Manejo perioperatorio del paciente con enfermedad hepática crónica

Annabel Blasi

Intraoperatorio

Objetivos:

- Evitar la insuficiencia hepática postoperatoria: preservar flujo/evitar congestión hepática
- Evitar la hipervolemia
- Preservar función renal: máyor riesgo de insuficiencia renal permanente (10%)

- Monitorització

PRO: Transesophageal Echocardiography Should Be Routinely Used for All Liver Transplant Surgeries

Con: Transesophageal Echocardiography Is Not Recommended as a Routine Monitor for Patients Undergoing Liver Transplantation

Journal of Cardiothoracic and Vas. Anest. In press

- Cirurgia menor: standard, temperatura y BIS (> riesgo de hipotermia y de encefalopatia)

- Cirurgia mayor:
  - Presion arterial invasiva
  - Gast
    ETE
  - PVC

Does the Central Venous Pressure Predict Fluid Responsiveness? An Updated Meta-Analysis and a Plea for Some Common Sense*

Paul E. Marik, MD, FCCM[1]; Rodrigo Cavallazzi, MD[2]

CCM, 2013

➢ Técnica anestesica

- Locoregional

  - Cir. extremidades
  - INR< 1.5/, plaq > $50x10^9$
  - Evitar cateteres

- General

  - Inhalatoria vs TIVA
  - Evitar VC/PEEP ↑
  - Normocapnia

✓ PAM > 60 mmHg o > 80% de la PAM basal

➢ Fluidoterapia

- De elección
  - Plasmalyte®, Volulyte®
  - Albúmina
- Evitar
  - Lactat
  - Coloides sintètics (midó, gelatina, dextrà)

✓ no sobrecarega volemica: 1- 3 ml x kg

✓ debito urinario > 0.5 ml x Kg x h: furosemida

Effect of Volume Expansion on Systemic Hemodynamics and Central and Arterial Blood Volume in Cirrhosis

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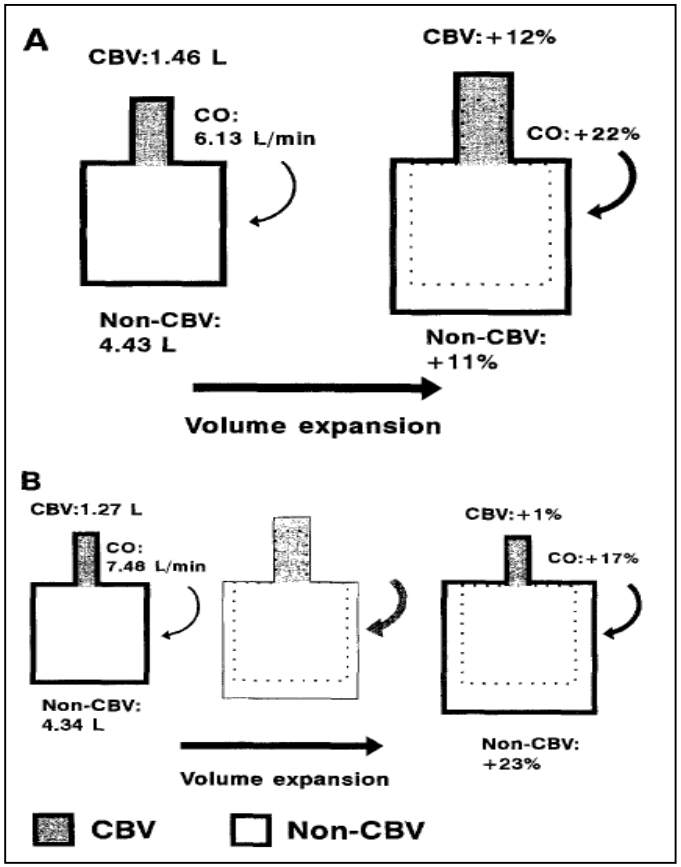
Departments of *Clinical Physiology and †Gastroenterology, Hvidovre Hospital, University of Copenhagen, Copenhagen, Denmark



Moller, Gastroenterology, 1995

- Alteraciones hidroelectrolíticas
  - Hiperglucemia
    - 150-180 mg/dL
  - Hiponatremia
    - No incrementar > 12 meq/L Na /d
    - Restricció hídrica i diurètics
    - S. hipertonico si < 120 meq/L o clínica
  - Hipomagnesémia

