Nutritional supplements for patients with renal failure

by Ursula Struwig, MPharm

Nutritional supplements are frequently used for patients with renal disease. However, since each case of renal failure is different, treatment must be patient-specific.

The kidneys are responsible for removing waste products from the body. In addition, kidneys regulate the chemical balance in the body and help to maintain the body’s level of hydration.

There are many kidney diseases which can be caused by exposure to certain drugs or toxins, chemotherapeutic agents, insect or snake venom, poisonous mushrooms and pesticides. Disorders like congestive heart failure, diabetes, hypertension, liver disease, lupus and sickle cell anaemia, may feature renal failure as a complication of the disease.

Symptoms of renal failure

Oedema is the most significant indicator of kidney problems. This occurs when the kidneys produce less urine because they are unable to excrete salt and other wastes properly resulting in the build-up of body fluids. The person may become short of breath and ankles and hands may swell.

Other symptoms of renal failure include abdominal pain, loss of appetite, back pain, chills, fever, fluid retention, nausea, urinary urgency and vomiting.

Supplementation options

The use of drugs in the treatment of patients with renal failure requires knowledge of excretion, biotransformation and pharmacological activity of metabolites. Nutritional supplements are frequently used for patients with renal disease. However, the indications and dosages need to be modified for patients with renal failure, as each case may differ and the application should be patient-specific.

Dialysis is an artificial way to remove waste products and extra fluids from the blood when the kidneys can no longer do so on their own. If dialysis is required, certain nutritional supplements may assist to maintain the highest quality of life.

Up to 8 out of 10 people undergoing dialysis develop pruritus (a form of very itchy skin). Anti-itch medication may be required to control or reduce the itching that may occur due to a dry skin or high phosphorus levels. A group of researchers in Taiwan found that people undergoing dialysis to treat kidney failure who developed pruritus improved significantly after using a cream containing Omega 6 fatty acids (Gamma-linolenic acid – GLA). It is unclear why GLA-rich creams work, and it is hypothesised that Omega 6 Essential Fatty Acids may reduce inflammation or somehow boost the immune system.

Calcium supplements may be required to control the level of calcium in the blood and promote strong bones. Typically, in renal failure the calcium level in the blood is low, while the phosphate level is high. This imbalance needs to be treated, or the body overproduces parathyroid hormone in an attempt to control it which, in turn, causes thinning of the bones. A combination of alfacalcidol or calcitriol (active forms of Vitamin D) and phosphate binders is useful as this helps to prevent excessive absorption of phosphate from the gut thereby keeping its level in the blood lower. Calcium supplements are effective phosphate binders.

In renal failure the kidneys are unable to excrete the normal acid wastes produced by the body. As a result, people with renal failure have too much acid in the blood (acidaemia) and have to take bicarbonate tablets to neutralise this.

Iron supplements are important to increase the amount of iron in the bloodstream, which helps assure the production of red blood cells. Anaemia is a common side-effect of dialysis and occurs commonly in patients with renal disease. Healthy kidneys produce a hormone called erythropoietin, or EPO, which stimulates the bone marrow to produce the proper number of red blood cells needed to carry oxygen to vital organs. Diseased kidneys, however, often don’t make enough EPO, resulting in the bone marrow making fewer red blood cells. Other common causes of anaemia include loss of blood from haemodialysis and low levels of iron and folic acid. These nutrients help young red blood cells make...
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haemoglobin (Hb), their main oxygen carrying protein.

Anaemia begins to develop in the early stages of kidney disease when the kidney still functions at 20 to 50% of its normal function. Anaemia worsens as kidney disease progresses. End-stage kidney failure, the point at which dialysis or kidney transplantation becomes necessary, occurs when only 10% kidney function remains. Nearly everyone with end-stage kidney failure has anaemia.

The treatment for anaemia is EPO, administered three times a week intravenously. Iron is also needed to raise the haematocrit to a satisfactory level. If iron levels are too low, no amount of EPO will help, and the effects of anaemia will still be experienced. Iron tablets may be required, but iron can also be administered intravenously. It may be necessary to supplement additional Vitamin B₁₂ and folic acid. Water-soluble, multi-vitamins with folic acid are crucial to restore vitamins removed by dialysis.

Potassium levels can be high in severe renal failure and on dialysis, but potassium intake should not be restricted routinely – only if tests show high potassium levels.

General advice

General ideas and advice for the diet of renal failure patients include:

- Avoid excessive intake of protein, but once on haemodialysis, a slightly higher protein intake is recommended.
- Modern diets contain too much salt, and diseased kidneys cannot cope. Follow a ‘no added salt’ diet, which allows small amounts of salt to be used in cooking, limiting very salty foods and not adding salt to food after it has been cooked. Salt substitutes are not suitable for renal patients because they contain large amounts of potassium.
- Most people drink 1 to 2 litres of fluid per day and renal patients don’t need to (and should not) reduce fluid intake until the kidney disease is severe. If urine is not produced as a result of renal disease, fluid intake must be restricted. Fluid allowance for patients on dialysis is strictly controlled.
- When itching occurs, use a cream containing Omega 6 fatty acids (Gamma-linolenic acid – GLA).
- If the calcium level in the blood is low, take a combination of alfacalcidol or calcitriol (active forms of Vitamin D) and phosphate binders.
- If there is too much acid in the blood (acidaemia) take bicarbonate tablets to neutralise this.
- Iron supplements are important to increase the amount of iron in the bloodstream.
- If anaemia sets in, EPO (erythropoietin) should be administered three times a week intravenously.
- Lastly, it may be necessary to supplement additional Vitamin B₁₂ and folic acid.

