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Are we meeting current recommendations for the initial management of penetrating trauma? A preliminary analysis from a Colombian institutional registry[☆]

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ABSTRACT

Introduction: To achieve minimal physiological goals in patients with penetrating thoraco-abdominal trauma (TAPT) is essential to ensure adequate outcomes.

Objectives: To determine the success in meeting basic standards at the end of damage control surgery in subjects with TAPT: (1) Monitoring and prevention of hyperfibrinolysis; (2) central temperature $>35^{\circ}\text{C}$; (3) platelet count $>50,000/\text{mm}^3$ and serum fibrinogen $>150\text{ mg/dl}$; (4) hemoglobin levels $>7.5\text{ mg/dl}$ and base deficit <6 .

Methods: Subjects >18 years old undergoing damage control surgery as a result of TAPT were prospectively collected at a referral center between October Oct-2012 and Dec-2014. Comparisons were done according to the Injury Severity Score (ISS) with a severity value indicator of >25 . A $p < 0.05$ value was considered significant.

Results: 106 subjects with TAPT were enrolled. Administration of tranexamic acid was only reported in 52.7% of the patients, particularly in the group with low severity scores [Group $\text{ISS} \leq 25$ 36.3% vs. group $\text{ISS} > 25$ 65.8%. OR 3.37 (95% CI 1.2–9.85); $p = 0.01$]. Although the temperature was reported in 91% of the cases, only 66.2–71.4% reached the recommended goal. Serum fibrinogen was measured in 59.5% of the cases and only 52% met the recommended level. The base deficit values of <6 at the end of surgery were only accomplished in 40–43.8%

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of the subjects, with a significantly lower probability in the more severe patients [53% vs. 35.9%. OR 2.04 (95% CI 1.2–6.02); $p = 0.042$].

Conclusions: A considerable proportion of patients with TAPT does not meet the current recommendations at the end of damage control surgery.

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¿Estamos logrando las recomendaciones actuales en trauma penetrante? Análisis preliminar de un registro institucional colombiano

R E S U M E N

Palabras clave:

Mortalidad
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Introducción: El logro de metas fisiológicas mínimas en pacientes con trauma toracoabdominal penetrante (TTAP) es fundamental para garantizar adecuados desenlaces.

Objetivos: Determinar el éxito en el logro de estándares básicos al final de la cirugía de control de daños en sujetos con TTAP: 1. Monitorización y prevención de hiperfibrinólisis; 2. Temperatura central $> 35^{\circ}\text{C}$; 3. Niveles plaquetarios $> 50.000/\text{mm}^3$ y de fibrinógeno sérico $> 150 \text{ mg/dl}$; 4. Niveles de hemoglobina $> 7.5 \text{ mg/dl}$ y déficit de base < 6 .

Métodos: Se recolectaron prospectivamente sujetos > 18 años llevados a cirugía de control de daños por TTAP en un centro de remisión entre Oct-2012 y Dic-2014. Las comparaciones se realizaron según el Injury severity score (ISS) teniendo como indicador de severidad un valor > 25 . Se consideró significativo un valor de $p < 0.05$.

Resultados: Se registraron 106 sujetos con TTAP. La aplicación de ácido tranexámico solo se reportó en 52.7% de los pacientes, especialmente en el grupo con puntajes de severidad bajos [Grupo $\text{ISS} \leq 25$ 36.3% vs. grupo $\text{ISS} > 25$ 65.8%. OR 3.37 (IC95% 1.2-9.85); $p = 0.01$]. A pesar de que la temperatura fue reportada en 91% de los casos, solo 66.2-71.4% alcanzaron la meta recomendada. El fibrinógeno sérico fue valorado en 59.5% de los sujetos y solo 52% alcanzaron la recomendación. Valores de déficit de base < 6 Al final de cirugía solo se lograron en 40-43.8% de los sujetos, con una probabilidad significativamente menor en los sujetos más graves [53% vs. 35.9%. OR 2.04 (IC95% 1.2-6.02); $p = 0.042$].

Conclusiones: Una proporción considerable de pacientes con TTAP no logran las recomendaciones actuales al final de la cirugía de control de daños.

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Introduction

Increasing incidence of major and high impact trauma makes it a world public health problem,^{1,2} resulting in a growing number of up-to-dates, new concepts and guidelines based on the best available evidence about the optimal use of pharmacological/non-pharmacological strategies and devices for physiological stabilization.^{3,4} Early recognition and treatment of shock and coagulopathy are cornerstones in this setting. There have been important advances in these concepts leading to more specific recommendations about markers of adequate hemostasis and microcirculation.⁵

Perioperative treatment of patients with severe trauma is quite heterogeneous among different institutions. This observation is even a fact among the healthcare providers within the same institution, in terms of the approach to the problem and the perception about the best therapeutic option for each situation, specially in the absence of institutional treatment guidelines to address this patients.^{6,7} Numerous publications recommend structuring a trauma team with clear objectives and the ability to define the role of each team member.

However, initial caregivers in the OR are exceptionally important, both in the accomplishment of these goals, as well in helping to reduce the rate of adverse outcomes and mortality.

This paper analyzed the achieving of the current recommendations⁸⁻¹⁰ by the surgical team of a referral center during the initial care of penetrating chest and/or abdomen trauma patients (TAPT) at the end of damage control surgery (DCS) globally and according to the severity of the injury based on the Injury Severity Score (ISS).¹¹

Design and study population

An observational cohort study was performed based on a prospective trauma registry at a Colombian trauma referral center (CERATI registry – prospective Cohort study of Early Re-intervention in Abdominal and Thoracic Penetrating Injuries) approved by the Committee of Ethics in Biomedical Research of the Fundación Valle del Lili (Protocol No. 635). Subjects 18 years or older requiring DCS due to TAPT within the first 24 hours after trauma occurrence or those who were admitted from other centers within 12 hours after initial treatment were

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