

Case Report on Acute Kidney Injury

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Abstract: Acute kidney injury is characterized by abrupt deterioration in kidney function, which is manifested by an increase in serum creatinine level with or without reduced urine output. The spectrum of injury ranges from mild to advanced, sometimes requiring renal replacement therapy. The diagnostic can be used to classify as prerenal, intrinsic renal, or post renal. The initial workup includes a patient history to identify the use of nephrotoxic medications or systemic illnesses that might cause poor renal perfusion or directly impair renal function. It should include measurement of serum creatinine level, complete blood count, urinalysis, and fractional excretion of sodium. Ultrasonography of the kidneys should be done in most patients, particularly in older men, to rule out obstruction. Management involves fluid resuscitation, avoidance of nephrotoxic medications and contrast media exposure, and correction of electrolyte imbalances. Renal replacement therapy (dialysis) is indicated for refractory hyperkalemia. Recognition of risk factors (e.g., older age, sepsis, hypovolemia /shock, cardiac surgery, infusion of contrast agents, diabetes mellitus, pre-existing chronic kidney disease, cardiac failure, liver failure) is important. Team-based approaches for prevention, early diagnosis, and management are critical for improving its outcomes. A 37 years old female admitted with complain of decreased urine output, fever and abdominal pain whose blood sample sent for biochemical analysis showed very high values of urea and creatinine. Urine culture shows high value of pus cells and sugar positive. By analysing this case we discuss the clinical features, diagnosis, cause and treatment of acute kidney injury.

Keywords: hyperkalemia , hypovolemic shock , nephrotoxic medications

INTRODUCTION

Acute kidney injury (AKI), previously called acute renal failure (ARF), is an abrupt loss of kidney function develops within 7 days [1]. There are number of causes. Generally it occurs because of damage to the kidney tissue caused by decreased kidney blood flow (kidney ischemia) from any cause (e.g., low blood pressure), exposure to substances harmful to the kidney, an inflammatory process in the kidney, or an obstruction of the urinary tract that impedes the flow of urine. AKI is diagnosed on the basis of characteristic laboratory findings, such as elevated blood urea nitrogen and creatinine, or inability of the kidneys to produce sufficient amounts of urine [2]. This can occur in the setting of previously normal renal function or in patients with pre-existing renal disease (acute on chronic kidney disease). Recently it has been recognised that even very small increases in serum creatinine are associated with adverse patient outcomes [3]. It is detected and monitored by serial serum creatinine readings primarily, which rise acutely. Urine output and eGFR fall, and may be used for detection and monitoring of the condition.

CASE REPORT

A 37 years old female was admitted with complain of decreased urine output since 4 days, while

fever and abdominal pain since 8 days. There is h/o B/L leg swelling, facial puffiness, breathlessness and generalised body ache. On General examination he was conscious, oriented and co-operative. Afebrile, vitals are normal. Local examination is found to be normal. His blood sample was taken and sent for biochemical analysis where urea and creatinine found to be very high. On urine culture, pus cells high with albumin and sugar positive.

Lab investigations

CBC : Haemoglobin - 9.4gm% , TLC-14900, P-90% L6% E-5%, RBC -3.56 million, MCV- 85.4 fl, MCH- 27.2pg, MCHC- 31.98, Platelet – 229000
RFT: Urea – 174mg % , Creatinine – 7.8mg%, Na- 137Meq/L, K- 4.3Meq/L,
Blood sugar – 129mg %
Urine routine: - Pus cells 9-12/hpf, RBC nil, Albumin + , Sugar +,
24 hour urine protein- 364mg
Peripheral smear for MP Neg., Mf Neg. , Widal Neg , MSAT Neg. , Dengue for IgM Neg.
CXR – NAD, ECG – WNL, Viral Markers Neg.
Urine culture – 75000 CFU/ml

Ultrasonography Abdomen:
Rt. Kidney – 13 cm * 6.4cm

Lt. Kidney – 13cm * 7.2cm
Increased cortical echotexture.

Treatment

- The first step is to treat with antibiotics for 14 to 21 days. Antibiotics are selected according to results of urine analysis for culture and sensitivity and may also include broad spectrum medications.
- Monitoring of kidney function, by serial serum creatinine measurements and monitoring of urine output, is routinely performed.
- Patients with acute kidney injury generally should be hospitalized unless the condition is mild and clearly resulting from an easily reversible cause. The key to management is assuring adequate renal perfusion by achieving and maintaining hemodynamic stability and avoiding hypovolemia.
- Ampicillin or Vancomycin can be combined with an aminoglycoside.
- Adequate fluids at least 8oz. glasses per day.
- Urinary analgesic such as Phenazopyridine (Pyridium) is helpful.
- Follow up urine culture is indicated.

DISCUSSION

Acute kidney injury is increasingly seen in primary care in people without any acute illness, and awareness of the condition needs to be raised among primary care health professionals [4]. Acute kidney injury is seen in 13–18% of all people admitted to hospital, with older adults being particularly affected [3, 4]. It emphasises early intervention and stresses the importance of risk assessment and prevention, early recognition and treatment. The incidence of acute kidney injury has increased in recent years, both in the community and in hospital settings. The estimated incidence of acute kidney injury is two to three cases per 1,000 persons [4]. Seven percent of hospitalized patients and about two-thirds of patients in intensive

care units develop acute kidney injury, often as part of the multiple organ dysfunction syndromes [5, 6].

CONCLUSION

Because of the morbidity and mortality associated with acute kidney injury, it is important for primary care physicians to identify patients who are at high risk of developing this type of injury and to implement preventive strategies. Close monitoring of urinary output and creatinine levels for these patients allows early detection. Avoidance of nephrotoxic drugs and iodinated contrast agents in these patients will reduce the risk of them developing AKI. All acutely ill patients in hospital should be closely monitored for signs of developing acute kidney injury.

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