

Urinary Congophilia in pregnancies with pre-eclampsia

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Objective: **Urinary congophilia** is a feature that proteins in the urine bind Congo Red dye. It can signify a protein conformational disorder and has potential role in identifying pre-eclamptic women. This study aims to evaluate the use of urinary congophilia in women with suspected pre-eclampsia.

Method: Women admitted for **work up of pre-eclampsia** in two tertiary hospitals in Hong Kong were recruited to provide 10 ml of urine for Congophilia test using the Preeclampsia Detection Kit developed by PerkinElmer.

The sample was assayed within 12 hours of collection by laboratory staff blinded to the clinical management and the result would not be disclosed to the managing obstetricians.

Pre-eclampsia is diagnosed using the definition adopted by International Society for the Study of Hypertension in Pregnancy in 2014. The obstetric parameters were analysed for correlation with Congophilia.

Results: From July 2020 to March 2021, 17 out of 53 (**32%**) women recruited at median of 35 gestational weeks developed **pre-eclampsia**. Overall, 38 (**72%**) women was diagnosed with any **hypertensive disorders**.

The mean maternal age was 34.3 years old with 88.7% Chinese, 62.3% nulliparous women and 18.9% taking aspirin prophylaxis for pre-eclampsia, and these parameters were comparable among women with and without pre-eclampsia.

Women with pre-eclampsia had significantly **lower mean body mass index** (24.5kg/m² Vs 28.0kg/m²), **higher median systolic blood pressure** (149mmHg Vs 145.5mmHg), **earlier delivery** (36weeks Vs 37.5 weeks) with babies of **lower birthweight** (2123grams Vs 2804grams) (p < 0.05).

Urinary Congophilia was detected in 8 women (6 pre-eclampsia, 1 gestational hypertension and 1 gestational proteinuria).

Congophilia was significantly associated with pre-eclampsia (chi square, p=0.005) but **marginally insignificant with any hypertensive disorders** (p=0.054). Overall, the positive predictive value (PPV) was 75% and negative predictive value (NPV) was 75.6% for pre-eclampsia. For any hypertensive disorders, PPV was 100% but NPV was 33.3% only. **Among the 6 pre-eclampsia patients with Congophilia, 3 women delivered within one week and all delivered within four weeks.**

Condition	PPV	NPV	Specificity	Sensitivity
Pre-eclampsia	75.0%	75.6%	94.4%	35.3%
Any hypertensive conditions	100.0%	33.3%	100.0%	21.1%

PPV – positive predictive value, NPV – negative predictive value

Conclusions: **Urinary Congophilia is associated with pre-eclampsia.** It may facilitate the prediction of predicting of pre-eclampsia.