

Of microbes and machines

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Two themes from different ends of the evolutionary spectrum emerge in this month's issue of *Nature Clinical Practice Nephrology*.

Infectious micro-organisms are the subject of several articles. An overview of the pathogenesis, diagnosis and management of complications secondary to infection of kidney graft recipients with parvovirus B19 begins on page 540. Physicians should consider infection with this common human pathogen as part of the differential diagnosis of chronic anemia and other cytopenias in the post-transplantation period.

Immunosuppression increases the susceptibility of patients to opportunistic infections, but can also compromise the efficacy of vaccination. A Research Highlight on page 527 summarizes the comparative effects of calcineurin inhibitors (i.e. ciclosporin and tacrolimus) and the mTOR inhibitor sirolimus on responses of renal allograft recipients to influenza and pneumococcal vaccines. The study investigators conclude that vaccination guidelines established for patients receiving calcineurin inhibitors can also be applied to those receiving sirolimus.

Management of hyperinfection syndrome caused by a parasitic nematode that is endemic to tropical regions is the subject of this month's Case Study (page 573). The patient, who had rapidly progressive renal failure secondary to ANCA-positive crescentic glomerulonephritis, presented to a hospital in India with persistent fever, vomiting and dry cough. Examination of bronchoalveolar lavage and stool samples revealed *Strongyloides stercoralis* larvae.

Intravenous antibiotics were one type of treatment tested empirically in the patient with *Strongyloides stercoralis* hyperinfection. Current guidelines recommend injectable agents as first-line therapy for pediatric pyelonephritis. A randomized controlled trial of more than 500 children, reported in a Research Highlight on page 524, shows that a course of oral co-amoxiclav alone is as effective as parenteral ceftriaxone plus oral co-amoxiclav at preventing renal scarring. The cost of management and degree of patient

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discomfort could both be decreased by adopting the purely oral regimen.

Pyelonephritis often develops in response to anatomical abnormalities. From page 551, two urological and surgical specialists from Children's Hospital Boston present the facts that nephrologists need to know about primary vesicoureteral reflux. Different treatment options, the controversy surrounding optimum management, as well as pathophysiology, clinical presentation and initial work-up, and radiographic assessment, are all discussed.

From some of the simplest organisms that can contribute to renal disease, we move to some of the most complex man-made devices, engineered specifically to help overcome kidney dysfunction. Dialysis has long been the mainstay of the management of end-stage renal disease (ESRD). Unfortunately, its capacity—together with that of transplantation—is not satisfying the ever-increasing demand, and another 'great leap forward' is sorely needed. In this issue, Braam and colleagues provide a wide-ranging overview of technological innovations that have the potential to revolutionize ESRD management (page 564).

Until the promise of new approaches such as tissue engineering and artificial kidneys is realized, optimization of dialysis and allograft transplantation should be pursued. On page 526 is a report of an adapted hemodialysis machine that produces customized bicarbonate-based dialysate for use during continuous renal replacement. Now the primary source of dialysis solution for patients with acute renal failure at the Cleveland Clinic, this dialysate has been shown to be safe, efficacious and cost-effective.

Finally, another Research Highlight on page 527 summarizes the findings of a retrospective analysis of machine perfusion versus cold storage for the preservation of donated kidneys. Machine perfusion reduced the risk of long-term graft failure by more than 50%, despite these organs having been subjected to cold ischemia for longer.

SJ Farley is Editor of Nature Clinical Practice Nephrology.

Competing interests

The author declared no competing interests.

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