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## Accepted Manuscript

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Does urinary tract infection alter fetal fibronectin vaginal swab results?PJ Teoh, A Ridout, P Seed, RM Tribe, AH Shennan

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Dear Editor,

Cervicovaginal fluid (CVF) fetal fibronectin (FFN) is a reliable test in asymptomatic high-risk women to help predict preterm birth (PTB). Urinary tract infections (UTI) are a treatable risk-factor for PTB risk. FFN is affected by recent intercourse<sup>1</sup> or bleeding<sup>2</sup>, but it is unknown whether FFN results are affected by UTI. We hypothesized that levels of FFN in the CVF increases at the time of a UTI but subsequently recovers following treatment. We performed an exploratory longitudinal prospective study to test this.

We studied consecutive women attending an inner-city Prematurity Surveillance Clinic and audited routine clinical tests. Women were high-risk due to previous history of PTB, late miscarriage, cervical surgery or uterine abnormalities. At each visit women provided a mid-stream urine (MSU) which was dipped, and sent for prompt culture in boric acid containers if nitrite positive, leukocyte >1+, or clinician discretion. Women were analysed if an MSU was sent. FFN was measured at each appropriate visit (18<sup>+0</sup> to 34<sup>+6</sup> weeks' gestation<sup>3</sup>).

Women with UTI (cases) were gestational age-matched with up to three controls ( $\pm 2$ wks). To isolate the effect of UTI on FFN rather than impending PTB, we excluded women with with PTB <34 weeks (a major confounder to FFN). FFN values at the time of positive dipstick, and those 5 weeks before and after, were compared using random-effects GLS (Generalised Least Squares) regression using STATA 15.0.

Of 394 high-risk women, 112 MSUs were cultured. 70 (62.5%) had no growth, 33 (29.5%) grew contaminants and 9 (8%) grew a causative organism. Of the nine cases, two were excluded due to lack of FFN and one excluded due to delivery <34 weeks' gestation. The FFN of the woman who delivered <34wks rose to 200ng/mL at time of UTI, but recovered to 16ng/mL two weeks later. Six cases were matched to sixteen controls and there were no recurrent UTIs.

FFN appeared to increase over time in the controls, although remaining negative (<50ng/mL). Cases appeared to have higher FFNs at baseline and stepped up at time of infection. UTIs could therefore cause false positive (>50ng/mL) FFNs in women who do not deliver preterm. This, however, was not statistically significant as shown by the wide confidence intervals (Figure 1).

We gathered longitudinal data on 394 high-risk women, but only 2.3% had proven UTIs; suggesting that UTI is not a common concern in this group. This is relevant in the community where GPs may empirically treat a positive dip. There appeared to be an increase in FFN at time of infection, but to demonstrate an effect (3.2x FFN increase) with 80% power, 1400 high-risk women would need to be screened. Given the very low prevalence of UTI in this high-risk group, the size of a trial that would be needed to prove an effect would be challenging.

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AH and RMT receive funding from the National Institute for Health Research Biomedical Research Centre based at Guy's and St Thomas' National Health Service Foundation Trust and Tommy's Charity (no. 1060508).

#### References

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- <sup>1</sup> McLaren JS, Hezelgrave NL, Aybi H, Seed PT, Shennan AH. Prediction of spontaneous preterm birth using quantitative fetal fibronectin after recent sexual intercourse. *American Journal of Obstetrics and Gynecology* :2015; 212:89.e1-89.e5.
- <sup>2</sup> Hezelgrave NL, Kuhrt K, Cottam K, Seed PT, Tribe RM, Shennan AH. The effect of blood staining on cervicovaginal quantitative fetal fibronectin concentration and prediction of preterm birth. *European Journal of Obstetrics & Gynecology and Reproductive Biology* 2017; 208:103-108.
- <sup>3</sup> Hezelgrave NL, Abbott DS, Radford SK, Seed PT, Girling JC, Filmer J, Tribe RM, Shennan AH. Quantitative fetal fibronectin at 18 weeks of gestation to predict preterm birth in asymptomatic high-risk women. *Obstetrics & Gynecology* 2016; 127:255-63.