

INTERNATIONAL TRAUMA LIFE SUPPORT

ROLE OF TXA IN MANAGEMENT OF TRAUMATIC HEMORRHAGE IN THE FIELD

The guidelines and references contained in this document are current as of the date of publication and in no way replace physician medical oversight.

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Updated October 2016

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INTRODUCTION

Hemorrhagic shock remains a serious problem for the multiple trauma patient. It is the leading cause of preventable trauma deaths after loss of airway. Rapid and effective control of exsanguinating hemorrhage has been demonstrated to markedly improve survival and outcome, especially in the combat environment. Increased use of tourniquets has reduced death from hemorrhagic shock in the most recent wars fought by U.S. and NATO forces.

The tactical and military environment is associated with a higher percentage of penetrating trauma and external hemorrhage than is seen with the civilian sector, in which blunt trauma predominates. This leads to the situation of ongoing hemorrhage that is difficult to control. Prompt recognition of this with transport to the appropriate facility (Trauma Center) and limiting fluid resuscitation to the level of restoring perfusion (hypotensive resuscitation) have been shown to result in improved survival for the trauma patient.

BACKGROUND

Tranexamic acid (TXA) is an antifibrinolytic that has been used for many years to assist with the management of spontaneous hemorrhaging in the hemophilia patient. The use of this agent for management of hemorrhage in combat wounds has been reported in several papers. One of the most significant findings in the CRASH-2 study is that the use of TXA is associated with a 1.5 absolute risk reduction for death from hemorrhage. Other studies show that TXA is most effective if given within 3 hours of the injury and may be detrimental if given after that time.

CONSIDERATIONS

The side effects of the agent are minimal and the contraindications are few. It is administered as a simple IV infusion, does not require refrigeration or extensive laboratory



studies to allow administration (as is seen with blood products) and is inexpensive. (NOTE: Use for traumatic hemorrhage is an off label use per FDA in the United States.)

PROCEDURE

Based on local protocols and clearance, TXA should be considered in those patients who show signs of hemorrhagic shock, including tachycardia (>110 BPM) and hypotension (SBP<100) and are less than three hours from injury. Do not give TXA through the same line as blood products.

MEDICAL OVERSIGHT

Medical oversight should review current literature and develop pre-hospital EMS protocols in regard to appropriate use of TXA. Implementation of this protocol should be monitored and supervised through a quality assurance program.

CONCLUSION

ITLS believes that there is sufficient evidence to support the use of TXA in the management of traumatic hemorrhage in the adult patient, pursuant to system medical control approval. Following initial resuscitation including control of external bleeding and stabilization of airway, consideration should be given to administration of TXA during early stages of transport.

UPDATES – OCTOBER 2016

While there is no current dispute on the merits of TXA in patients with severe extracranial hemorrhage as stated above, a 2015 systematic review was undertaken of two relevant completed randomized trials looking at the effectiveness and safety of TXA in polytrauma with traumatic brain injury. In a meta-analysis, there is a statistically significant reduction in intracranial hemorrhage. However, because the confidence intervals are wide, the quality of this evidence is low. Therefore, the effectiveness and safety of TXA in traumatic brain injury are uncertain although randomized trials are underway to investigate the problem. The authors recommend that patients with isolated traumatic brain injury should not receive TXA outside the context of a randomized trial.

UPDATES – NOVEMBER 2019

A randomized control study called CRASH- 3 has successfully been conducted and the results confirm the safety and merits of using TXA in traumatic brain injury. It has now been published in The Lancet (see reference below).



On the basis of the CRASH-2 trial results, tranexamic acid was included in guidelines for the pre-hospital care of patients with trauma. However, patients with isolated TBI were specifically excluded. The CRASH-3 trial provides evidence that tranexamic acid is safe in patients with TBI and that treatment within 3 hours of injury reduces traumatic brain injury (TBI)-related deaths.

ITLS now believes that there is enough evidence to administer TXA in patients with TBI within 3 hours from the time of injury and as early as possible, as the benefits are much greater.

Early treatment of patients with mild (GCS 13–15 and intracranial bleeding on baseline CT scan) and moderate TBI (GCS 12-9) seemed to confer the greatest mortality benefit. This finding is consistent with the hypothesis that tranexamic acid improves outcome by reducing intracranial bleeding. Because hemorrhage expansion occurs in the hours immediately after injury, treatment delay would reduce the potential for tranexamic acid to prevent intracranial bleeding. Patients with severe TBI (GCS 8-3) might have less to gain from tranexamic acid treatment than patients with mild to moderate TBI because such patients already have extensive intracranial hemorrhage before treatment or other potentially life-threatening intracranial pathologies that are not affected by tranexamic acid.

MEDICAL OVERSIGHT

Medical oversight should review current literature and develop pre-hospital EMS protocols in regard to appropriate use of TXA. Implementation of this protocol should be monitored and supervised through a quality assurance program.

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Current Thinking

Role of TXA In Management of Traumatic Hemorrhage In The Field International Trauma Life Support

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Abstract

This is the official current thinking of International Trauma Life Support (ITLS) with regard to the role of TXA in management of traumatic hemorrhage in the pre-hospital setting.

Current Thinking

It is the position of International Trauma Life Support that:

1. There is sufficient evidence to support the use of TXA in the management of traumatic hemorrhage in adult trauma patients.
2. ITLS supports the use of TXA in the acute management of traumatic hemorrhagic shock within the framework of established system medical oversight and protocols.
3. Use of TXA is recommended in conjunction with initial resuscitation and control of external bleeding. Early TXA administration should be considered following airway stabilization, control of external bleeding, and initial volume resuscitation.
4. The use of TXA should be considered during the early stages of resuscitation and transport. Current research demonstrates TXA is most effective if given within 3 hours of the injury and may be detrimental if given after that time.
5. With reference to Updates-November 2019, ITLS now believes that there is enough evidence to administer TXA in patients with TBI within 3 hours from the time of injury and as early as possible, as the benefits are much greater.

