Global perspective of acute kidney injury in Onco-Nephrology

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ABSTRACT

Introduction: Cancer patients have an increased risk of developing acute kidney injury (AKI) either because of their multiple comorbidities or because of their greater exposure to nephrotoxic drugs. Although AKI has an impact on the survival and treatment of cancer patients, the literature does not provide a global perspective of AKI in this population. The primary outcome of this study is to characterize the population of inpatient cancer patients who had AKI requiring regular observation by a nephrologist. The secondary outcome consists of identifying the predictors for developing AKI requiring dialysis, as well as the predictors of mortality.

Methods: Retrospective study that included cancer patients hospitalized at Instituto Português de Oncologia Porto between 1995 and 2020 with AKI stage 2 or higher of the KDIGO classification and in need of regular observation by a nephrologist.

Results: In the last 25 years, there were 2751 patients with AKI. Most (56.9%) were male, with a mean age of 66.4 ± 12.9 years. Genitourinary cancer was the most frequent (32.5%, n=893), followed by hematologic (26.6%, n=731) and gastrointestinal (23.3%, n=641) cancer. The most common etiologies of AKI were post-renal (28.5%, n=783), associated with sepsis (23.8%, n=654) and pre-renal/ischemic acute tubular necrosis (22.7%, n=625). Nephrotoxicity (20.3%, n=559), AKI associated with monoclonal gammopathy (5.3%, n=145) and tumor lysis syndrome (2.4%, n=65) were less frequent. Overall, 20.5% (n=572) needed to start dialysis. Predictive factors for initiation of dialysis were invasive ventilation (OR 5.4 [3.4 – 8.7]) and hematologic malignancy (OR 2.2 [1.5-3.2]). In-hospital mortality was 26.5% (n=740). Risk factors for mortality were need for continuous (4.3 [2.8 - 6.7]) or intermittent (OR 2.5 [1.6 - 3.8]) dialysis, invasive ventilation (3.5 [2.1-5.8]) and sepsis (OR 3.0 [2.1-4.3]).

Conclusion: In patients admitted to an Oncology Hospital, AKI is mainly of post-renal etiology, associated with sepsis or pre-renal/ischemic acute tubular necrosis. It appears that nephrotoxicity and tumor lysis syndrome are less frequent causes of AKI, which reflects the impact of the development of nephroprotection protocols. About a fifth of patients start dialysis. The development of AKI during hospitalization is associated with a high mortality rate.