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"Clinical Profile of Acute Kidney Injury in Cancer Patients"

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Abstract:
Background: *Acute Kidney Injury (AKI) is a common and serious complication in patients with cancer. It causes interruption in therapy, increased hospital stay, cost and mortality. The development of cancer-associated kidney complications is associated with poor prognosis, whereas prompt recognition and initiation of treatment are associated with improved outcomes in this population.*
Material & Methods: *A total of 230 cancer patients admitted in Father Muller Medical College & Hospital over a period of 6months were studied.*
Results: *Of 230 patients, 26 (11.3%) who had renal dysfunction, were studied; their mean age was 55.61±12.706 years; 18 patients (75%) had solid tumors and 8 (25%) had hematologic malignancies. Acute renal dysfunction was multifactorial in 30.8% of the patients, and the main associated factors were hypovolemia (38.5%), sepsis (30.8%) and hypercalcemia (23.1%). Renal function completely improved in 21 patients, four required chronic dialysis and 1 patient died. Patients with age more than 60 years, uncontrolled cancer, and more than two associated risk factors had poor outcomes.*
Conclusions: *Acute renal dysfunction is a serious complication in patients with cancer. When evaluating prognosis in these patients, older age, cancer status and the severity of associated organ dysfunction are important variables to take into consideration.*
Keywords: *Acute kidney injury, cancer, onconephrology*

I. Introduction

Onconephrology is an emerging discipline that covers the interrelations between cancer and kidney diseases (1). Acute kidney injury (AKI) is a common complication in patients with cancer, and indeed certain clinical entities, such as tumor lysis syndrome and syndrome of inappropriate antidiuretic hormone have close associations with cancer (2). With the wider use of chemotherapeutic regimens and targeted therapies, the link between kidney disease and cancer has unfortunately become stronger. Not only is cancer often associated with abnormalities that affect the kidney, but renal dysfunction itself cause interruptions in therapy and increased hospital length of stay, cost, and mortality(3).

A sound knowledge and understanding about the aetiology and risk factors leading to AKI in these patients will help to devise various interventions at appropriate times and improve the overall outcome. To our knowledge no studies were available on Indian population, thus this study is undertaken to evaluate the clinical profile of AKI in cancer patients of Dakshina Karnataka.

II. Aims And Objectives

To assess the
1) Clinical profile of AKI in cancer patients
2) Incidence of AKI in cancer patients

III. Materials And Methods

Study design: Cross-sectional study

Source of data & Period of study: The data was included from the medical records in Father Muller Medical College Hospital from Jan 2016 to Jun 2014.The study population includes cancer patients admitted in Father Muller Medical College & Hospital who satisfy the inclusion criteria. Sample size was 230.

Methodology: Standard demographic data (age, gender, & occupation) was obtained from all participants enrolled. Clinical data include the admitting diagnosis, presence of co-morbidities (hypertension, diabetes mellitus & coronary artery disease). The data on renal function includes urine microscopy, blood urea, serum creatinine, serum electrolytes, serum calcium, serum bicarbonate, serum phosphorous.

IV. Statistical Analysis

Data was analyzed by frequency, percentage, mean, standard deviation.

Inclusion Criteria

(1) Patients admitted in oncology department with increase in serum creatinine of ≥0.3mg/dl from baseline, or a percentage increase in the serum creatinine ≥50% within 48hrs or oliguria of less than 0.5ml/kg per hour for more than 6hrs.

(2) Patients with age ≥18yrs.

