

Lactate measurement improves treatment during labour

28 October 2016

Labour dystocia, or the failure of the uterus to contract properly during labour, is a serious problem in obstetrics. A new study from Karolinska Institutet demonstrates a simple method that can make it easier for doctors to assess and treat the condition. The study is published in the journal *PLOS ONE* and was part-financed by the Bill and Melinda Gates Foundation.

Labour dystocia causes the woman to undergo painful but ineffective labour, and while her contractions come regularly there is no dilation of the cervix and the baby does not push through the birth canal.

All kinds of muscular fatigue produce lactic acid, and this includes the uterine musculature. The main cause of lactic acid production is anoxia (oxygen starvation), which in labour dystocia can stretch over long periods of time, leading to the accumulation of lactate.

In Sweden alone, some 20,000 women are diagnosed every year with labour dystocia, which results in arrested labour. Although the underlying causes are not yet known, the condition is treated with oxytocin, the effects of which, however, vary from one individual to the next.

Studies at Karolinska Institutet and Stockholm South General (Söder) Hospital demonstrate a close link between levels of uterine lactate and amniotic fluid lactate (ALF). An analysis of the amniotic fluid that leaks out during labour can give obstetricians valuable information on the current [lactic acid](#) level of the uterus.

"We've developed a clinical application that measures the level of lactate in the amniotic fluid," says Eva Wiberg Itzel, associate professor at Department of Clinical Research and Education, Karolinska Institutet, South Hospital. "This means that we're able to deal more effectively with the individual woman's labour."

The study shows that oxytocin stimulation works well in the event of an arrested labour when the level of AFL is low. In 75 per cent of cases, the baby was spontaneously delivered vaginally, with a C-section frequency of only 9 per cent. In the group with high lactate readings, the rate of spontaneous vaginal delivery was much lower and C-section much higher: 36 per cent and 37 per cent respectively. Arrested labour and high lactate levels were also more likely to lead to complications such as post partum haemorrhage and infections and neonatal anoxia. The results of the study point towards a possible improvement in perinatal care for mother and child in Sweden and elsewhere.

"Many women around the world die from complications associated with labour dystocia," says Dr Wiberg Itzel. "Being able to measure individual differences in lactate production means that we can tailor and individualise the assessments we make ahead of each delivery. Above all, it means that we can use oxytocin where it has the best effect."

More information: Eva Wiberg-Itzel et al. Lactate in Amniotic Fluid: Predictor of Labor Outcome in Oxytocin-Augmented Primiparas' Deliveries, *PLOS ONE* (2016). [DOI: 10.1371/journal.pone.0161546](https://doi.org/10.1371/journal.pone.0161546)

Provided by Karolinska Institutet

APA citation: Lactate measurement improves treatment during labour (2016, October 28) retrieved 31 July 2022 from <https://medicalxpress.com/news/2016-10-lactate-treatment-labour.html>

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