- Consideraciones farmacologicas

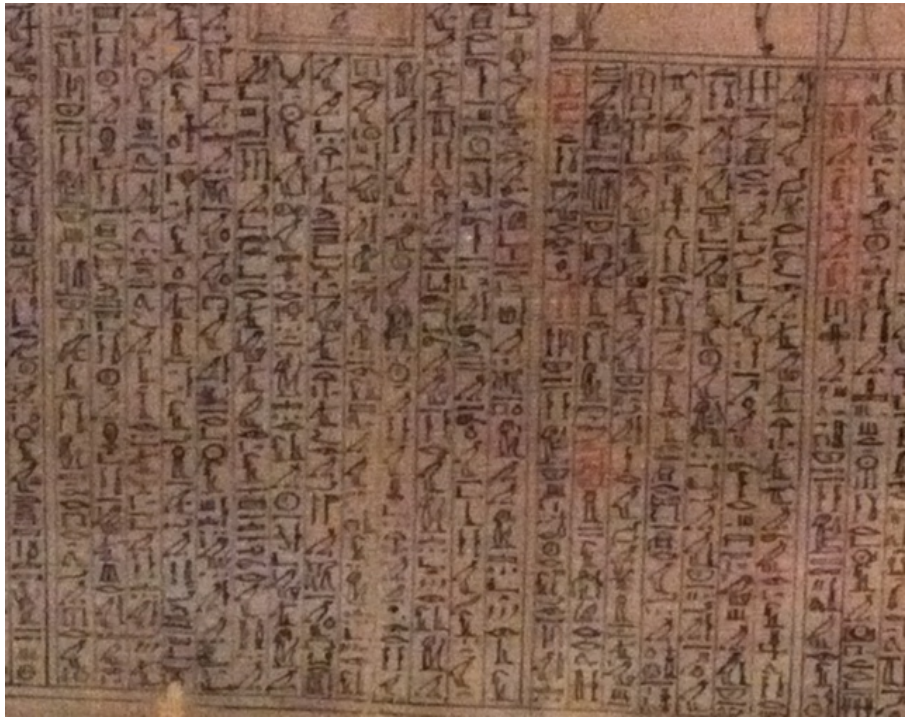
  - Efecto poco previsible. Titular la dosis

  - De elección, fc de vida media más corta

  - Hipnoticos: propofol, sevo i desflurane, son opciones validas

  - Atracurio/cis-A, de elección. Succinilcolina efecto prolongado

Manejo coagulación



Jeroglífic Egipci. British Museum

Coagulation Disorders and Hemostasis in Liver Disease: Pathophysiology and Critical Assessment of Current Management

Stephen H. Caldwell,[1] Maureane Hoffman,[2] Ton Lisman,[3] B. Gail Macik,[1] Patrick G. Northup,[1] K. Rajender Reddy,[4] Armando Tripodi,[5] Arun J. Sanyal[6] and the Coagulation in Liver Disease Group

Table 1. S

Respondents (%)	Primary role (%)
GI-Hepatology (59)	Clinical MD (82)
Hematology (11)	Research (3)
Blood Bank (14)	Non-MD HCP (13)
Surgery-Anesthesiology (10)	Pharmacology (5)
ICU (3)	
Radiology (3)	

Threshold Platelets for Liver Biopsy	Threshold Platelets for ICP Monitor
<25,000 (4)	<25,000 (20)
<30,000 (81)	<30,000 (46)
<50,000 (14)	<50,000 (34)
<100,000 (0)	<100,000 (0)

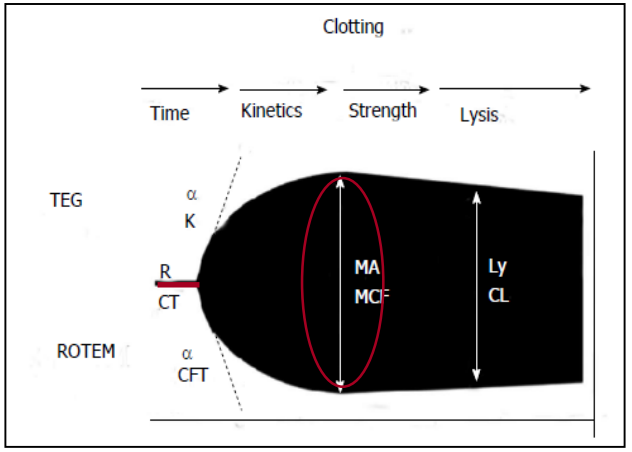
Caldwell, Hepatology 2006;44:1039-1046

- Monitorització coagulación
  - Test de coagulación estandard
  - Tromboelastometria

- ✓Test de coagulación estandard: plasma
  - T. protrombina
  - T. cefalina
  - Recuento plaquetar

    - ✓procoagulantes: vit K

- ✓ Tromboelastometria: sangre total
  - T. Formación del coágulo
  - Firmeza
  - Estabilidad



Thromboelastography-Guided Transfusion Decreases Intraoperative Blood Transfusion During Orthotopic Liver Transplantation: Randomized Clinical Trial

S.-C. Wang, J. Mandell, and M.-Y. Tsou

Variable	Control Group	TEG Group
Intake		
Blood product		
Total transfusion, mL	6587.1 (3254.6)	4937.1 (2038.2)
Fresh-frozen plasma, U	21.5 (12.7)	12.8 (7.0)†
Cryoprecipitate, U	15.6 (9.5)	13.0 (10.3)
Platelet concentrates, U	30.1 (18.5)	27.3 (13.9)
Whole blood, U	1.4 (2.5)	0.3 (1.1)
Packed RBCs, U	16.7 (12.8)	14.2 (7.1)
IV fluid		
Fluid total, mL	10053.8 (4966.8)	9198.0 (4546.9)
HAES, mL	214.3 (544.7)	150.0 (231.2)
Albumin, mL	664.3 (474.9)	829.2 (588.7)
Output		
Blood loss, mL	6348.0 (3704.1)	4775.7 (4264.7)
Urine output, mL	2139.3 (1208.0)	2312.9 (1491.5)

