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Renal Adverse Effects of Interferon-α

Interferon-α is a natural cytokine with the ability to influence cell proliferation and differentiation. In the past 2 decades, interferon has become an important tool in the treatment of several viral and malignant diseases, such as chronic hepatitis B and C virus infections, hairy cell leukaemia, follicular lymphoma, chronic myelogenous leukaemia, liver metastases of carcinoid tumour, recurrent and metastatic renal cell carcinoma, AIDS-related Kaposi's sarcoma and as an adjunct to surgery in malignant melanoma. The most frequent adverse effects with interferon-α are an influenza-like syndrome, hypotension, anorexia and leukopenia. Although mild proteinuria and a slight increase of serum creatinine levels can be found in approximately 15% of patients, serious renal adverse effects are rare.

Acute renal failure and consequent nephrotic syndrome have been described when interferon-α was used in the treatment of chronic myelogenous leukaemia.[1-4] The predominant lesion discovered on renal biopsy was thrombotic microangiopathy (two cases),[2,4] although focal segmental glomerulosclerosis[3] and focal segmental mesangial proliferation[1] were also noted. It was proposed in one of these reports that in the context of chronic myelogenous leukaemia, interferon-α treatment can induce pathogenic antiphospholipid antibodies that result in renal thrombotic microangiopathy,[4] but this remains to be confirmed. Interferon-α is also known to cause induction of multiple autoantibodies;[2] the immunological reaction, which results in deposits of immune complexes in the glomerules, could also be responsible for acute renal failure and nephrotic syndrome.

Interferon-α also causes renal adverse effects when used for the treatment of hepatitis B or C virus infections. However, the main adverse effect is nephrotic syndrome with membranous glomerulonephritis in the biopsy specimens. The association of acute renal failure with consequent nephrotic syndrome is never seen with interferon use in this setting.[5-8] In addition, there are no available reports on isolated acute renal failure after interferon-α use in viral diseases. It seems that interferon-α in different settings (chronic myelogenous leukaemia or viral hepatitis) produces different adverse reactions in the kidneys, with probably different mechanisms.

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