



# Onconeurophathology; an emerging field of medicine

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**Implication for health policy/practice/research/medical education:** Onconeurophathology is the study of the interaction between cancer and kidney disease. This field also focuses the ways in which kidney disease can influence cancer prognosis and treatment. Onconeurophathology is a multidisciplinary field that involves collaboration between nephrologists, oncologists, pathologists, and other healthcare professionals. Onconeurophathology is a rapidly evolving field, since ongoing research is necessary to better understand the complex interactions between kidney disease and cancer.

**Keywords:** Onconeurophathology, Glomerular diseases, Kidney disease, Acute kidney injury, Cancer, Immune checkpoint inhibitors, Nephrotoxicity, Tumor, Chronic kidney disease

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## Introduction

Onconeurophathology is a multidisciplinary field that involves collaboration between nephrologists, oncologists, pathologists, and other healthcare professionals (1). It encompasses the study of both primary and metastatic renal tumors, as well as the renal complications that can arise as a result of systemic cancer therapies such as chemotherapy and radiation therapy (2,3). Patients with cancer are at higher risk for developing kidney complications, such as acute kidney injury, electrolyte imbalances, and glomerular diseases like minimal change disease, membranous nephropathy, and focal segmental glomerulosclerosis (4,5). Understanding these relationships is essential in optimizing the care of patients with cancer who also have kidney disease. Onconeurophathology is a rapidly evolving field, and ongoing research is needed to better understand the complex interactions between kidney disease and cancer. One common example of onconeurophathology is the development of nephrotic syndrome in patients with solid tumors, lymphomas, or chronic myeloid leukemia (4,6). Nephrotic syndrome is a condition characterized by proteinuria, hypoalbuminemia along with edema (7). Several renal diseases are associated with nephrotic syndrome, including minimal change disease, membranous nephropathy, and focal segmental glomerulosclerosis

(8). Onconeurophathology also involves the study of the effects of cancer therapies on renal function. Some medications, such as cisplatin and other chemotherapy drugs, can cause acute kidney injury, while others may cause chronic kidney disease (9). Immune checkpoint inhibitors, an emerging class of immunotherapy drugs, can cause immune-related adverse events, including immune-mediated nephritis (10). Onconeurophathology is essential for optimizing cancer care in patients with kidney disease. It involves a comprehensive understanding of the complex interactions between cancer and renal function, as well as the development of new diagnostic and treatment strategies to improve patient outcomes. Some key areas that may be covered in by onconeurophathology include:

*Nephrotoxicity of cancer drugs:* This would involve a detailed analysis of the different classes of drugs used to treat cancer and their potential for causing kidney damage (9,11).

*Glomerular diseases associated with cancer:* Some cancers are associated with specific glomerular diseases, such as membranous nephropathy and minimal change disease (12,13). One of the most common examples of onconeurophathology is called paraneoplastic glomerulonephritis. This condition occurs when the immune system attacks the kidneys in response to

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a cancerous tumor in another part of the body (14). Other types of onconephropathology include renal cell carcinoma-associated nephropathy and thrombotic microangiopathy (15,16).

*Acute kidney injury and cancer:* Acute kidney injury is a common complication in cancer patients, often related to dehydration, sepsis, or obstructive nephropathy (17,18).

*Chronic kidney disease and cancer:* Chronic kidney disease is a risk factor for some types of cancer, since cancer treatments can also lead to chronic kidney disease (19,20).

Diagnosis of onconephropathology involves a thorough medical history, physical examination, and laboratory tests such as blood and urine tests. Imaging studies such as computerized tomography scan and magnetic resonance imaging may also be conducted to identify any tumors or abnormalities in the kidneys (21,22).

Treatment for onconephropathology depends on the underlying cause of the kidney disease. In some cases, treating the cancer may also improve kidney function. Other treatments may include medications to control blood pressure and reduce inflammation in the kidneys (23).

## Conclusion

Onconephropathology is an important area of study for understanding how cancer can affect kidney function. Early diagnosis and treatment are crucial for improving outcomes for patients with these conditions.

## Authors' contribution

Conceptualization: AGh and FB.

Validation: MA.

Investigation: MS

Resources: MB.

Data curation: NP and Akh.

Writing—original draft: MB, MS, MA, and AGh.

Writing—review and editing: NP, AKh, and FB.

Visualization: Akh.

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The authors declare that they have no competing interests.

## Ethical issues

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