LE CONTRÔLE D'HÉMORRAGIE

Une approche scientifique et technique

Image libre de droit

Les morts en trauma

- Accident de la route au Qc
- Québec 7 % de décès
- Canada 12.1% à 9.9 %
- 248 vies de plus 2012 vs 2006

TRAUMA/HÉMORRAGIE DANS LE MONDE

Injury, Int. J. Care Injured 48 (2017) 5–12

Contents lists available at ScienceDirect

Injury

journal homepage: www.elsevier.com/locate/injury

2016, Huston, 1 centre

2005/2006
2012/2013

7.6 %à 5.8%

Trends in 1029 trauma deaths at a level 1 trauma center: Impact of a bleeding control bundle of care

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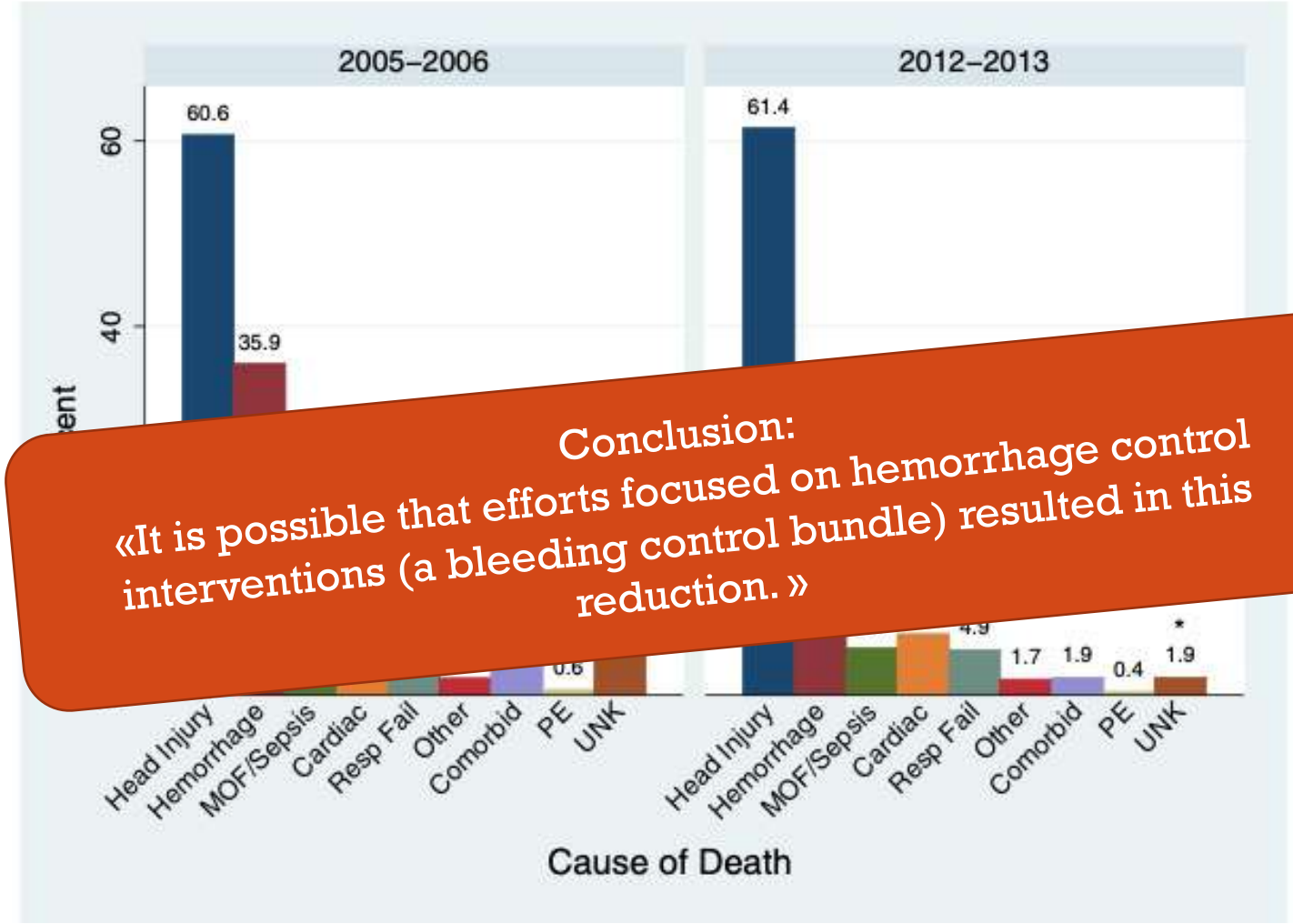
ABSTRACT

