Nonoliguric Acute Renal Failure in Non-Hodgkin's Lymphoma

V.	Vijay	Kher
R.	Rakesh	Pandey
K.	Keshav	Sadhwani
A.	Amit	Gupta
R.K.	Raj K.	Sharma

Departments of Nephrology and Pathology, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, India

Dr. Vijay Kher, Department of Nephrology, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow 226001 (India)

Dear Sir,

The kidney represents one of the most common extranodal sites of metastatic lymphoma [1, 2]. However, renal failure, whenever present, is a late and rare manifestation of lymphomatous process [3, 4], but renal failure as a presenting manifestation due to lymphomatous infiltration of the kidneys is unusual [5, 6]. We report a case with nonoliguric acute renal failure as a presenting manifestation caused by diffuse infiltration of non-Hodgkin's lymphoma in both kidneys.

A 19-year-old male was admitted to our hospital with a 2-month history of fever, anorexia, and vomiting. Serum creatinine and serum urea done prior to admission were 7.7 mg/dl (680.7 $\mu\text{mol/l}$) and 165 mg/dl (58.90 $\mu\text{mol/l}$), respectively. There was no history of nephrotoxic drug intake. Physical examination revealed an ill-looking restless and irritable boy who was pale, normotensive, afebrile and anicteric. The lungs were clear and cardiac examination was normal. There was no organomegaly. Laboratory tests revealed a hemoglobin concentration of 8.6 g% (869 $\mu\text{mol/l}$) with ESR 45 mm/h and normal total and differential white cell counts. Urinalysis showed a specific gravity of 1,010 and 1 + protein. Urinary protein excretion was 0.279 g/day. The sediment contained few red cells, numerous leukocytes and no casts. Urine culture was negative. Urine osmolality was 288 mosm/kg and plasma osmolality was 280 mosm/kg. Urinary FENa was 1.9%. The peak serum creatinine and urea concentrations were 16.9 mg/dl (1,493.9 $\mu\text{mol/l}$) and 375 mg/dl (133.8 mmol/l), respectively. Endogenous creatinine clearance was 6.5 ml/min (0.108 ml/s). Serum sodium 132.9 mmol/l, potassium 5.12 mmol/l, calcium 9.4 mg/dl (2.34 mmol/l), phosphorus 9.72 mg/dl (3.14 mmol/l), albumin 43 g/l and uric acid 11.6 mg/dl (689.9 $\mu\text{mol/l}$). Blood glucose and liver function tests were normal. C3 was normal and ANA was negative. Chest X-ray did not reveal any mediastinal enlargement. Abdominal sonography revealed bilateral diffusely enlarged kidneys (size 16 cm) with increased echogenicity of the renal cortex. Histological examination of percutaneous renal biopsy revealed a markedly widened interstitium due to dense and diffuse infiltration by small round to oval cells having hyperchromatic nuclei, and only a very thin rim of pale blue cytoplasm. Intermixed with these were somewhat larger cells with partially distorted to collapsed

and cleaved nuclear membranes. At places, these cells were seen infiltrating glomeruli and tubules leading occasionally to degenerative and necrotic glomerulo-tubular changes. Cytological appearances were consistent with diffuse lymphocytic lymphoma of intermediate differentiation (centrocytic-lymphocytic). Computerized tomography of the abdomen, done after the renal histology report was available, revealed paraortic lymphadenopathy and an ill-defined space-occupying lesion in the spleen. Thorax CT showed enlarged lymph nodes in the superior mediastinum anterior to the major vessels. The patient was treated with monthly courses of intermittent combination chemotherapy consisting of vincristine (1.4 mg/m² i.v. on the 1st and 8th day), cyclophosphamide (650 mg/m² i.v. on the 1st and 8th day), procarbazine (100 mg/m² p.o. 1-14 days) and prednisolone (40 mg/m² p.o. 1-14 days). A rapid improvement in renal function was observed: serum creatinine decreased to 1.1 mg/dl (97.24 μmol/l), serum urea decreased to 54 mg/dl (19.28 mmol/l) and serum uric acid decreased to 6.4

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mg/dl (380.67 μmol/l). Within 3 weeks of treatment, the patient became normal clinically. He received 6 such courses. Follow-up sonography of the kidneys revealed a reduction of the enlarged kidney size from 16 to 11 cm with normal echogenicity. Six months later, the patient was doing well with serum creatinine 1.0 mg/dl (88.40 μmol/l) and blood urea 44 mg/dl (15.7 mmol/l). Repeat CT scan showed resolution of lymph nodes in the mediastinum and abdomen. Infiltration of kidneys in non-Hodgkin's lymphoma is commonly found at autopsy, but renal impairment attributed to this is rare [1]. The incidence of renal insufficiency and uremia in lymphoma ranges between 3.8 and 14% [4]. Renal involvement is almost always a manifestation of disseminated neoplasia. Glicklich et al. [7] reported 3 cases of renal failure due to lymphomatous infiltration of the kidneys and reviewed 14 other such cases reported in the literature till 1986. Non-Hodgkin's lymphoma was the predominant histologic type (n = 15/17) whereas 2/17 patients had Hodgkin's disease. In 4 cases the diagnosis of lymphoma was made only by renal biopsy.

Our case is unusual in that peripheral lymphadenopathy, hepatosplenomegaly or a mass in the abdomen, which are common physical findings in such patients, were absent. The presentation in this case was such that clinically, we could not suspect lymphoma and the diagnosis was made only on kidney biopsy. Subsequently, however, CT scan did reveal enlargement of abdominal and thoracic lymph nodes. In this case, we could not find any other cause for the rapid decline in renal function like hydronephrosis, hypercalcemia or urate nephropathy. Non-oliguric acute renal failure in this patient was caused by lymphomatous infiltration of the renal parenchyma as confirmed on renal histology, and a rapid and complete normalization of renal function and clinical status occurred after the institution of combination chemotherapy, with normalization of kidney size and architecture as revealed on ultrasound. The mechanism of renal failure with diffuse infiltration is not known; Suki [8] speculated that dense tumor infiltration of the kidney parenchyma may cause compression of the tubular lumen producing intrarenal obstruction, since histologically, the tubules are compressed, the epithelium is flattened but the tubular basement membrane is intact. In conclusion, rapidly progressive nonob-structive, nonoliguric renal failure with enlarged kidneys may be considered as a rarely presenting manifestation of non-Hodgkin's lymphoma.

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