

ORIGINAL ARTICLE

**Use of tranexamic acid in combat casualties.
Experience of the Spanish medical corps. Clinical
series and literature review[☆]**



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KEYWORDS

Combat casualties;
Tranexamic acid;
Multiple injuries;
Hypovolaemic shock;
Massive bleeding;
Patient blood
management;
Military health

Abstract

Objective: To describe the experience with tranexamic acid (TXA) during the care of combat casualties treated in the Spanish military hospital based in Herat (Afghanistan) and to perform an analysis of the literature related to the military setting.

Materials and methods: With the approval of the appropriate military institutions, an analysis was performed on the use of TXA in combat casualties treated between March and May 2014. Of the 745 patients seen, 10 were due to a firearm/explosive device (combat casualties). A descriptive analysis was performed on the data collected. Absolute and relative frequencies (%) were used for the categorical variables. For central tendency measurements, the arithmetic mean and standard deviation or the median and interquartile range was calculated. The data were obtained from the military records of patients treated in the Herat military hospital.

Results: All the patients in this series received TXA within the first 3 h after the attack. The most frequent dose used was 1 g IV, with bleeding was controlled in 100% of cases. All the patients survived and none of them had secondary effects. These data agree with that recommended in the combat casualties treatment guide followed by military health in other countries in this setting.

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Conclusion: All combat casualties were treated with TXA within the first 3 h. The most frequent dose used was 1 g IV and bleeding was controlled in all cases. All the patients survived with no adverse effects being observed.

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PALABRAS CLAVE

Baja de combate;
Ácido tranexámico;
Politrauma;
Shock hipovolémico;
Sangrado masivo;
Gestión hemorragia del paciente;
Sanidad militar

Empleo de ácido tranexámico en el herido de combate, experiencia de la sanidad militar española. Serie de casos y revisión de la literatura

Resumen

Objetivo: Describir la experiencia obtenida con el ácido tranexámico (ATX) durante la atención a bajas de combate en el hospital militar español desplegado en Herat (Afganistán) y analizar la bibliografía relacionada en el ámbito militar.

Material y métodos: Con la aprobación de las instituciones militares pertinentes, se analizó la administración de ATX en bajas de combate entre marzo y mayo de 2014. De los 745 pacientes atendidos, 10 fueron por arma de fuego/artefacto explosivo (bajas de combate). El método estadístico empleado fue el descriptivo. Para variables categóricas se emplearon frecuencias absolutas y relativas en tanto por ciento (%). Como índices de la tendencia central, la media aritmética y la desviación estándar o la mediana y el rango intercuartílico. Los datos se obtuvieron del registro militar de pacientes atendidos en el hospital militar español de Herat.

Resultados: En nuestra serie de datos, todos los pacientes recibieron ATX antes de las 3 primeras horas tras el ataque. La dosis empleada más prevalente fue un gramo iv (intravenoso). La hemorragia fue controlada en el 100% de los casos. Todos los pacientes sobrevivieron y en ninguno se objetivaron efectos secundarios. Estos datos coinciden con lo recomendado en las guías de atención a la baja de combate seguidas por sanidades militares de otros países de nuestro entorno.

Conclusión: Todas las bajas en combate fueron tratadas con ATX durante las 3 primeras horas. La dosis más prevalente fue de un gramo iv. La hemorragia fue controlada en la totalidad de los casos. Todos los pacientes sobrevivieron sin efectos secundarios.

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Introduction

Tranexamic acid (TXA), which is sold in Spain under the name Amchafibrin® (Rottapharm, Italy), is a medicine that slows the physiological fibrinolysis system, preventing the degradation of fibrin. TXA acts by binding to the plasminogen lysine receptor site, preventing the fibrin from joining the complex composed of the plasminogen-plasmin tissue activator and causing its degradation. Another possible effect is that of protecting platelets thanks to inhibition of platelet activation factor.¹

TXA is used in the field of traumatology. The results of works published in hip arthroplasty surgery,² knee surgery³ or patient blood management⁴ programmes indicate that the use of TXA significantly reduces blood loss and the number of patients who receive transfusions.¹⁻⁴

Military medicine has recently included TXA in the clinical guides for treating combat casualties.⁵⁻⁷ Controlling haemorrhage is of maximum importance in wounds of this type and, together with the use of tourniquets, topical haemostatic material, the early administration of haemoderivatives and the monitoring of coagulopathy, TXA is a new therapy that has helped increase the survival rate of combat casualties.^{8,9}

The aim of this study is to describe the administration of TXA in combat casualties treated by Spanish military doctors deployed in Herat (Afghanistan).

Materials and methods

This is a descriptive retrospective study undertaken in the Spanish military hospital at Herat (Afghanistan) from March to May 2014. The inclusion criterion covered all casualties due to firearms or explosive devices that arrived at the emergency department of this hospital. Those patients who had not suffered injury caused by firearms or explosive devices were excluded from the study. The quantitative variables were: age, dose of TXA, haemoglobin level, the New Injury Severity Score (NISS), units of red blood cell concentrates administered, units of fresh frozen plasma administered and units of frozen platelets administered. The selected qualitative dichotomising variables were sex (male or female), TXA administration (yes or no), prescription of TXA by a military doctor (yes or no), when TXA was administered (prehospital, intrahospital), moment of haemoglobin analysis (prehospital, intrahospital), vasopressor use (yes or no), haemorrhage

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