

Epidemiological study of acute kidney injury in hospitalized patients with malignant tumors

Yuxin Nie^{1#}, Jiarui Xu^{1#}, Yanting Shi^{2#}, Yang Li¹, Yimei Wang¹, Wuhua Jiang¹,
Yeqing Xie¹, Jie Teng^{1,2}, Bo Shen¹, Xiaoqiang Ding^{1,2}

1. Department of Nephrology, Zhongshan Hospital, Fudan University, Shanghai, China;

2. Department of Nephrology, Xiamen Branch, Zhongshan Hospital, Fudan University, Xiamen, Fujian, China.



Introduction

Acute kidney injury (AKI) is one of the most common complications in patients with malignant tumors. This study intends to provide basis for further optimizing the prevention and treatment of malignant tumor related AKI by analyzing the clinical risk factors related to the occurrence and progression of malignant tumor related AKI.

Methods and Materials

The clinical data of all inpatients with malignant tumors in Zhongshan Hospital from January 1, 2019 to December 31, 2019 were collected retrospectively. The patients were divided into AKI group and Non AKI group according to the KDIGO guideline. AKI group was further divided into AKI-stage1 and critical AKI group (include AKI-stage2 and stage3). AKI group was also divided into community-acquired AKI and hospital acquired AKI. Multivariate logistic regression analysis was used to explore the clinical risk factors related to the incidence of AKI and AKI progression.

Methods and Materials

1. A total of 68379 patients were enrolled in this study, of which the incidence of AKI was 11.3% (n = 7734). The incidence of community-acquired AKI and hospital acquired AKI was 3.4% (n = 2367) and 7.8% (n = 5368). The incidence of critical AKI was 1.1% (n = 810). The incidence of AKI in urinary system tumors, hematological system tumors and digestive system tumors ranked the top three (26.1% vs 12.9% vs 11.9%).
2. Multiple logistic regression analysis showed that the risk factors for AKI progression included male, hypertension, heart failure, emergency hospitalized, malignancy-associated hematological, use of nephrotoxic drugs, surgical treatment, chemotherapy, interventional therapy, serum creatinine $\geq 115 \mu\text{mol/L}$, eGFR(60 - 89 ml / min / 1.73 m²), eGFR < 60 ml / min / 1.73 m², TBil $\geq 20.4 \mu\text{mol/L}$, ALB < 35 g / L, anemia, leukocyte elevation, hyponatremia, hypernatremia, hypokalemia, hypercalcemia.
3. After correcting electrolyte disorder, nephrotoxic drug use, abnormal liver function, anemia and leukocyte elevation, the incidence of AKI in patients undergoing surgery, chemotherapy and interventional therapy can be significantly reduced.
4. The mortality of AKI in male reproductive system tumors, head and neck tumors and female reproductive system tumors was the highest (7.0% vs 3.3% vs 3.1%). The mortality of AKI patients was 1.7%, that of non AKI patients was 0.0016%, that of hospital-acquired AKI patients was 2.1%, that of community-acquired AKI patients was 0.7%, and that of critical AKI patients was 7.4%.

