BIONEXT
LABORATOIRE LUXEMBOURGEOIS
D'ANALYSES MÉDICALES

PREECLAMPSIA

VALUE OF BLOOD MARKERS

*In clinical practice, "conventional" monitoring (blood pressure, urine albumin) remains indispensable, but is **inadequately discriminatory** for rapid screening of patients at risk of preeclampsia complications.*
***Angiogenesis biomarkers (sFlt-1/PlGF** ratio) provide **earlier** information, which is more directly related to placental pathophysiology and achieves very high performance, chiefly when it comes to a **diagnosis of exclusion**.*

Use of preeclampsia markers

The sFlt-1/PlGF ratio is validated for **singleton pregnancies** from **20 weeks (of gestation) up to 36 weeks + 6 days in**:

- **Patients with symptoms evocative of preeclampsia:**
  - De *novo* hypertension or aggravation, headache, excessive oedema, epigastric pain, sudden weight gain (>1kg/week in the third trimester), eyesight disorders
  - De *novo* urine albumin or aggravation, thrombocytopaenia (<100G/L), liver cytolysis
  - Suspected IUGR, abnormal uterine artery Doppler results

- **Asymptomatic patients classified as high risk** according to the *Fetal Medicine Foundation* algorithm

The ratio is **not to be used in generalised screening**.

Interpretation according to sFlt-1/PlGF ratio

R < 38	< 34 weeks: **R 38-85** ≥ 34 weeks: **R 38-110**	< 34 weeks: **R ≥ 85** ≥ 34 weeks: **R ≥ 110**
Exclusion of preeclampsia	**Monitoring**	**High probability of preeclampsia**
Routine pregnancy monitoring	Repeat test in 1 to 2 weeks	Urgent patient management

Analytical performance of the ratio

The sFlt-1/PlGF ratio has an **NPV of 99 % and 95 %** for excluding the occurrence of preeclampsia **within 1 and 4 weeks respectively**.

By comparison, the NPV of the hypertension/urine albumin association that is customarily used is only about 80%.

The ratio also makes it possible to guide diagnosis more accurately and more promptly than conventional markers in high-risk situations (PPV = 71.4%).

International recommendations

The *American College of Obstetricians and Gynecologists* (ACOG) updated its recommendations in June 2024. These now take account of the ratio for managing and assessing the risk of preeclampsia in patients with gestational hypertension.

Other countries like Switzerland use it and refund its use since 2019 in order to limit the number of hospitalisations and thus reduce the iatrogenic effects and costs of admission.

Pre-eclampsia and sickle cell anaemia disease

PlGF (Placental Growth Factor) is involved in the pathophysiology of sickle cell anaemia and contributes to the vascular phenomena observed during vaso-occlusive crises. It is thus **chronically increased in the basal state** in such patients.

When such elevation occurs during pregnancy, it can result in the **underestimation of the sFlt-1/PlGF ratio.** However, available data are still limited and do not allow the definition of specific thresholds. In practice, **a high sFlt-1/PlGF ratio keeps its diagnostic value and must suggest suspected pre-eclampsia.**

Prospects

Many studies have indicated that this ratio can also help stratify the severity of pre-eclampsia, explain foetal growth restriction or estimate the date of delivery.
Research is also under way to establish limits for twin pregnancies.

In practice

- ✓ Reasoned prescription (term and symptoms justifying the test)
- ✓ Off-nomenclature test: a request for insurance cover based on the opinion of the medical officer of the CNS is initiated by the laboratory if the prescription is reasoned
- ✓ Monday to Saturday
- ✓ Same-day result
- ✓ BIONEXT can collect your sample in the office every day, for more information:

T. 27 321 285 E. bio@bionext.lu

Key points

- ✓ Screening is recommended from 20 weeks of gestation in the presence of warning signs or in high-risk patients.
- ✓ Screening is only suitable for singleton pregnancies.
- ✓ A ratio below 38 can rule out preeclampsia within 1 week with an NPV of 99 %.
- ✓ Screening is not recommended for all pregnant women.

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Bibliography

D_COMM_395_02

2-4, rue du Château d'Eau
L-3364 Leudelange
Luxembourg

(+352) 27 321
info@bionext.lu
www.bionext.lu