



Kidney news

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Introduction

October 2004 marks the opening of New Zealand's first private, fee-paying haemodialysis unit. The unit is a joint venture between the world's largest provider of dialysis equipment and services (Fresenius Medical Care), and Auckland's largest provider of Private Hospital Services (MercyAscot). I am delighted to be the Medical Director of this venture. The Auckland Dialysis at MercyAscot will provide haemodialysis for overseas travellers and tourists to New Zealand; non-residents needing renal replacement therapy; and New Zealander residents who seek a superior dialysis service. Haemodialysis for both chronic end-stage kidney failure and acute renal failure suffers will be provided.

Pregnancy and renal disease

The case discussed in this newsletter is that of a woman wishing to become pregnant for a second time; and what renal factors need to be taken into account in her management. I have limited the discussion to renal advice, and not delved into obstetric advice.

Case

A 27 year old woman, with one previous uncomplicated pregnancy eight years ago, wishes to have another child. She has been diagnosed with systemic lupus erythematosus since her first pregnancy. The lupus mostly involved the MCP and DIP joints in the hands, and the facial skin. At diagnosis BP was normal, and proteinuria 400mg/24 hours (1+ on dipstick of MSU). The lupus is mild and well controlled. She has been off her hydroxychloroquine for two years, and had no SLE symptoms flare. She is on no medications, and has no allergies, and no other medical history. Currently her BP is 126/74, sitting. Plasma creatinine is 0.08mmol per litre (GFR 1.7ml/sec/1.73m² BSA), and MSU has a trace of proteinuria, no blood and no WBCs, and no growth on bacterial culture.

What is the likelihood of her previous renal history affecting this pregnancy, and what other specific renal management should she have before and throughout her pregnancy?

Lupus Status

Repeat FBC (for WBC and lymphocyte count) and ANA and dsDNA and complement are all that are necessary.

Renal health

Her "renal health" is the best it can be, based on the GFR (normal), the normal blood pressure, and MSU (trace of proteinuria is not significant).

An ultrasound examination or other radiological investigation of the renal tract is not required.

What is high BP in pregnancy?

There are 4 types of hypertension in pregnancy:

- a. pre-eclampsia/eclampsia
- b. chronic hypertension
- c. pre-eclampsia on pre-existing hypertension
- d. gestational hypertension ("transient hypertension")

Preeclampsia is diagnosed when a woman, normotensive prior to pregnancy, develops hypertension, after the 20th week; with BP > 140/ >90 mmHg; and proteinuria > 300mg/24 hours. The hypertension may result in reduced foetal growth. BP is usually treated before BP rises to critical levels (>160-180 / >100) where maternal health is at risk (eg. cerebral bleed).

Chronic hypertension usually requires initiation or an increase in medication dose as the pregnancy progresses. Recommended goal BP is <150 / <100 in the absence of end-organ damage; and < 140 / <90 where end-organ damage develops or is pre-existing.

The risk (in observational studies) of complications from pre-existing chronic hypertension in the pregnant woman includes: superimposed pre-eclampsia (10 to 25%); delivery before 37 weeks (12 to 34%); small for dates babies (8 to 16%); and placental abruption (0.7 to 1.5%).

There is a three-fold increase in perinatal mortality, two-fold increment in placental abruption; and increased risk of small-for-dates baby and early delivery in pregnant women with pre-existing hypertension.

Good control is therefore paramount for both maternal and foetal health.

Kidney news is produced in the interest of education of all medical practitioners in the management of kidney disease or general conditions that may affect the kidneys. Previous issues of kidney news are available at www.kidney.net.nz/newsletters.htm.

These risks, and the risk of hypertensive encephalopathy and acute renal failure, are more marked if BP is not controlled in the first trimester.

The "safest" anti-hypertensive medications in pregnancy are: **labetalol** in bd to qid regimen, up to 2.4g per 24 hours; and **methyldopa** in bd to tds regimen, up to 4g per 24 hours. **β-blockers** alone, without α-blockade (eg. atenolol and metoprolol), may reduce placental and foetal weight, but are otherwise acceptable choices. **ACEs and ARBs** should be avoided more so because of their anti-growth and developmental effects, leading to reduced renal mass. **Diuretics** are contraindicated. **Nifedipine** and similar **calcium channel blockers** are associated with foetal hypoxaemia and teratogenic effects in animals (not humans). They are also excreted in breast milk. **Nifedipine** has been used to help control severe hypertension in pregnancy without major consequence when the maternal benefits have been felt to outweigh the foetal risks.

Pregnancy Maternal Assessment

Investigations include: **MSU** (for proteinuria; and cultured for infection); plasma **urea, creatinine, uric acid** (all for renal function); **electrolytes; glucose. 24-hour urine** for proteinuria and creatinine clearance if MSU or plasma creatinine (and calculated GFR) abnormal.

ECG if long-standing / chronic hypertension. Check plasma creatinine once per trimester throughout the pregnancy.

Maximum **goal BP** is 140-150 mmHg systolic, and 90-100 mmHg diastolic if there is no evidence of end-organ damage; or BP <140 / <90 if there is evidence of maternal end-organ damage (retinopathy; LVH on ECG; other evidence of hypertension; renal impairment or proteinuria). Foetal distress caused from maternal hypertension is also an indication for treatment.

Other pre-existing renal disease

The risk to maternal and foetal health from pre-existing renal disease is more related to the degree of renal involvement from the renal disease, rather than the type of renal disease. Presence of urinary infection, increasing proteinuria, reduced GFR (measured or estimated GFR (www.kidney.net.nz/GFRcalculator)), and pre-pregnancy BP are the renal indicators of a poorer prognosis in pregnancy.

Causes of renal failure such as polycystic kidney disease, reflux nephropathy, glomerulonephritis, etc are less important factors *per se*.

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Qualifications

BSc (Biochemistry, Otago) 1981

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Interests

Investigation of renovascular disease and hypertension

Management of urinary tract infections

Investigation of urinary calculi

Investigation of proteinuria and haematuria
Early detection, investigation and management of impaired renal function.

Renal nutrition.

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