



Kidney news

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The Case

Edward, an 82 year old man, with long standing controlled congestive cardiac failure, atrial fibrillation, peripheral vascular disease (limiting claudication at 200m on the flat), and two minor previous CVAs 6 years ago (from which he has had near-total resolution) has worsening symptoms of shortness of breath. He denies any angina. He is known to have severe chronic renal failure with a plasma creatinine of 0.25 mmol/l (equivalent to a corrected GFR of 0.36 ml/sec (21.6 ml/min/1.73m² BSA)). He occasionally gets gout for which he takes Voltaren 50mg tds for two to three doses. There is no other relevant history.

On examination he has a pulse of 100/min AF. BP 120/70. Bilateral chest crackles, and mild leg oedema.

He is taking enalapril 10mg daily, frusemide 40mg twice a day, digoxin PG two daily (levels stable and satisfactory), carvedilol 6.25mg daily.

He is anaemic (Hb 87g/l) and every two months is admitted acutely with a crisis of SOB with anaemia, and has a blood transfusion. Uric acid 0.55mM.

Edward has no blood loss symptoms. FOBs are negative. He is iron and vitamin B12 and intra-RBC folate replete.

4. Edward's intermittent use of Voltaren may well be inhibiting local renal prostaglandin production, and resulting in acute cardiac failure.
5. The anaemia will be leading to tachycardia, and further cardiac ischaemia, reduced cardiac function, and worsening the failure symptoms.
6. He is currently fluid overloaded, with bi-ventricular cardiac failure.

What can be done to help Edward?

1. Further fine-tuning of anti-failure treatment is worth a trial - increasing the diuretic.
2. Diuresis may drop the BP too low to permit him having further increments in the carvedilol.
3. For the degree of renal impairment there is little value from increasing the ACE inhibitor.
4. Avoiding further use of NSAIDs, and trialling colchicine or prednisone (which unfortunately may also worsen the fluid retention), and the addition of and slow titration up to allopurinol 100mg daily.
5. Blood transfusion now could be considered, as erythropoietin will take at 6 to 10 weeks to have a significant effect upon Edward's symptoms.
6. Addition of erythropoietin to regimen is indicated.

What issues need addressing in Edward?

1. The anaemia is exacerbating Edward's cardiac status.
2. He has severe renal failure with low erythropoietin production exacerbating the anaemia, and need for regular blood transfusions.
3. The exacerbations of gout may reflect his poor renal function.

Use of erythropoietin in chronic renal failure (pre-dialysis)

Renal physician must apply for approval and re-approvals.

Approval is for 2 years.

Any medical practitioner can write repeat prescriptions.

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.

Dose presentation is 1000, 2000, 3000, 4000, 5000, 6000, and 10000IU per pre-filled syringe, self-administered subcutaneously.

Roche Pharmaceuticals provides a coolie-pad and bag, with video, sharps bin, instruction booklet, for patients use. I also have a supply of these packs for the patients, as I initiate therapy.

Initially treatment may require subcutaneous dosing two to three times per week. Once stabilised on erythropoietin, dosing can be adjusted to maximise convenience – eg. weekly.

Recommended monitoring programme:

Exogenous erythropoietin easily depletes iron stores, reducing efficacy. Pre-erythropoietin iron stores (serum iron, saturation, ferritin and TIBC) need to be checked – as baseline; and thereafter no less than two monthly to ensure iron stores are replete.

Check vitamin B12 and folate no less than six monthly.

Add oral iron – taken on an empty stomach. Oral iron best taken at bedtime to avoid any gut upset symptoms. Oral iron is better absorbed if taken with some vitamin C (100mg tablet, or fruit, or vitamin C fruit juice).

Efficacy of erythropoietin declines when ferritin falls below 300mcg/l. Oral iron often does not adequately maintain iron stores – so need IV iron therapy – Ferrum H (infusion over 2 hours) – requires day-case admission to hospital.

Main side-effect is increased BP. Infrequently dose needs to be with-held until BP under better control.

Summary:

More patients are eligible for erythropoietin. Criteria are anaemia and chronic renal failure. Co-existing disease, eg. ischaemic heart disease, or dialysis dependent are no longer pre-requisites for erythropoietin therapy.

Check the patients GFR on my website: <http://www.kidney.net.nz/GFRcalculator.htm>; if **below 35ml/min (non-diabetics) or <45 ml/min (diabetics), and if Hb < 100g/l**, then refer for erythropoietin therapy.

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Qualifications

BSc (Biochemistry, Otago) 1981

MBChB (Otago) 1984

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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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