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5/4/07 12:47:23 PM
Intensive Lipitor therapy cuts the risk of hospitalisations

Patients with coronary heart disease who took Lipitor (atorvastatin calcium) 80mg tablets reduced their risk of hospitalisations due to heart failure compared to patients taking the 10mg dose of Lipitor, according to a new analysis of a subset of patients from the five-year TNT (Treating to New Targets) study, published in the first February issue of Circulation.

‘These results show that patients with a history of heart failure who were treated with Lipitor 80mg dose significantly reduced their chances of hospitalisations for heart failure,’ says Rochelle Chaiken, vice president of Pfizer’s CV Metabolic group. ‘This important new information for physicians and patients adds to what has been shown about the cardiovascular efficacy of Lipitor in reducing the risk of events like heart attacks, strokes and revascularisation procedures.’

The analysis showed that patients with heart disease who took Lipitor 80mg dose achieved significant reductions in the risk of hospitalisations due to heart failure by 26%. For those patients with a history of heart failure, Lipitor 80mg significantly reduced their risk of hospitalisation by 41%.

‘These findings have important implications for the management of these high-risk patients,’ says David Waters, professor of medicine at the University of California, San Francisco. ‘Hospitalisations due to heart failure are a major contributor to growing healthcare costs in the United States.’

Patients hospitalised once for heart failure face a substantially greater risk of being hospitalised for the condition again and a greater risk of death.

Impact of Heart Failure

Nearly 1 million new cases of heart failure are diagnosed each year worldwide. Patients who develop heart failure often have other cardiovascular risk factors such as post-MI, hypertension, smoking, being overweight, eating foods high in fat and cholesterol, not exercising, and having diabetes.

Of the 10,000 patients in the overall TNT study the incidence of hospitalisations due to heart failure was 2.4% in patients who took the Lipitor 80mg dose and 3.3% in patients who took the Lipitor 10mg dose.

A sub analyses of these patients with a history of heart failure (781 patients) showed the incidence of hospitalisations for heart failure was 10.6% in patients who took Lipitor 80mg compared to 17.3% in patients who took the 10mg dose.

In patients without a history of heart failure, the rates of hospitalisation due to heart failure were lower compared to those with a history of heart failure (1.8% for patients who took the 80mg dose versus 2.0% for patients who took the 10mg dose). The difference between treatment groups was not statistically significant.

TNTing to New Targets study

The TNT study was a landmark investigator-led trial coordinated by an independent steering committee and sponsored by Pfizer. It is the largest study to date evaluating the efficacy and safety of Lipitor 80mg. The study enrolled 10,001 men and women with coronary heart disease aged 35 years to 75 years in 14 countries and followed them up for an average of five years.

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Ranbaxy acquires Be-Tabs Pharmaceuticals

Ranbaxy Laboratories Limited (Ranbaxy), India’s largest pharmaceutical company, recently announced the acquisition of Be-Tabs Pharmaceuticals (Pty) Limited (‘Be-Tabs’), in South Africa, for a total consideration of USD 70 Million (500 Million ZAR). The transactions, subject to requisite approvals from South Africa’s Competition Council authority, are expected to be completed in the first quarter of the year 2007.

Be-Tabs, the fifth largest generics player, is amongst the most established companies in South Africa with an excellent brand equity and a good profitable track record.

Be-Tabs is a significant acquisition in a market that is large and growing with high entry barriers.

The acquisition further strengthens Ranbaxy’s South Africa operations and places the Company amongst the top five generic players in the market.

Commenting on the acquisition, Malvinder Mohan Singh, CEO and Managing Director, Ranbaxy, said, ‘The acquisition of Be-Tabs’ results in considerable synergies and further strengthens Ranbaxy’s foothold in South Africa. It reinforces our position by expanding our portfolio in a key market that is exhibiting strong growth potential. The move will help us to provide effective disease management solutions in support of the government’s objective to make healthcare affordable to a wider cross-section of the population.’

On the occasion, Desmond Brothers, CEO of Ranbaxy South Africa, said, ‘We are pleased with the acquisition of Be-Tabs. It is our clear intent to accelerate our growth in the local market. Ranbaxy with its India-centric advantage is well positioned to leverage these competencies and capture the synergies unleashed in the process, for the benefit of the South African market.’

Also speaking on the occasion, Dr Rashid Bhikha, Chairman Be-Tabs, said, ‘Ranbaxy’s stature as a global generic pharma player brings further credibility to Be-Tabs’ 30 year old rich heritage in South Africa and will take it to its next phase of growth.’

Ranbaxy
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