Postoperative anaemia and acute kidney injury: a retrospective study in major orthopedic surgery

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BACKGROUND AND GOAL OF THE STUDY

Acute kidney injury has been correlated with perioperative anaemia possibly due to less oxygen transport capacity.¹ The aim of this study was to **examine the association between postoperative anaemia and acute kidney injury in major orthopedic surgery.**

MATERIALS AND METHODS

Retrospective analysis, with Local Ethics Committee approval. Patients submitted to **elective orthopedic surgery**.
Exclusion criteria: minor surgery, chronic kidney disease under haemodialysis, serum creatinine > 1.6 mg/dL for men and > 1.4 mg/dL for women, intraoperative mean arterial pressure < 55 mmHg and incomplete records.
AKI was defined as an increment of baseline serum creatinine of > 0.3 mg/dL or > 50% within 48h (AKI Network).
Anaemia was considered for **haemoglobin levels < 10.0 g/dL**.
Statistic analysis: SPSS® v21.0 (Chi-square, Fisher Exact and Mann-Whitney U tests); a simple binary logistic regression was performed to identify independent factors for acute kidney injury; $p < 0.05$).

RESULTS

Patients characteristics and perioperative data

Variables	Total (n= 111)	Hb < 10 (n= 46)	Hb > 10 (n= 65)	p value
Age (years)	60.95 ± 17.56	65.57 ± 16.28	57.69 ± 17,82	0,019
Gender (♂:♀)	52 (46.8):59 (53.2)	18 (39.1):28 (60.9)	34 (52.3):31 (47,7)	0,171
BMI (kg/m²)	27.70 ± 4.95	26,94 ± 5,14	28.23 ± 4.79	0,179
Hypertension	61 (55.0)	29 (63.0)	32 (49.2)	0,150
Diabetes mellitus	20 (18.0)	10 (21.7)	10 (15.4)	0,391
Ischemic heart disease	8 (7.2)	5 (10.9)	3 (4.6)	0,272
Chronic kidney disease	5 (4.5)	5 (10.9)	0 (0)	0,011
Serum albumin (g/dL)	3.25 ± 0.51	3.03 ± 0.50	3.41 ± 0.46	<0,001
Serum creatine before surgery (mg/dL)	0.86 ± 0.29	0.87 ± 0.38	0.85 ± 0.19	0,369
Type of anaesthesia:				
General	45 (40.5)	16 (34.8)	29 (44.6)	0,299
Neuroaxial	66 (59.5)	30 (65.2)	36 (55.4)	
Duration of surgery (minutes)	140 ± 74	155 ± 83	130 ± 66	0,078
Hemoglobin at 48 hours	10.8 ± 1.9	9.04 ± 0.83	12.06 ± 1.49	<0,001
AKI at 48 hours	6 (5.4)	4 (8.7)	2 (3.1)	0,23

Data are expressed as the mean ± SD or number (%). BMI, Body Mass Index

Simple binary logistic regression - Risk factor for acute kidney injury

Variable	OR (CI 95%)	p value
Age	1.11 (1.00-1.23)	0,04

CONCLUSION

A **statistically significant association** between postoperative anaemia and acute kidney injury **was not established**. Increasing age was independently associated with an increased likelihood of exhibiting acute kidney injury.
It would be necessary a large and controlled prospective study in order to clarify this tendencies.

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