

## **Onco-Nephrology: the frontier of cancer and kidney disease**

Kidney problems can result from cancer or its treatment. Patients with kidney disease can develop cancer. These clinical problems are challenging and significantly affect morbidity and mortality. Yet until recently they have not had focused attention. Cancer and the Kidney and a recent review address this gap in the field sometimes called Onco-Nephrology.

Kidney function is a basic concern, because it defines whether a treatment may be used. Thus, for instance, cis-platinum cancer chemotherapy is avoided when the kidney function is half or less than normal. Thus, chronic kidney disease forces the Oncologist to use less-well-proven therapies, which in turn can lead to worse patient outcomes.

Kidney function affects handling of non-chemotherapy medications as well. The cancer patient with seemingly normal kidney function may suffer unexpected drug toxicities if his kidney function is not properly assessed.

Cancer chemotherapy toxicities are often greater when the baseline kidney function is lower. Adjusted drug dosing becomes an important issue for quality of life. Long-term toxicities may lead to permanent reduction in kidney function, which is a heavy price to pay for success in treating cancer. Chronic kidney disease as a long term late effect of cancer will become more common because cancer treatments can more often cure the cancers than they did in years past. But chronic kidney disease (CKD) causes increased morbidity and mortality. The most severe consequence of CKD is end-stage-renal-disease, i.e. the requirement for dialysis or kidney transplant to sustain life.

It is well-known that paraproteinemias such as multiple myeloma often cause acute and chronic kidney disease, even resulting in end-stage-kidney-disease. More effective treatments are being developed, including bortezomib and other medications. But many patients lose kidney function despite the best care – understanding the mechanisms of toxicity of the paraproteins is an urgent priority.

*Cancer treatment affected by kidneys*

- Kidney function in cancer patients
- Uncertain drug dosing in cancer treatment
  - Treatment toxicity
  - Impact on cancer cure rates

*Cancer damaging kidneys*

- Paraproteinemias
- Paraneoplastic syndromes
  - Malignant obstruction
    - Kidney cancer

There are fascinating but rare paraneoplastic complications of cancer including glomerular diseases that cause the nephrotic syndrome. Their reversal proves that the cancer caused the syndrome. Investigations of the pathophysiology of individual such cases could provide new insights to the mechanisms of glomerular diseases.

Knowing the significance of renal complications of cancer is important for patients and families. Thus, urinary tract obstruction occurring in a patient with previously resected colon cancer points to recurrent pelvic disease and a six-month prognosis.

But cancer is not only a cause of kidney problems, but can complicate kidney disease. Acquired cysts and cancers of native kidneys are becoming more frequent clinical problems, in part because people with chronic kidney disease are living longer than in years past. Cancers complicate kidney transplantation, and ongoing clinical studies are needed to define their proper management and the appropriate adjustment of immunosuppressive medication doses.

Kidney cancer itself is a paradigm for Onco-Nephrology. It often occurs in a patient with chronic kidney disease, its surgical treatment often is followed by reduction in kidney function, and the newer tyrosine kinase inhibitor treatments have distinct nephrotoxicity.

These and many more topics have prompted some Nephrologists to become sub-specialists in Onco-Nephrology, to The American Society of Nephrology has created an Onco-Nephrology working group and an international conference was convened earlier this year by Cancer and the Kidney International Network. These groups will define the pressing clinical priorities and work towards their solutions.

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## **Publication**

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