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COMMENTARY

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Causes of Acute Kidney Damage and Treatments

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DESCRIPTION

An abrupt decline in kidney function that occurs within 7 days is known as acute kidney injury (AKI), also known as acute renal failure (ARF). This condition is indicated by a rise in serum creatinine or a decrease in urine output, or both. AKI is caused by prerenal, intrinsic renal or post renal causes. Sepsis, dehydration, severe blood loss, cardiogenic shock, heart failure, cirrhosis, and some medications, such as angiotensin-converting-enzyme inhibitors (ACE) or nonsteroidal anti-inflammatory drugs (NSAIDs), are some of the prerenal causes of AKI. Acute tubular necrosis, glomerulonephritis, lupus nephritis, some medications, and chemotherapeutic drugs are some of the intrinsic renal causes of AKI. Kidney stones, bladder cancer, neurogenic bladder, enlarged prostate, narrowed urethra, and some drugs like anticholinergics are among the post renal causes of AKI.

Treatment

The underlying cause must be found and treated in order to manage AKI. Preventing cardiovascular collapse and mortality and requesting specialized counsel from a nephrologist are the primary goals of initial care. Management of AKI typically involves avoiding nephrotoxins, or chemicals poisonous to the kidneys, in addition to treating the underlying illness. NSAIDs like ibuprofen or naproxen, iodinated contrasts like those used in a computed tomography scan (CT), several antibiotics like gentamicin, and a variety of other drugs are among them. Intravenous fluid injection is often the first approach to restore kidney function in prerenal AKI without fluid excess. To prevent over- or under-replacement of fluid, volume status may be checked using a central venous catheter.

Drugs that raise blood pressure, such as norepinephrine, and in some cases, medications that improve the heart's ability to pump, such as dobutamine, may be administered to improve blood flow to the kidney if low blood pressure persists after giving a person enough intravenous fluid. Despite being a helpful vasopressor, there is little proof that dopamine has any particular advantages and it might even be harmful. Specific treatments are needed for the various causes of intrinsic AKI. For instance, steroid therapy, cyclophosphamide, and plasma exchange may be effective treatments for intrinsic AKI brought on by vasculitis or glomerulonephritis. The treatment for toxin-induced prerenal AKI frequently involves stopping the offending substance, such as ACE inhibitors, ARB antagonists, aminoglycosides, penicillin, NSAIDs, or paracetamol. Diuretics like furosemide are frequently used and can be useful in treating fluid overload. It has no relation to increased mortality, decreased mortality, or duration of stay in an ICU or hospital.

Providing relief from the obstruction may be required if the reason is urinary tract obstruction. Some AKI instances may require the initiation of renal replacement therapy, such as hemodialysis. The use of intermittent (IRRT) and continuous renal replacement therapy is possible (CRRT). The findings of the studies comparing CRRT and IRRT's effects on outcomes are mixed. Continuous venovenous hemofiltration and intermittent hemodialysis did not produce any different results, according to a systematic review of the literature (CVVH). When compared to intermittent hemodialysis, which is less intensive, intensive renal replacement therapy with CVVH does not appear to enhance outcomes for critically sick patients. In contrast, some clinical and health economic studies showed that starting CRRT in patients with acute renal injury was more cost-effective than IRRT and was related with a lower chance of chronic dialysis.

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