

RHABDOMYOLYSIS AND ACUTE KIDNEY INJURY IN PATIENTS UNDERGOING PROLONGED HEAD AND NECK OPERATIONS

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INTRODUCTION

Rhabdomyolysis (RML) is defined as a clinical and biochemical syndrome caused by skeletal muscle necrosis resulting in the release of intracellular contents into the systemic circulation after revascularization of the damaged areas. It is related to prolonged immobilization and non-physiological surgical positions, with direct muscle compression on the operating table. The elevation of creatine kinase (CK) is the most sensitive indicator of muscle damage in RML. It is present in 100% of the cases. CK normal values vary between 45 and 190 U/L. The peak serum CK is on the fourth to seventh day after muscle injury, remained high until 12 days after injury. If not prevented, the diagnosis is delayed and treatment is not performed, several complications may occur, some potentially lethal, such as hyperkalemia, hypocalcemia, hyperphosphatemia, cardiac arrhythmias, disseminated intravascular coagulation, neural injury and acute kidney injury (AKI). Although there are some papers on the topic, the event has been hardly studied in operations to treat head and neck cancer.

PURPOSE

The aim of this study is to establish the incidence and the relationship between rhabdomyolysis and acute kidney injury (AKI) in patients undergoing prolonged head and neck operations.

PATIENTS AND METHODS

A retrospective study that included 78 patients undergoing head and neck tumor resections with a duration greater than 7 hours was performed at the Brazilian National Cancer Institute (INCA/MS/RJ). The diagnosis of rhabdomyolysis was established by increased serum creatinekinase (CK) 5 times greater than the normal value (>950U/l) in absence of cardiac or neurological injury.

RESULTS

The mean age was 52.8 years (range 6 to 81 years). Sixty-five percent were male. Sixty-five patients had malignant lesions and 84.7% were staged as T4. Resection of tumors from the oral cavity with microsurgical reconstruction was the most common procedure, accounting for 53.8%, followed by extended total maxillectomys (craniofacial access) with or without free flap reconstruction in 21.8%. The incidence of rhabdomyolysis was 83.3% (Table 1). Twenty-three percent of the patients had CK levels higher than 10,000 U/l (Table 2).

Table 1. Incidence of RML in 78 patients undergoing prolonged head and neck operations at INCA/MS/RJ.

Rhabdomyolysis	Absolut Frequency	Relative Frequency
Yes	65	83,3%
No	13	16,7%
Total	78	100,0%

Table2. Maximum serum levels of CK in 78 patients undergoing prolonged head and neck operations at INCA/MS/RJ.

CK-T Maximum	Absolut Frequency	Relative Frequency
< 951	13	16,7%
951 – 10.000	47	60,2%
> 10.000	18	23,1%
Total	78	100,0%

Of the 65 patients diagnosed with RML, 10 (15.4%) developed AKI during hospitalization. Higher levels of serum CK were related with higher renal dysfunction incidence. Of the 18 patients with CK levels over 10,000 U/l, 04 (22.2%) developed AKI while from 47 patients with CK levels between 951 and 10,000 U/l, 06 (12.8%) developed renal dysfunction (Table 3).

Table 3. Relationship between serum CK and AKI in 78 patients undergoing prolonged head and neck operations at INCA/MS/RJ.

CK (n)	AKI		No AKI	
	n	(%)	n	(%)
< 951 (13)	01	7,7%	12	92,3%
951 – 10.000 (47)	06	12,8%	41	87,2%
> 10.000 (18)	04	22,2%	14	77,8%
Total	11		67	

Ninety percent of the patients who developed AKI recovered renal function with creatinine levels similar to preoperative values. Three patients required dialysis. There were no deaths related to renal injury.

CONCLUSION

Rhabdomyolysis and AKI are potentially serious complications after prolonged surgery and frequently presented themselves as a high incidence in this study. To identify the factors is very important in preventing their occurrence, therefore, with accurate and proper guidance, there is the tendency these serious complications to decrease in these patients. New prospective studies with larger numbers of patients are needed to identify the risk factors and to prevent its occurrence.