Exclusion Criteria

(1) Patients with Chronic kidney disease on dialysis

V. Results

A total of 230 cancer patients were admitted in oncology wards of Father Muller medical college hospital during the study period. Results are as follows

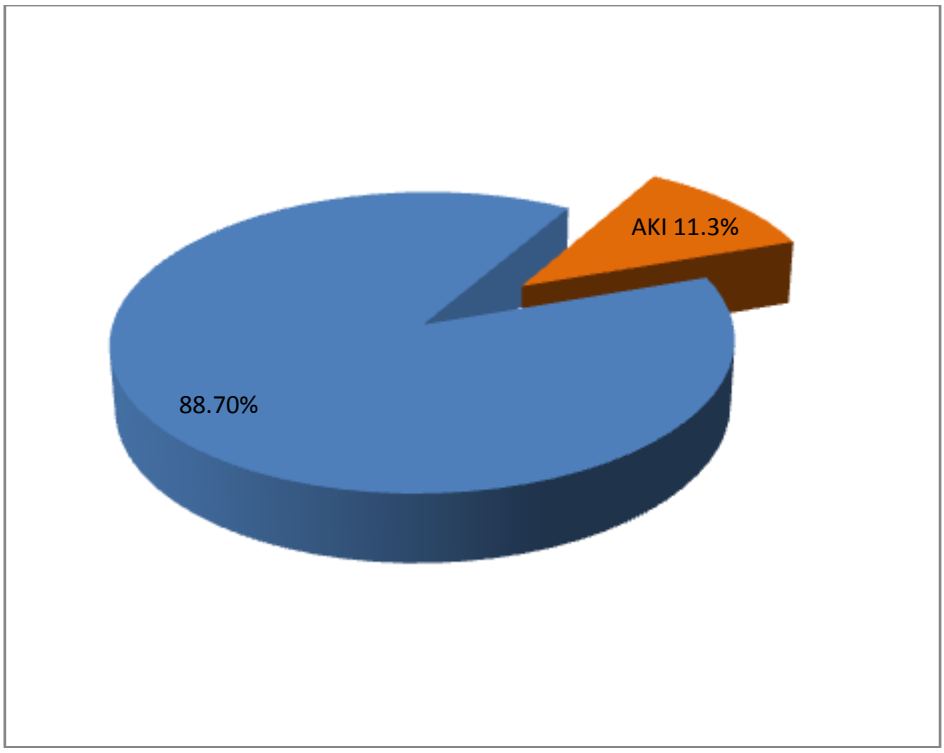

Figure 1: occurrence of AKI

AKI accounted for 11.3% (26) of the cancer patients admitted during study period.

Age Distribution:

AGE	NUMBER OF PATIENTS	PERCENTAGE
40 and below	2	7.70%
41-60	13	50.0%
Above 60	11	42.30%

Table 1: Age Distribution

The predominant age group of patients with AKI in this study was between 41 to 60 years of age and the mean age was 55.61 years as shown in table 1

Sex Distribution:

Sex distribution of patients	No. of patients	%
Males	16	61.5
Females	10	38.5
Total	26	100