Background: Over the last decade the age of trauma patients and injury mortality has increased. At the same time, many centers have implemented multiple interventions focused on improved hemorrhage control, effectively resulting in a bleeding control bundle of care. The objective of our study was to analyze the temporal distribution of trauma-related deaths, the factors that characterize that distribution and how those factors have changed over time at our urban level 1 trauma center.
Methods: Records at an urban Level 1 trauma center were reviewed. Two time periods (2005–2006 and 2012–2013) were included in the analysis. Mortality rates were directly adjusted for age, gender and mechanism of injury. The Mann-Whitney and chi square tests were used to compare variables between



Conclusion:
«It is possible that efforts focused on hemorrhage control interventions (a bleeding control bundle) resulted in this reduction. »

LES TRAUMATISMES ET LES HÉMORRAGIES

- % de mort par hémorragie 35.9% à 24.9% entre les 2 groupes.
- Les changements pour réduire les hémorragies sont:
  - Ceinture pelvienne
  - Pansements hémostatiques
  - Tourniquet
  - Occlusion de l'aorte par ballon (REBOA)
  - Réanimation liquidienne restrictive
  - TEG
  - TXA
  - Transfusion balancés

OBJECTIFS ET SUJETS

Survoler avec une approche scientifique et technique

- La pression directe
- Les pansements compressifs
- Les tourniquets
- Le paquetage de plaie
- La réanimation liquidienne restrictive
- L'acide tranexamique

CLASSIFICATION DES HÉMORRAGIES (ATLS)

- Classe 1: 15% de perte sanguine, aug. FC, pas d'autres changements
- Classe 2: 15-30 % de perte sanguine, FC 100-120, RR 20-24, dim. pression pulsée, peau froide. Pâle et moite
- Classe 3: 30-40% de perte sanguine, dim. de l'état mental, dim. TAS (sous 90mmhg), FC plus de 120/min, RR élevé, production d'urine diminuée
- Classe 4: 40 et plus , dim. marquée de la pression systolique et de l'état de conscience, production d'urine très diminuée, peau pale , remplissage capillaire allongé
- Classe 3 et 4 sont considérées hémorragie majeure.

LA PRESSION DIRECTE

LE PANSEMENT COMPRESSIF

Image repérée à: https://www.rescue-essentials.com/control-wrap-6/

LE PANSEMENT COMPRESSIF

Appliquer directement sur la peau contrairement à la démonstration!

TOURNIQUET

Annales Françaises d'Anesthésie et de Réanimation 33 (2014) 248–255

ELSEVIER MASSON

SFAR
Société Française d'Anesthésie et de Réanimation

Revue générale

Le garrot en médecine d'urgence et militaire

Tourniquet use in civil and military medicines

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INFO ARTICLE

Historique de l'article :
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Mots clés :
Garrot
Effets secondaires
Hémorragie
Médecine d'urgence
Médecine militaire

RÉSUMÉ

Objectif. – Présenter les indications et précautions d'emploi du garrot en médecine d'urgence militaire et civile.
Source de données. – Une revue de la littérature anglo-saxonne et française a été réalisée dans la base de données PUBMED, de 1962 à 2012 en utilisant les mots clés suivants : « tourniquet », « complications », « haemorrhage », « emergency », « military medicine », employés seuls ou en combinaison.
Sélection des travaux. – Les articles ont été retenus s'ils contenaient des informations sur les indications, la physiopathologie ou les complications du garrot dans le cadre de l'anesthésie, des urgences, en médecine civile ou militaire. Dans chaque domaine, les études avec le niveau de preuve le plus élevé ont été retenues. Dans certains cas, seuls des cas cliniques ont été publiés.
Extraction des données. – Les données extraites ont concerné l'historique, l'épidémiologie, l'intérêt du garrot en temps de paix et en temps de guerre, les effets indésirables et le rapport bénéfice/risque

LE TOURNIQUET (GARROT)

- Indication
  - Membre amputé
  - Extrémité non compressible
  - Crush syndrome avec hyperkaliémie
  - Accident à victime multiples
- Dangers
  - Ischémie tissulaire (90min MS, 120min MI)
  - Syndrome de levé du garrot
  - Libération de potassium, lactate et autres toxines
  - Destruction musculaire
  - Amputation
  - Hyperalgésie
  - Neuraplaxie
- Temps recommandé en contexte urgence:
  - 3h00

LE TOURNIQUET

LE PAQUETAGE DE PLAIE AVEC PANSEMENT HÉMOSTATIQUE

- Utiliser dans les jonctions, le cou et les membres
- Peu d'étude de qualité sur le sujet
- Le QCCG semble supérieur pour le moment
- Étude animale : 100% d'hémostase initiale vs 70% pour le «Celox gauze»
- Autre étude animale 100% celox vs 0% gaze (hémostase initial)
- Étude militaire en Afghanistan parle de 88,3% de succès

