+ since ovulation) with a high level of accuracy.

REFERENCES

DECLARATION OF INTEREST
The study was funded by SPD Development Company Ltd., and the authors have no financial conflicts of interest to declare. The members of the CRL-40 group were paid by SPD Development Company Ltd. for the contribution this work was based on.

Conclusions
- Daily urine hCG is highly consistent between women, within day of pregnancy is referenced accurately.
- Therefore hCG can be considered an early, accurate measure of pregnancy duration.
- Pregnancy duration by LH surge and ultrasound correlate well, but are not identical due to a systematic bias in the Hadlock formula.
- The range in agreement between LH surge and ultrasound indicate that the ±5 days variability associated with ultrasound is reasonable.
- LMP is a poor reference of gestational age, as highlighted by the increased variability seen when using it as a reference.
- hCG can provide an estimate of pregnancy duration in weeks (1-2, 2-3 and 3+ since ovulation) with a high level of accuracy.


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