Table 2: Sex Distribution of patients

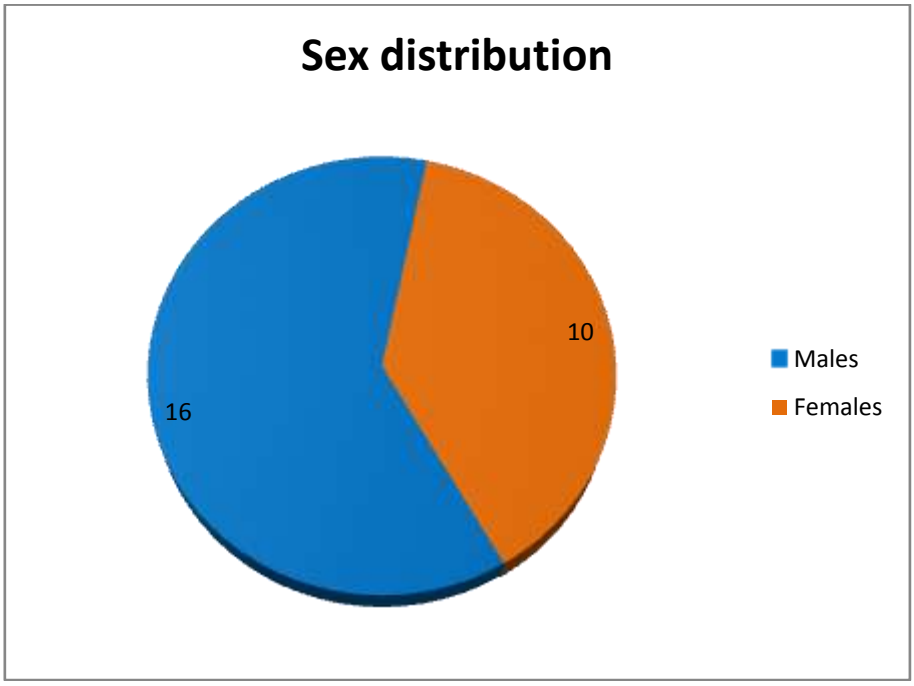

Figure 2: Sex Distribution of patients

Among 26 patients who were studied 61.5% were males and 38.5% were females. The male to female ratio was1.6:1.

Admission Diagnosis:

MALIGNANCY	**NUMBER**
BREAST CANCER	1
BLADDER CANCER	2
CARCINOMA TONGUE	2
CARCINOMA ESOPHAGUS/ PANCREAS	3/ 1
CERVICAL CARCNOMA/ ENDOMETRIAL CANCER/ OVARIAN CARCINOMA	2/ 1 / 1
LEUKEMA	3
LYMPHOMA	1
LUNG CANCER	2
MULTIPLE MYELOMA	4
PROSTATE CANCER	2/
RENAL CELL CARCINOMA	1

Table 3: Admission diagnosis

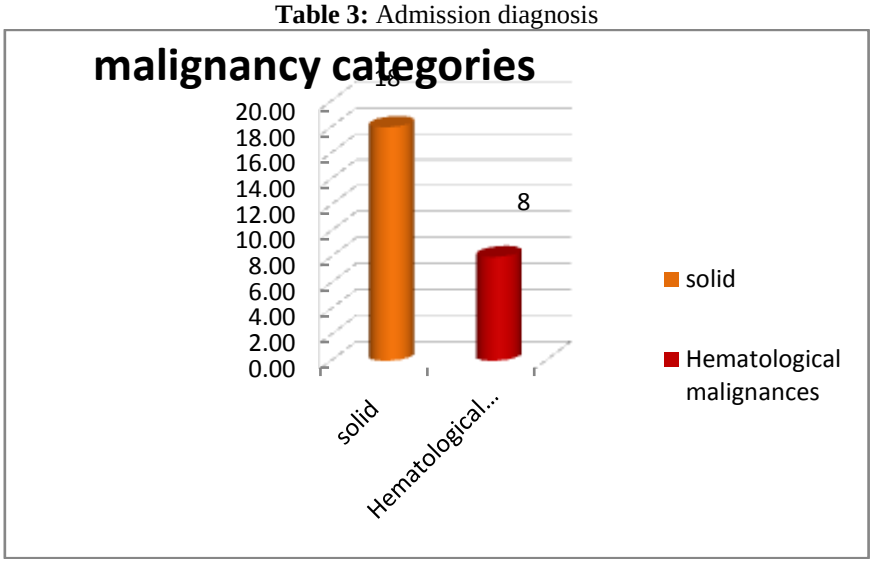

Figure 3: Type of Malignancy in AKI patients

The predominant type of malignancy in patients with AKI in this study was solid tumors (69.2%).

CAUSE OF AKI:

	Number	%
Sepsis	8	30.8
Hypovolemia	10	38.5
Multiple myeloma	4	15.4
Urinary tract obstruction (cancer related)	6	23.1
Acute tumor lysis syndrome	2	7.7
Hypercalcemia	6	23.1

Note: A Patient could have more than one factor

Table 4: Causes of Acute Kidney Injury (N= 26)

Commonest causes for AKI were hypovolemia (38.5%), sepsis (30.8%) and hypercalcemia (23.1%).

