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P062 -Recognition of pregnancy-related acute kidney injury with electronic alerts

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Introduction

Acute kidney injury (AKI) is an uncommon complication of pregnancy, associated with increased maternal and neonatal morbidity. Previous studies have used diverse diagnostic criteria for pregnancy-related AKI (Pr-AKI) and diagnosis remains challenging due to dynamic changes in glomerular filtration during pregnancy.

AKI electronic alerts (e-alerts) are now recommended to inform clinicians of the presence and severity of AKI to enable early intervention. However, clinical utility of AKI e-alerts in obstetric care is unknown. Pregnancy has been considered to be protective against AKI but rates of recovery using KDIGO diagnostic criteria have not been described.

Aims

1. To review the incidence and severity of Pr-AKI e-alerts in a general obstetric cohort.
2. To determine rates of Pr-AKI recognition by obstetric healthcare professionals.
3. To explore rates of renal recovery from Pr-AKI according to KDIGO criteria.

Method

Data were extracted from maternity and laboratory databases (October 2016 to September 2018) at an inner-city teaching hospital. Women receiving obstetric care were identified and AKI stages were generated using the NHS England algorithm. Recognition of Pr-AKI from electronic patient records was extracted by two investigators. Differences between stages of Pr-AKI were compared by Fisher's exact tests.

Results

There were 279 (2.5%) Pr-AKI e-alerts in 11,073 deliveries. Median age of women with Pr-AKI was 33-years (interquartile range (IQR) 30 – 36-years).

215 (77%) women had Stage 1 AKI (peak median creatinine (Cr) 79µmol/L, IQR 70, 93µmol/L); 46 women (16%) had Stage 2 AKI (peak median Cr 106µmol/L, IQR 86, 137µmol/L) and 18 (6%) women had Stage 3 AKI (peak median Cr 162.5µmol/L, IQR 134, 217µmol/L).

Pr-AKI identified by e-alert was only recognised in 68 (32%) of women with Stage 1 but there was increasing recognition with AKI severity (Stage 2 27(59%); Stage 3 18 (100%) (p<0.0001)). All women with Stage 3 had an identifiable cause of Pr-AKI but 39 (18%) women with Stage 1 and 4 (9%) women with Stage 2 had no precipitating event.

Overall 80% (187/233) of women with repeat Cr testing had complete recovery with no significant differences according to AKI stage (Table 1) but 19% (24/124) of women that were not recognised to have Pr-AKI did not have complete recovery.

Conclusion

Pr-AKI e-alerts occurred in 1 in 40 pregnancies but estimated incidence is limited by kidney function testing not being routinely performed without clinical indication potentially leading to an overestimate. However, the majority of e-alerts were Stage 1, of which two thirds were not recognised by the obstetric team and nearly 1 in 5 women with Stage 1 AKI had no apparent precipitant.   Thus it is possible that gestation related dynamic changes in creatinine may have led to e-alerts being falsely triggered. Comparison with serial creatinine concentrations in healthy women is needed to determine if e-alerts for non-pregnant patients are valid in pregnancy.

In keeping with non-pregnant patients, many women had incomplete recovery from AKI but assessment was limited by small numbers and incomplete repeat testing, and further study is needed.