PAQUETAGE DE PLAIE AVEC HÉMOSTATIQUE

RÉANIMATION LIQUIDIENNE RESTRICTIVE

- Pour les patient avec hémorragie
- Limiter les fluides
- Viser une bonne perfusion des organes vitales
- Cible TA variables
- Exclure les trauma du CNS (TCC et trauma spinaux)

The New England
Journal of Medicine

Volume 331 OCTOBER 27, 1994 Number 17

IMMEDIATE VERSUS DELAYED FLUID RESUSCITATION FOR HYPOTENSIVE PATIENTS WITH PENETRATING TORSO INJURIES

WILLIAM H. BICKELL, M.D., MATTHEW J. WALL, JR., M.D., PAUL E. PEPE, M.D., R. RUSSELL MARTIN, M.D., VICTORIA F. GINGER, M.S.N., MARY K. ALLEN, B.A., AND KENNETH L. MATTOX, M.D.

Table 5. Outcome of Patients with Penetrating Torso Injuries, According to Treatment Group.

VARIABLE	IMMEDIATE RESUSCITATION	DELAYED RESUSCITATION	P VALUE
Survival to discharge — no. of patients/total patients (%)	193/309 (62)*	203/289 (70)†	0.04
Estimated intraoperative blood loss — ml‡	3127±4937	2555±3546	0.11
Length of hospital stay — days§	14±24	11±19	0.006
Length of ICU stay — days§	8±16	7±11	0.30

*95 percent confidence interval, 57 to 68 percent.

†95 percent confidence interval, 65 to 75 percent.

‡The estimated intraoperative blood loss was calculated for patients who survived the operation: 268 in the immediate-resuscitation group and 260 in the delayed-resuscitation group.

§The lengths of stays in the hospital and intensive care unit (ICU) were calculated for patients who survived the operation: 227 in the immediate-resuscitation group and 238 in the delayed-resuscitation group.

§The lengths of stays in the hospital and intensive care unit (ICU) were calculated for patients

RÉANIMATION LIQUIDIENNE RETARDÉE

- Étude plus veille
- Trauma pénétrant avec hypotension en préhospitalier
- 598 patients
- Survie 70% vs 62%
- Complication 23% vs 30%

EAST 2011 PLENARY PAPER

Crystalloid to packed red blood cell transfusion ratio in the massively transfused patient: When a little goes a long way

Matthew D. Neal, MD, Marcus K. Hoffman, MD, Joseph Cuschieri, MD, Joseph P. Minei, MD, Ronald V. Maier, MD, Brian G. Harbrecht, MD, Timothy R. Billiar, MD, Andrew B. Peitzman, MD, Ernest E. Moore, MD, Mitchell J. Cohen, MD, *and* Jason L. Sperry, MD, MPH, *Pittsburgh, Pennsylvania*

BACKGROUND: Massive transfusion (MT) protocols have emphasized the importance of ratio-based transfusion of plasma and platelets relative to packed red blood cells (PRBCs); however, the risks attributable to crystalloid resuscitation in patients requiring MT remain largely unexplored. We hypothesized that an increased crystalloid:PRBC (C:PRBC) ratio would be associated with increased morbidity and poor outcome after MT.

METHODS: Data were obtained from a multicenter prospective cohort study evaluating outcomes in blunt injured adults with hemorrhagic shock. Patients requiring MT (≥10 units PRBCs in first 24 hours) were analyzed. The C:PRBC ratio was computed by the ratio of crystalloid infused in liters (L) to the units of PRBCs transfused in the first 24 hours postinjury. Logistic regression modeling was used to characterize the independent risks associated with the 24-hour C:PRBC ratio, after controlling for important confounders and other blood component transfusion requirements.

RESULTS: Logistic regression revealed that the 24-hour C:PRBC ratio was significantly associated with a greater independent risk of multiple organ failure (MOF), acute respiratory distress syndrome (ARDS), and abdominal compartment syndrome (ACS). No association with mortality or nosocomial infection was found. A dose-response analysis revealed that patients with a C:PRBC ratio >1.5:1 had over a 70% higher independent risk of MOF and over a twofold higher risk of ARDS and ACS.

