Retrospective cohort study evaluating quantitative fetal fibronectin in predicting spontaneous preterm birth in symptomatic women

Christoph Lehner[1], Anh Nguyen[3], Cathy Liu[2,3], Akwasi Amoako[2, 3], Renuka Sekar[1]

[1]Centre for Advanced Prenatal Care, The Royal Brisbane and Women's Hospital, Brisbane, Australia
[2]Dept. of Obstetrics & Gynaecology, The Royal Brisbane & Women's Hospital, Brisbane, Australia
[3]Faculty of Medicine, University of Queensland, Brisbane, Australia
Correspondence to:
christoph.lehner@health.qld.gov.au

Introduction

Quantification of fetal fibronectin levels offers the possibility of better discrimination between high risk versus low risk patients for preterm labour when compared to the qualitative test[#].

Objectives

The aim of this study was to evaluate the bedside Hologic quantitative fetal fibronectin (qfFN) test in predicting spontaneous preterm birth (sPTB) in patient presenting with symptoms of threatened preterm labour (TPL).

Methods

We conducted a retrospective cohort study of pregnant women (n=462) who presented to the Royal Brisbane and Women's Hospital with symptoms suggestive of TPL between October 2013 and January 2018.

The qfFN measurements were taken between 22+0 and 35+6 weeks gestation. The ability to predict sPTB within 14 days and <34 weeks gestation at qfFN thresholds of 10, 50 and 200 ng/ml was assessed using various statistical analysis.

Results

The overall rate of sPTB <37 weeks was 11.7%.

For delivery within 14 days, a qfFN threshold of 200 ng/ml had a positive predictive value (PPV) of 50.0% and a negative predictive value (NPV) of 97.3%. Patients with qfFN of >200 ng/ml also had a relative risk of 22.4 when compared to patients with qfFN values of 0-9 ng/ml. PPV for sPTB <34 weeks increased (9.8%, 20.8% and 46.7%) with increasing qfFN threshold (10, 50 and 200 ng/ml respectively).

Breakdown of spontaneous preterm birth rates between different fFN concentrations

fFN (ng/ml)	N (GA 22-35+6) [%]	sPTB within 14 days [%]	N (GA 22-32+6) [%]	sPTB <34 weeks [%]
0-9	313 [67.7]	7 [2.2]	245 [66.6]	3 [1.2]
10-49	91 [19.7]	3 [3.3]	75 [20.4]	2 [2.7]
50-199	36 [7.8]	2 [5.6]	33 [9.0]	3 [9.1]
>200	22 [4.8]	11 [50]	15 [4.1]	7 [46.7]
total	462	23	368	15

Conclusion

The quantitative fetal fibronectin test allows for more accurate prediction of preterm birth using the threshold of 10, 50 and 200 ng/ml.
This higher degree of discrimination allows for more direct interventions for high risk patients and reduces the cost and burden of unnecessary treatment for low risk patients.

Reference

Abbott DS, Radford SK, Seed PT et al. Evaluation of a quantitative fetal fibronectin test for spontaneous preterm birth in symptomatic women. AJOG 2013 Feb; 208(2): 122.e1-6.

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