VI. Discussion

The association between kidney disease and cancer has been long recognized. With the wider use of chemotherapeutic regimens and the introduction of many targeted therapies, the link between kidney disease and cancer has unfortunately become stronger. Not only is cancer often associated with abnormalities that affect the kidney, but cancer therapy often leads to both acute and chronic kidney injury.[4]

In this study it was found that the incidence of AKI was 11.3 %, which was comparable to a recent analysis of 3560 patients admitted to the University of Texas M.D. Anderson Cancer Centre in Houston over 3 months which revealed an incidence rate of AKI of 14.5%.[5] In a study done by Soares et al, among 975 patients, 309 (32%) had renal dysfunction[6].

In present study of 26 cancer patients with AKI, 75% had solid tumors and 25% had hematologic malignancies. In SOAP study, of 473 patients with cancer malignancy, 85 % solid cancer, and 15 % haematological cancer.[7]

Sepsis is the most common cause of AKI in patients with cancer. [8] Cancer has been reported in about 17% of medical admissions associated with sepsis. [9]This study showed, common cause of AKI was multifactorial in 30.8%, followed by hypovolemia (38.5%), sepsis (30.8%) and hypercalcemia (23.1%); all of the patients requiring dialysis and one who died presented with septic shock. Soares et al, [6] in their study showed

renal dysfunction was multifactorial in 56% of the patients, and the main associated factors were shock/ischemia (72%) and sepsis (63%).

In study done by Soares et al, there was complete recovery of renal function in 82% and partial recovery in 12%, and chronic dialysis was needed in only 6% of patients. [6] In this study renal function completely improved in 80.7% patients and 15.4% required chronic dialysis.

VII. Conclusion

AKI is a complication in cancer patients that results from various causes, including metabolic disturbances secondary to the sepsis, tumor burden, renal infiltration by malignant cells and drug-induced toxicity.Thorough evaluation to assess for general and cancer-related etiologies can assist in managing the patient in best possible way. When evaluating prognosis in these patients, older age, cancer status and the severity of associated organ dysfunction are important variables to take into consideration.

References

[1]. Salahudeen AK, Bonventre JV Onconephrology: the latest frontier in the war against kidney disease. J Am Soc Nephrol 2013;24(1):26–30
[2]. Schwartz WB, Bennett W, Curelop S, Bartter FC: A syndrome of renal sodium loss and hyponatremia probably resulting from inappropriate secretion of antidiuretic hormone. Am JMed1957;23: 529–542
[3]. Lameire NH, Flombaum CD, Moreau D: Acute renal failure in cancer patients. Ann Med 2005;37:13-25
[4]. Perazella MA, Moeckel GW: Nephrotoxicity from chemotherapeutic agents: Clinical manifestations, pathobiology, and prevention/therapy. Semin Nephrol 2010; 30: 570–581,
[5]. Salahudeen AK, Doshi S, Pawar T, Gul N, Lahoti A, Shah P: Incidence rate, clinical correlates and outcomes of acute kidney injury in patients admitted to a comprehensive cancer centre. Clin J Am Soc Neph 2013; 8: 347–354
[6]. Soares M, Salluh JI, Carvalho MS, Darmon M, Rocco JR, Spector N: Prognosis of critically ill patients with cancer and acute renal dysfunction. J Clin Oncol 2006;24: 4003–4010
[7]. Taccone FS, Artigas AA, Sprung CL, Moreno R, Sakr Y, Vincent JL. Characteristics and outcomes of cancer patients in European ICUs. Crit Care. 2009; 13:15.
[8]. Benoit DD, Hoste EA. Acute kidney injury in critically ill patients with cancer. Crit Care Clin. 2010; 26:151-179.
[9]. Danai PA, Moss M, Mannino DM, Martin GS: The epidemiology of sepsis in patients with malignancy. Chest 2006; 129: 1432-40.