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Blood Test Speeds Preeclampsia Diagnosis, Improves Outcomes

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April 12, 2019

A simple blood test measuring placental growth factor (PlGF) may improve diagnosis and outcomes among pregnant women with preeclampsia, a new study shows.

The study, called the PARROT trial, is the first multicenter randomized controlled trial to evaluate the usefulness of PlGF testing added to traditional methods of diagnosis for preeclampsia.

Results, published online April 1 in the *Lancet*, support the large-scale adoption of PlGF testing among pregnant women in the United Kingdom.

"The findings of the PARROT trial should be considered as practice changing for women presenting to maternity services prior to 37 weeks' gestation with suspected preeclampsia," first author Kate Duhig, MRCP, told *Medscape Medical News* by email. Duhig is a clinical research fellow at Kings College London.

Results suggest that testing for PlGF, a protein involved in blood vessel formation, may reduce the time to diagnosis of preeclampsia by about 2 days. The test was also linked to improved outcomes among women, without increasing the risk for serious adverse outcomes among newborns.

"Speeding up the diagnosis of preeclampsia helps to ensure the most appropriate and individualized care pathway for women at highest risk, and this strategy has been shown to reduce severe associated complications," Duhig emphasized.

Decreasing diagnostic time may allow time to give steroids to help mature fetal lungs in preparation for pre-term delivery and to transfer women to hospitals with higher level care for them and their newborns.

PlGF testing has already been endorsed by NICE. Now, spurred by results of this trial, the National Health Service (NHS) plans to make PlGF testing available more widely across the UK. The test costs £70 to £80 and should be straight forward to implement in maternity units, according to Duhig.

"The NHS, with partners in government, will be making this test more widely available across the NHS as part of our plans to ensure as many patients as possible can benefit from world-class health innovations," professor Tony Young, PhD, FRCS, national clinical lead for innovation at NHS England, said in a press release.

Reduced Risk of Adverse Maternal Outcomes

To evaluate the clinical effectiveness of PlGF testing in real world settings, researchers conducted a randomized controlled trial in 11 maternity units in the UK between June 2016 and October 2017.

Researchers enrolled 1035 women with suspected preeclampsia before 37 weeks' gestation and pregnant with a singleton fetus. All patients received PlGF testing added to usual care (a clinical algorithm based on UK National Institute for Health and Care Excellence [NICE] guidelines).

Women were randomly assigned to two groups. One group had their PlGF test results revealed to clinicians (56%, n = 576), the other group had their PlGF results concealed from clinicians (44%, n = 447). Patients were managed according to the discretion of clinicians, who were not masked to intervention group. Preeclampsia diagnoses were independently reviewed by a clinician and midwife masked to intervention group.

Results showed a 64% reduction in time to diagnosis of preeclampsia among the revealed compared with the concealed testing group (1.9 vs 4.1 days; time ratio, 0.36; *P* = .027).

The revealed testing group also had a 68% reduction in risk of severe maternal adverse outcomes, such as death and stroke, compared with the concealed testing group (22/573 [4%] vs 24/447 [5%], respectively; adjusted odds ratio, .32; *P* = .043).

These improvements occurred without negatively impacting newborn outcomes. The concealed versus revealed testing groups had similar rates of perinatal serious adverse events (15% vs 14%). They also had similar rates of neonatal intensive care unit admissions (33% vs 34%), although the revealed testing group spent fewer nights in the neonatal unit (25.9% vs 35.2%).

Importantly, revealing PlGF results did not seem to affect preterm delivery. Both concealed vs revealed testing groups had similar gestational age at delivery (36.6 weeks vs 36.8 weeks; mean difference, –0.52).

The PlGF test may bring long-needed change to the diagnosis and treatment of preeclampsia. Not much has changed in this area for over 100 years, Duhig and colleagues note, despite preeclampsia being common and potentially fatal when left undetected.

Currently, diagnosis of preeclampsia relies on clinical symptoms: hypertension and increased levels of urinary protein after 20 weeks' gestation. But these symptoms can occur in other conditions and some women can be asymptomatic, complicating diagnosis.

Recently, another blood test has also shown promising results for improving the diagnosis of preeclampsia. That test uses Congo red dye (CRD) to detect misfolded proteins in a woman's urine. Study results suggested that the CRD test may correctly identify preeclampsia in one of every 1.4 women.

But misfolded proteins are not specific for preeclampsia, which may be increased in other conditions like chronic kidney disease and lupus nephritis. So the CRD test may not be able to distinguish between these other conditions and preeclampsia, Duhig pointed out.

In addition, PlGF is implicated in the underlying process that causes preeclampsia. That may make it more specific to preeclampsia than current diagnostic methods that rely on clinical symptoms, she said.

The authors mentioned several limitations. The study included only singleton pregnancies before 37 weeks' gestation, when diagnosis of preeclampsia is most difficult and maternal and infant morbidity is highest. However, results may not generalize to preeclampsia diagnosed after this time period or to multiple births.

The authors have reported no relevant financial relationships.

Lancet. Published online April 1, 2019. Full text

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Cite this: Blood Test Speeds Preeclampsia Diagnosis, Improves Outcomes - *Medscape* - Apr 12, 2019.