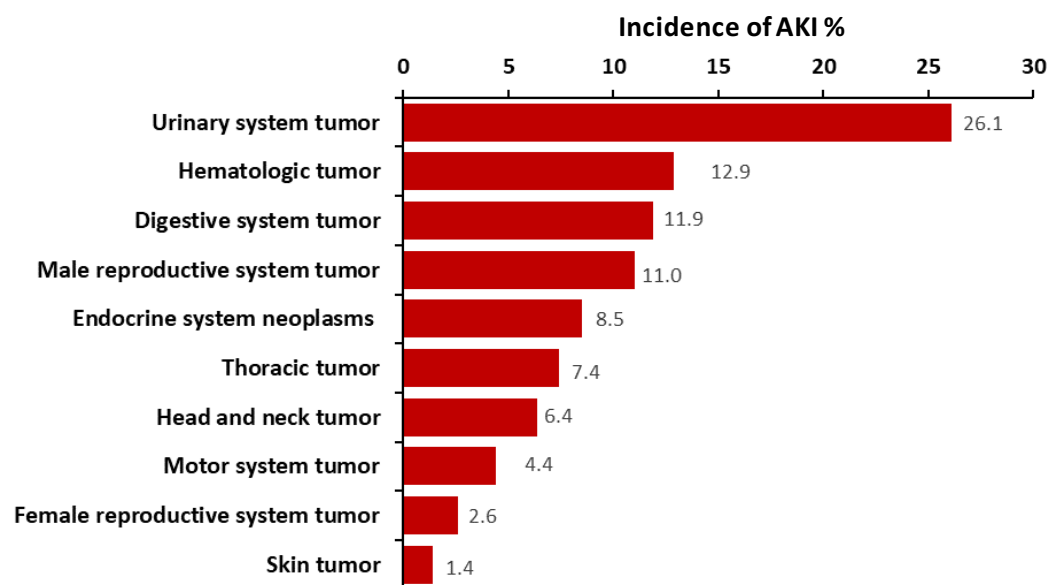


Figure 1: Incidence of AKI indifferent tumor type

Table 1: AKI risks in patients with and without modifiable factors

therapy (modifiable factors)	AKI number(%)	OR(95% CI)	p-value
surgical therapy (yes)	2356(19.2)	3.22(2.93-3.55)	< 0.001
surgical therapy (no)	562(6.9)	1	—
chemotherapy (yes)	3048(12.7)	2.08(1.90-2.27)	< 0.001
chemotherapy (no)	621(6.5)	1	—
interventional therapy (yes)	625(10.8)	1.78(1.51-2.09)	< 0.001
interventional therapy (no)	211(6.3)	1	—
radiation therapy (yes)	26(6.6)	1.94(0.90-4.22)	0.126
radiation therapy (no)	9(3.5)	1	—
palliative care (yes)	256(6.2)	1.45(0.91-2.32)	0.139
palliative care (no)	20(4.4)	1	—

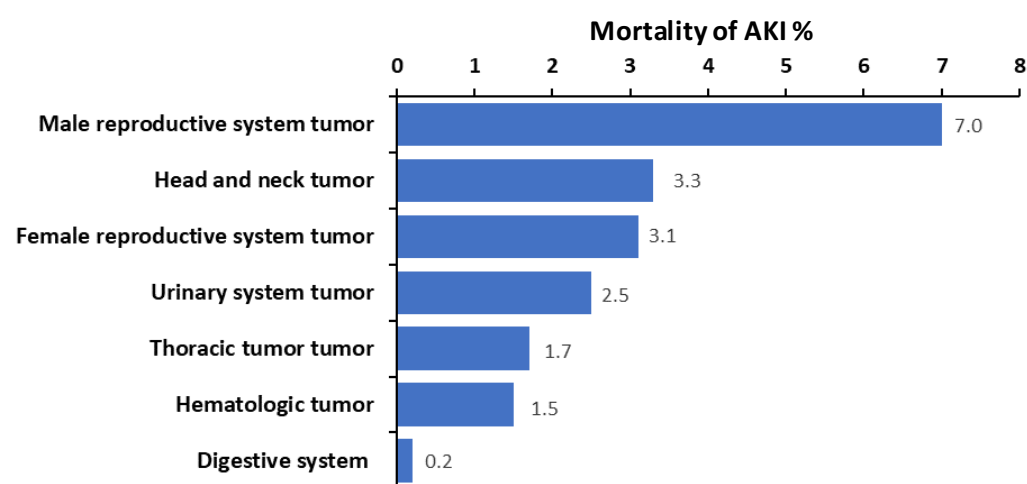


Figure 2: Mortality of AKI indifferent tumor type

Conclusions

Malignant tumor related acute kidney injury is related to many factors, such as male, age, tumor status, nephrotoxic drugs using, accompanying complications, electrolyte disorder, abnormal liver function, inflammation, anemia. Correcting the above risk factors is beneficial to prevent malignant tumor related acute renal injury.



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