Coagulopatía, Acidosis y Hemorragia Grave en el Paciente Politraumático: Efecto Sobre la Hipotermia y Mortalidad.

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Resumen

Introducción: El descenso de la temperatura corporal (Tc) se asocia a peores resultados de morbimortalidad en el paciente politraumatizado. Existe debate sobre si esta relación se mantiene al incluir variables de confusión de la tríada letal o hemorragia grave. El objetivo de este trabajo es evaluar la firmeza de esta asociación entre descenso de la Tc y mortalidad mediante la inclusión de variables de confusión.

Material y métodos: Análisis *post-hoc* de sensibilidad de una cohorte de pacientes politraumatizados (n=334). Se crearon 3 variables asociadas a la tríada letal e hipovolemia. Se definió coagulopatía: INR (*International Normalized Ratio)* >1.5, TTPAr (*Tiempo de Tromboplastina Parcial activado)* >1.5 o plaquetas

<100.000; acidosis: exceso de base <-6 y hemorragia grave: activación del protocolo de hemorragia grave o Índice de shock >1.46. Se construyeron modelos de regresión logística binaria añadiendo cada una de las variables al modelo de regresión inicial de mortalidad (variables ISS (*Injury Severity Score*), GCS (*Glasgow Coma Scale*) <9, ASA (clasificación *American Society of Anesthesiologists*) y Tc). Se valoró la estabilidad de la asociación entre la temperatura corporal (variable continua y dicotómica a 36ºC) y mortalidad para cada modelo.

Resultados: En el modelo paralelo y conjunto, la inclusión de la variable coagulopatía, acidosis o hemorragia grave no modificó la asociación estadísticamente significativa entre la Tc y la mortalidad (Tabla 1).

Tabla 1. Análisis de sensibilidad.

	Modelo inicial	Modelo con coagulopatía	Modelo con acidosis	Modelo con hemorragia grave	Modelo con las 3 variables
Tc como variable continua					
OR (IC 95%) Temperatura corporal	0.53 (0.32-0.87)	0.50 (0.3-0.84)	0.55 (0.33-0.91)	0.53 (0.32-0.87)	0.51 (0.3-0.87)
p-valor	0.014	0.009	0.021	0.014	0.014
Tc como variable dicotómica a 36ºC					
OR (IC 95%) Temperatura corporal	3.87 (1.39-10.78)	4.15 (1.45-11.86)	3.62 (1.27-10.3)	3.93 (1.4-11.04)	3.96 (1.35-11.59)
p-valor	0.010	0.008	0.016	0.009	0.012

Conclusiones: La asociación de la variable TC y mortalidad se mantuvo robusta y es independiente de la inclusión de variables de la tríada letal y hemorragia.

Palabras clave: Hipotermia, mortalidad, trauma.

Coagulopathy, Acidosis, and Severe Hemorrhage in Polytrauma Patients: Effect on Hypothermia and Mortality

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Abstract

Introduction: A decrease in body temperature (BT) is associated with poorer morbidity and mortality outcomes in polytrauma patients. There is ongoing debate as to whether this relationship remains when potential confounding variables related to the lethal triad or severe hemorrhage are included. The aim of this study was to assess the robustness of the association

between decreased BT and mortality by including potential confounding variables.

Materials and Methods: A post-hoc sensitivity analysis was conducted on a cohort of polytrauma patients (n = 334). Three variables associated with the lethal triad and hypovolemia were created. Coagulopathy was defined as INR (International Normalized Ratio) > 1.5, aPTT ratio (activated Partial Thromboplastin Time) > 1.5, or platelet count < 100,000; acidosis as base excess < −6; and severe hemorrhage as activation of the severe hemorrhage protocol or a Shock Index > 1.46. Binary logistic regression models were constructed by adding each of these variables to the initial mortality regression model, which included ISS (Injury Severity Score), GCS (Glasgow Coma Scale) < 9, ASA (American Society of Anesthesiologists classification), and BT. The stability of the association between body temperature (both as a continuous variable and dichotomized at 36°C) and mortality was assessed for each model.

Results: In both the parallel and combined models, the inclusion of coagulopathy, acidosis, or severe hemorrhage did

not modify the statistically significant association between BT and mortality (Table 1).

Table 1. Sensitivity analysis.

	Initial model	Coagulopathy model	Acidosis model	Severe hemorrhage model	Model with all 3 variables
BT as a continuous variable					
OR (95% CI), body temperature	0.53 (0.32–0.87)	0.50 (0.30–0.84)	0.55 (0.33–0.91)	0.53 (0.32–0.87)	0.51 (0.30–0.87)
p-value	0.014	0.009	0.021	0.014	0.014
BT dichotomized at 36°C					
OR (95% CI), body temperature	3.87 (1.39–10.78)	4.15 (1.45–11.86)	3.62 (1.27–10.30)	3.93 (1.40–11.04)	3.96 (1.35–11.59)
p-value	0.010	0.008	0.016	0.009	0.012

Conclusions: The association between BT and mortality remained robust and was independent of the inclusion of variables related to the lethal triad and severe hemorrhage.

Keywords: Hypothermia, mortality, trauma.