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## Metabolic and perfusion trends in polytrauma patients post-peritoneostomy: identification of risk factors and clinical implications

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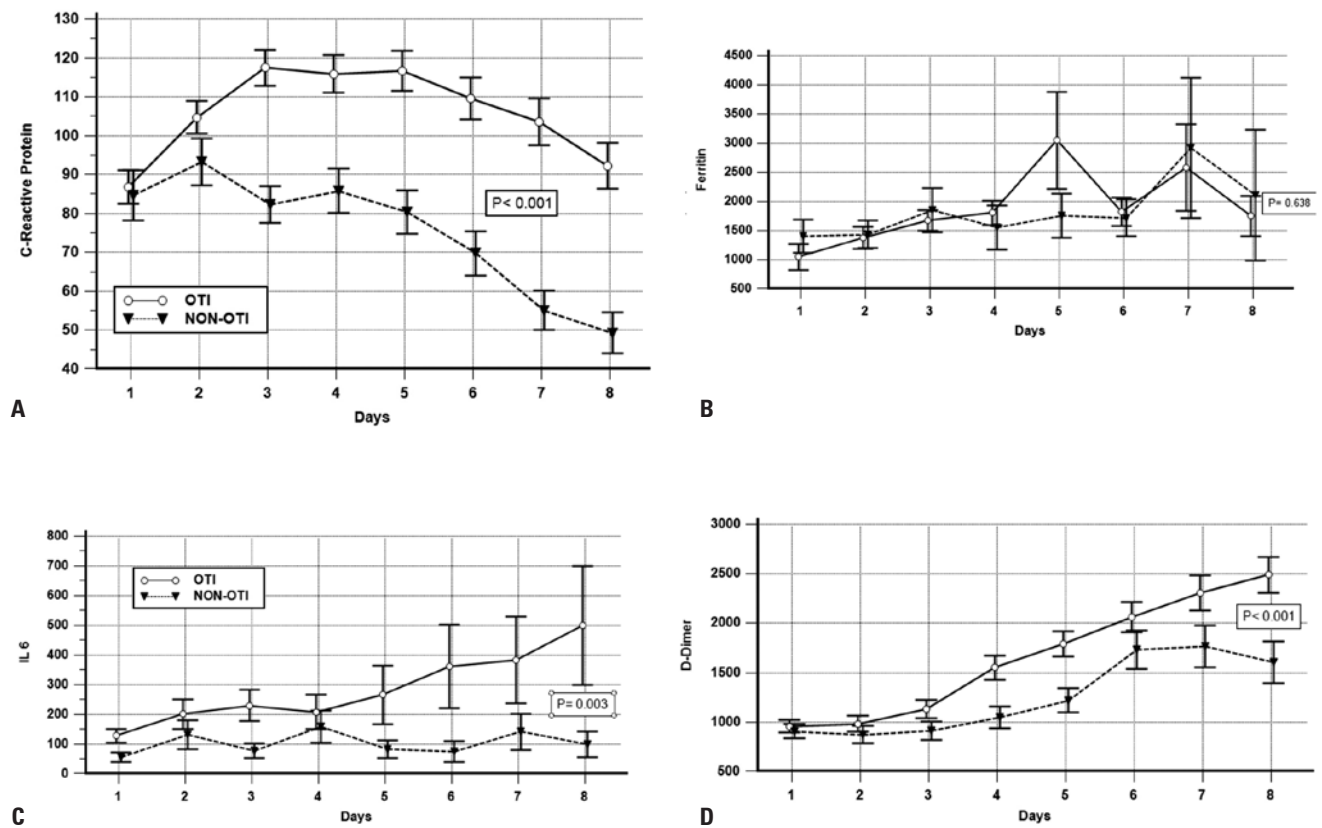
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**Introduction:** Circulatory shock secondary to severe trauma is a significant cause of death globally.<sup>(1)</sup> Many cases undergo peritoniotomy and the assessment of metabolic and perfusion variables is crucial as early diagnosis of hypoperfusion is a fundamental part of management in these patients.<sup>(2,3)</sup> **Objective:** To analyze perfusion and tissue oxygenation trends in post-peritoneostomy polytraumatized patients, focusing on mortality and seeking to understand the consequences of tissue dysoxia. **Methods:** Prospective longitudinal study in specialized trauma ICUs including severely traumatized adults diagnosed with post-peritoneostomy shock. Palliative patients and deaths prior to ICU admission were excluded. Primary outcomes: metabolic evolution associated with hospital mortality. Secondary outcomes: complications and risk factors for mortality. **Results:** Forty six patients (mean age  $31.2 \pm 11.4$  years; 87% male) with post-peritoneostomy due to severe trauma were analyzed. The majority received more than 10 red blood cell concentrates (90.2%) and tranexamic acid (65.2%). During the first surgery, the median

blood transfusion was 7.5 bags (3.75-14.7). All received crystalloids during (median 2250 mL) and in the first 24 hours of ICU (median 3000 mL). The average ICU stay was 12 days, with 4 days of vasopressor use. Hospital complications occurred in 47.8%, with mortality of 26.1%. Non-survivors had a higher ISS ( $32.7 \pm 9.9$  versus  $26.4 \pm 9.9$ ,  $p=0.05$ ), longer sedation time (7.5 versus 4 days,  $p=0.037$ ) and vasopressors (8 versus 3 days,  $p=0.036$ ) as well as a greater volume of crystalloids in the first 24 hours in the ICU (4000 versus 2750 mL,  $p=0.029$ ). In the multivariate logistic regression analysis, only the time of vasopressor use (OR=1.53; 95%CI=1.02-2.29) and the volume received in the first 24 hours of ICU (OR=1,0005; 95%CI 1,0001-1,001) were independent risk factors for death in this population. Regarding the evolution of metabolic and perfusion variables over time, a significant difference was observed between survivors and non-survivors in lactate ( $p=0.03$ ). Regarding pH, bicarbonate and urea, significant trends were observed ( $p<0.1$ ). Creatinine did not differ between groups ( $p=0.156$ ) (Figure 1). Regarding coagulation analysis, survivors presented lower APTT and PT values with a statistically significant difference between the groups ( $p<0.05$ ). **Conclusion:** In this study, we identified that metabolic and perfusion variables are risk factors for mortality in post-peritoneostomy polytraumatized patients. We highlight the importance of monitoring these variables and interventions to improve outcomes for these patients.

## REFERENCES

1. Lentsck MH, Sato AP, Mathias TA. Epidemiological overview - 18 years of ICU hospitalization due to trauma in Brazil. Rev Saude Publica. 2019;53:83.
2. Munoz C, Aletti F, Govender K, Cabrales P, Kistler EB. Resuscitation After Hemorrhagic Shock in the Microcirculation: Targeting Optimal Oxygen Delivery in the Design of Artificial Blood Substitutes. Front Med (Lausanne). 2020;7:585638. Review.
3. Frantz TL, Gaski GE, Terry C, Steenburg SD, Zarzaur BL, McKinley TO. The effect of pH versus base deficit on organ failure in trauma patients. J Surg Res. 2016;200(1):260-5.



**Figure 1.** Evolution of metabolic and perfusional variables in post-operative peritoniotomy patients: comparison between survivors and non-survivors