Blood spot testing is a less invasive and more convenient method than venipuncture for collecting blood samples for hormone testing and offers better ease and convenience to patients and healthcare providers. This simple method of blood collection also allows for a more viable means to carry out large-scale research and clinical studies on reproductive hormones. The present study shows that capillary finger-stick blood spot testing of gonadotrophins (LH and FSH) produces results comparable to conventional serum/plasma blood hormone levels. We have also observed similar results with blood spot testing of steroids (Data not included in this abstract).

Materials and Methods: Blood was collected by conventional venipuncture and by lancing the fingertip and collecting blood drops on a filter paper. Serum was analyzed for estradiol, progesterone, testosterone, LH and FSH by conventional commercial kits. Dried blood spots were rehydrated in buffer and analyzed by the same test kits, with modification.

Results: Significant positive correlations were found between the blood spot and plasma samples of FSH (R²= 0.91) and LH (R²= 0.93). Although the gonadotropin levels obtained from blood spots (mean FSH 4.0 mIU/mL, LH 5.4 mIU/mL) were significantly different from those derived from plasma samples (mean FSH 4.5 mIU/mL, p < 0.001; LH 6.2 mIU/mL, p < 0.001) the magnitude of these differences (mean difference FSH 0.5 mIU/mL, LH 0.8 mIU/mL, p < 0.001) is not clinically relevant. Conclusion: Gonadotropin levels obtained from blood spot samples correlate well with values obtained from standard plasma assays. Based on these promising results, we are extending these studies to examine blood spot monitoring for ovarian hormones (estradiol and progesterone) and to track women through an entire menstrual cycle.

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Abstract

Objective: Blood spot testing is a less invasive and more convenient method than venipuncture for collecting blood samples for hormone testing. Blood spot collection offers greater latitude regarding timing and convenience of collection for both the patient and the health care provider. This simple method of blood collection also allows for a more viable means to carry out large-scale research and clinical studies on reproductive hormones. The present study shows that capillary finger-stick blood spot testing of gonadotrophins (LH and FSH) produces results comparable to conventional serum/plasma blood hormone levels. We have also observed similar results with blood spot testing of steroids (Data not included in this abstract).

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Correlations

Gonadotropin levels obtained from blood spot samples correlate well with values obtained from standard plasma assays. Based on these promising results, we are extending these studies to examine blood spot monitoring for ovarian hormones (estradiol and progesterone) and to track women through an entire menstrual cycle.

Observations

Significant positive correlations were found between the blood spot and plasma samples of FSH (R²= 0.91) and LH (R²= 0.93). Although the gonadotropin levels obtained from blood spots (mean FSH 4.0 mIU/mL, LH 5.4 mIU/mL were significantly different from those derived from plasma samples (mean FSH 4.5 mIU/mL, p < 0.001; LH 6.2 mIU/mL, p < 0.001) the magnitude of these differences (mean difference FSH 0.5 mIU/mL, LH 0.8 mIU/mL) is not clinically relevant. Excluding imperfect blood spot samples (super-saturated, not sufficient quantity) did not greatly improve correlation

References