CONCLUSION: In patients requiring MT, crystalloid resuscitation in a ratio greater than 1.5:1 per unit of PRBCs transfused was independently

thew D. Neal, MD, Marcus K. Hoffman, MD, Joseph Cuschieri, MD, Joseph P. Minei, MD, l V. Maier, MD, Brian G. Harbrecht, MD, Timothy R. Billiar, MD, Andrew B. Peitzman, MD, . Moore, MD, Mitchell J. Cohen, MD, *and* Jason L. Sperry, MD, MPH, *Pittsburgh, Pennsylvania*

RATIO CRISTALLOÏDES; CULOTS SANGUINS

- 452 patients PTM
- Ratio C:PRBC 1.5:1
- Sans contrôle: pas de différence
- Ratio élevé augmente les risque:
  - X2: SDMV(MOF), SDRA(ARDS)
  - X3: Syndrome coronarien aigue

L'ACIDE TRANXEXAMIQUE (TXA)

- Nom commercial au Canada:
  - Cyklokapron
- Indications:
  - Trauma avec hémorragie (‹3h)
  - Hémorragie post partum. (‹3h)
  - Saignement menstruels
  - Prévention péri-opératoire
  - Trauma crânien (‹3h)
- Dose pour trauma:
  - 1G / 10min et 1G /8h00
- Mécanisme d'action:
  - Antifibrinolytique

HEALTH TECHNOLOGY ASSESSMENT

VOLUME 17 ISSUE 10 MARCH 2013
ISSN 1366-5278

The CRASH-2 trial: a randomised controlled trial and economic evaluation of the effects of tranexamic acid on death, vascular occlusive events and transfusion requirement in bleeding trauma patients

I Roberts, H Shakur, T Coats, B Hunt, E Balogun, L Barnetson, L Cook, T Kawahara, P Perel, D Prieto-Merino, M Ramos, J Cairns and C Guerriero

- 274 hôpitaux
- 40 pays
- 20211
- Randomisé
- Double insu

- Avant 1h00 : 4.9 % vs 5.7%
- 1h-3h: 4.8% vs 6.1%
- Plus de 3h: 4.4% vs 6.1%

CRASH-2

- Étude largement cité
- 2013
- Bénéfice prouvé jusqu'à 3h00 post trauma
- Bénéfice plus important moins d'un heure
- Dose utilisé:
  - Dose de charge: 1g/10min
  - Dose de maintenance: 1G/8h

BJA

British Journal of Anaesthesia, 124 (6): 676–683 (2020)

doi: 10.1016/j.bja.2020.01.020
Advance Access Publication Date: 19 March 2020
Cardiovascular

CARDIOVASCULAR

Effect of tranexamic acid by baseline risk of death in acute bleeding patients: a meta-analysis of individual patient-level data from 28 333 patients

Francois-Xavier Ageron[1,2,*], Angele Gayet-Ageron[3], Katharine Ker[1], Timothy J. Coats[4], Haleema Shakur-Still[1] and Ian Roberts[1], for the Antifibrinolytics Trials Collaboration[†]

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[†]The members of the Antifibrinolytics Trials Collaboration are listed in the Acknowledgments section.

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TXA , LA MORTALITÉ ET LES COMPLICATIONS

- Méthanalyse
- 2020
- Retenu seulement 2 études
  - CRASH-2
  - WOMAN
- Conclusions:
  - Ne pas se limiter aux trauma majeur
  - Diminution 1/3 de la mortalité par hémorragie si donné rapidement (Trau. et HPP)
  - Pas d'augmentation des évènement occlusifs

COMPLICATION VASCULAIRES OCCLUSIVES

Table 2 Vascular occlusive events by treatment allocation according to baseline risk.

Baseline risk, *n* (%)	0–5%		6–10%		11–20%		>20%		-value
	Tranexamic acid N=11 612	Placebo N=11 396	Tranexamic acid N=1245	Placebo N=1247	Tranexamic acid N=853	Placebo N=78	Tranexamic acid N=560	Placebo N=638	
Any vascular occlusive events	64 (0.6)	65 (0.6)	17 (1.4)	22 (1.8)	23 (2.7)	38 (4.9)	14 (2.7)	27 (4.2)	.255
Fatal occlusive events	16 (0.1)	15 (0.1)	6 (0.5)	4 (0.3)	4 (0.5)	14 (1.8)	1 (0.2)	7 (1.1)	0.058
Myocardial infarction*	8 (0.1)	14 (0.1)	3 (0.2)	7 (0.6)	6 (0.7)	13 (1.7)	7 (1.3)	12 (1.9)	0.909
Stroke*	19 (0.2)	14 (0.1)	3 (0.2)	6 (0.5)	6 (0.7)	15 (1.9)	4 (0.7)	7 (1.1)	0.152
Pulmonary embolism*	28 (0.2)	23 (0.2)	6 (0.5)	8 (0.6)	14 (1.6)	16 (2.1)	6 (1.1)	9 (1.4)	0.739
Deep vein thrombosis*	12 (0.1)	19 (0.2)	7 (0.6)	2 (0.2)	6 (0.7)	4 (0.5)	3 (0.5)	5 (0.8)	0.214

REMERCÎMENTS

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- Nicolas Capolla-Daneau pour son implication ayant mené aux nouveaux protocoles paramédicaux de contrôle d'hémorragie dans la Capitale nationale

- TOP SPU

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