PREDICTING PERIOPERATIVE ACUTE KIDNEY INJURY IN LIVER SURGERY

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Background

- Acute kidney injury (AKI) after abdominal surgery results in higher morbidity and mortality
- Liver surgery may cause important fluid shifts and blood loss
- The reported incidence of AKI in liver surgery is approximately 8%
- Peri-operative identification of these high-risk patients may improve utilization of healthcare resources and optimize patient care

Materials and methods

Conclusion

This **logistic regression model** based on the preoperative creatinine, creatinine change during surgery and the preoperative hemoglobine **has good discriminatory properties to predict postoperative AKI** in this cohort of patients undergoing liver surgery.

Results

- A total of **640 patients** were included
- The **incidence** of postoperative AKI was **4.6%** (28/640)
- All but 2 patients developed a stage 1 AKI
- Two logistic models were withheld**; a 4 predictor model based on AIC, a 3 predictor model based on BIC (Table)
- Both models had an **accuracy of 98.4%**
- AUC of the ROC analysis** was 0.965 (95% CI: 0.946 – 0.988) for the AIC model and 0.968 (95% CI: 0.949 – 0.985) for the model based on BIC

Model based on AIC				
Coefficients	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	0.5950	2.1516	0.277	0.78213
PreCreat	3.7481	1.3476	2.781	0.00541
DeltaCreat	-25.0301	4.5514	-5.499	3.81e-08
Meth2	1.4501	0.8643	1.678	0.09340
PreHb	-0.8456	0.1964	-4.306	1.66e-05

Model based on BIC				
Coefficients	Estimate	Std. Error	Z value	Pr(> z)
(Intercept)	1.7269	2.1059	0.820	0.41221
PreCreat	3.6481	1.2562	2.904	0.00368
DeltaCreat	-23.6073	3.9805	-5.931	3.02e-09
PreHb	-0.8293	0.1903	-4.357	1.32e-05

Legend:
PreCreat = preoperative serum Creatinine in mg/dL, DeltaCreat = change in serum Creatinine immediately postoperative, Meth2 = Laparotomy, PreHb = preoperative Hemoglobine in g/dL