P-099

Urinary hCG Levels Concordant between different Races/Ethnicities

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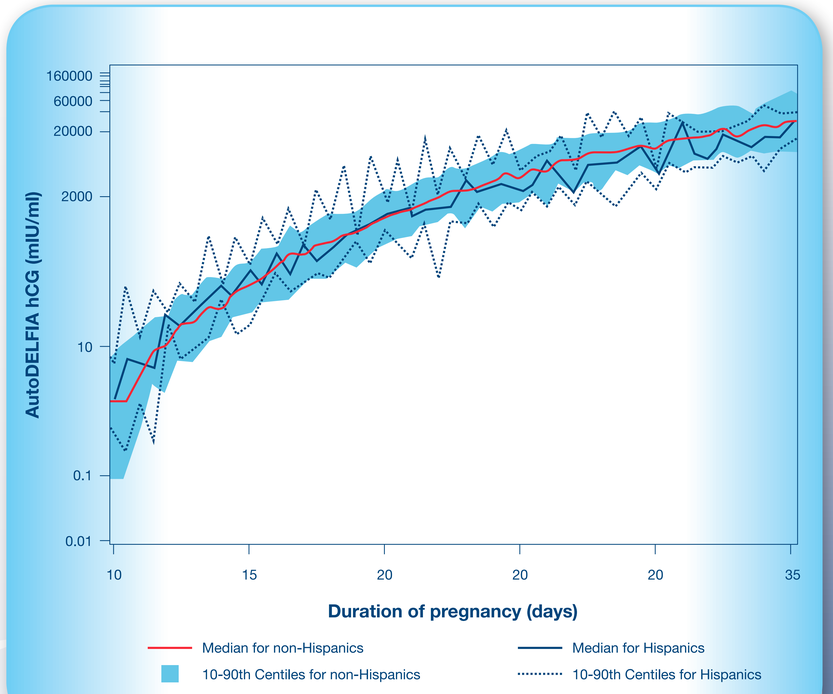
Introduction

- During early pregnancy, the daily rise in urinary intact human chorionic gonadotrophin (hCG) has been shown to be consistent between volunteers when the calculated day of ovulation (day following luteinising hormone [LH] surge) is used to align the data[1]
- However, most studies have considered only limited demographic populations[2,3]
- This study aimed to recruit a mixed demographic population to examine whether the daily rise in hCG observed in early pregnancy is consistent between different ethnic groups.

Material and methods

- This was a multi-centre, prospective study; approved by Quorum Review Institutional Review Board; Clinical Trials gov ID NCT01077583
- Women (aged 18–45 years) seeking to become pregnant, who had menstrual bleeds, were recruited via radio and newspaper advertising, from five US sites with a mixed demographic (Chicago, Minneapolis, Dallas, San Antonio and Atlanta)
- Volunteers collected daily urine samples from their last menstrual cycle until 28 days after their expected menstrual period (defined as LH surge day +15 days) if they became pregnant
- Volunteers remained in the trial for a maximum of three cycles if conception did not occur
- In conception cycles, LH and intact hCG were measured using AutoDELFIA (Perkin Elmer)
- Profiles of daily hCG rise were generated for all women and for the distinct racial/ethnic groups.

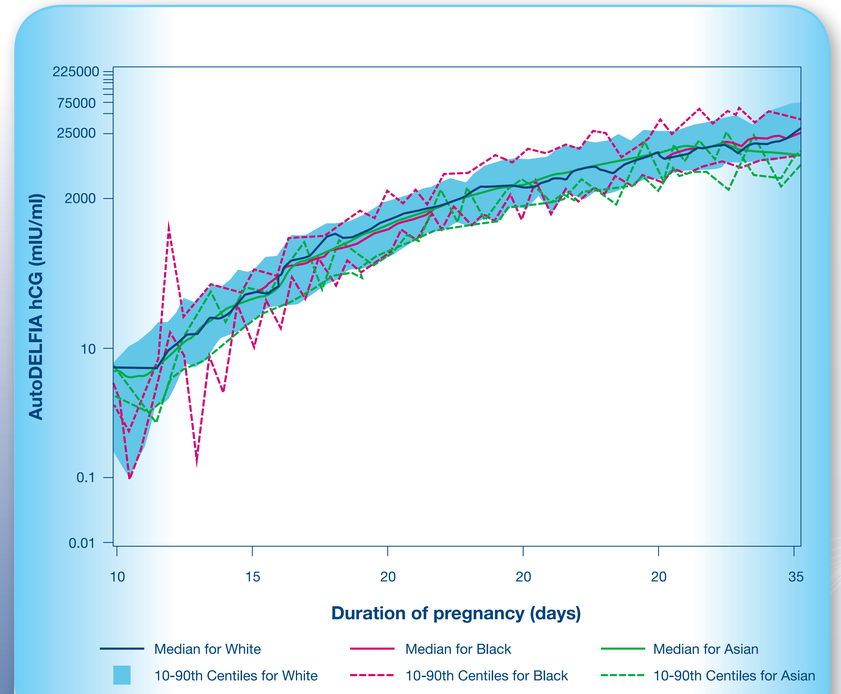
Figure 1. Level of hCG by duration of pregnancy (aligned using the day of the LH surge, where day 0 being LH surge + 1 day, i.e. the calculated day of ovulation) in Hispanic and non-Hispanic women



Results

- Figure 1 shows a plot of hCG by duration of pregnancy in Hispanic (n=12) and non-Hispanic (n=134) women volunteers
- No differences were observed in the hCG profiles obtained for Hispanic and non-Hispanic volunteers with regard to the daily median, 10th and 90th centiles
- For example, on day 23 post ovulation (LH surge day +1 day), median hCG concentration was:
  - 3185 mIU/ml for Hispanic volunteers
  - 3449 mIU/ml for non-Hispanic volunteers.
- Figure 2 shows a plot of hCG by duration of pregnancy in Black (n=9), white (n=127) Asian (n=5) women volunteers
- Examination of daily urinary hCG profiles from White, Black and Asian volunteers found no apparent differences between the groups for median, 10th and 90th centile levels
- For example, on day 23 post ovulation (LH surge day +1 day), median hCG concentration was:
  - 3422 mIU/ml for White volunteers
  - 3355 mIU/ml for Black volunteers
  - 3921 mIU/ml for Asian volunteers

Figure 2. Level of hCG by duration of pregnancy (aligned using the day of the LH surge, where day 0 being LH surge + 1 day, i.e. the calculated day of ovulation) in Black, White and Asian women



- These results demonstrate that there is consistent, exponential rise in hCG concentration in early pregnancy that does not appear to be influenced by race/ethnicity of the pregnant woman
- The results also demonstrate that urinary hCG concentration can be used to provide an accurate assessment of pregnancy duration. For example for White volunteers the median hCG concentrations at weekly intervals following ovulation (median (10–90th centile) for days 7, 14, 21, 28) were 0.35 (0.05–5), 120 (44–325), 2376 (800–5518), 11214 (4537–26921) mIU/ml, respectively.

Conclusions

- No difference in the daily rise in urinary hCG concentration was seen between different ethnicities/races in early pregnancy when the data was aligned using the day of the LH surge
- This provides confidence that, in the early stage of pregnancy, urinary hCG can be reliably related to pregnancy duration in women of different ethnic groups.

Acknowledgments

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Declaration of interest

This study was funded by SPD Development Company Ltd. Sarah Johnson, Sonya Godbert, Louise Roberts, Pauline Parkinson and Paul Perry are employees of SPD Development Company Ltd.

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