Wang, TP 2010; 42: 2590-2593

Thrombelastography-Guided Blood Product Use Before Invasive Procedures in Cirrhosis With Severe Coagulopathy: A Randomized, Controlled Trial

- 60 pacients , INR > 1.5 i/ o plaquetes < $50x10^9$/L

- Procediments invasius

	TEG Group ($n = 30$)	SOC Group ($n = 30$)	*P* Value
Overall blood products requirement (%)	5 (16.7)	30 (100)	<0.0001
Total amount of FFP infused, mL			
Low-risk procedure	4,000	11,050	0.002
High-risk procedure	0	6500	<0.0001
Total amount of PLTs pools infused, U			
Low-risk procedure	22	28	0.046
High-risk procedure	6	78	0.001
FFP only (%)	0	16 (53.3)	<0.0001
Procedure-related bleeding (%)	0	1 (3.3)	0.313

De Pietri, Hepatology 2016;63:566-573

- Manejo hemostasia

  - ✓No corrección profilactica: “wait and whatch”

  - ✓Transfundir sólo si sangrado microvascular

- Test coagulación estandard

  - Plaquetas > $50x10^9$
  - Fibrinogeno > 1,3 g/L

  Si sagnat microvascular

  - Plasma, si persistencia del sangrado

- ✓ Indicaciones de plasma

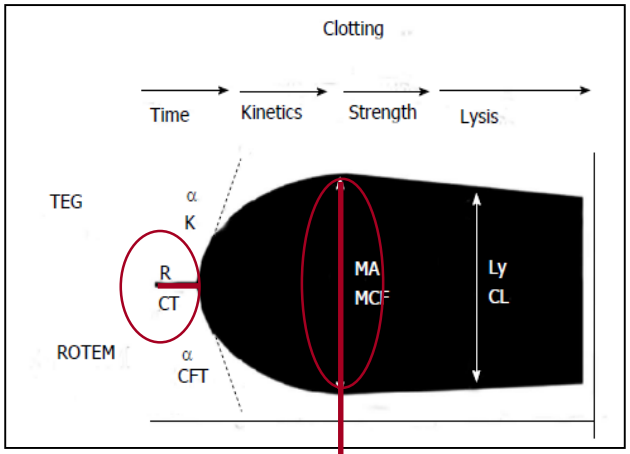
  - Hemorragia masiva (1:1:1)

  - Sangrado microvascular &

    - Plaquetes > $50x10^9$
    - Fibrinógeno > 1,3 g/L

Tromboelastograma

Factores



Plaquetas
Fibrinógeno

Use of Higher Thromboelastogram Transfusion Values Is Not Associated With Greater Blood Loss in Liver Transplant Surgery

Shen-Chih Wang,[1,3] Ho-Tien Lin,[1,3] Kuang-Yi Chang,[1,3] M. Susan Mandell,[5] Chien-Kun Ting,[1,4] Ya-Chun Chu,[1,3] Che-Chuan Loong,[2,3] Kwok-Hon Chan,[1,3] and Mei-Yung Tsou[1,3]

[1]Department of Anesthesiology and [2]Division of Transplant Surgery, Department of Surgery, Taipei Veterans General Hospital, Taipei, Taiwan; [3]School of Medicine and [4]Institute of Biomedical Engineering, National Yang-Ming University, Taipei, Taiwan; and [5]Department of Anesthesiology, University of Colorado Health System, Denver, CO

TEG values were 35% greater than normal

TABLE 2. Operation Times, Perioperative Fluid Intake, Blood Product Use, and Blood Loss

	Study Group	Historical Control Group
Operation time (hours)	14.5 (13.5-16.38)	14.5 (13-16)
Packed red blood cells (U)	8 (4-10)	10 (5-12)
FFP (U)	4 (2-8)	11 (6-18)*
Cryoprecipitate (U)	7 (0-12)	8 (4-12)
Pheresis platelets (U)	2 (1-3)	4 (2-4)*
Total fluid (mL)	7075 (6225-8625)	8100 (6350-9212)
Fluid (mL/kg/hour)	8.00 (6.22-10.11)	8.19 (6.66-9.67)
Blood loss (mL)	3275 (1775-4500)	3425 (1825-7182.5)

NOTE: The data are presented as medians and interquartile ranges.
*$P < 0.05$.

LT 2012 18:1254-1258

✓ Otr

– Fa
tra
tro

STUDY PROTOCOL Open Access

Prothrombin complex concentrate in the reduction of blood loss during orthotopic liver transplantation: PROTON-trial

Freeha Arshad[1], Brigitte Ickx[2], Rachel T van Beem[3], Wojciech Polak[4], Frank Grüne[5], Frederik Nevens[6], Minna Ilmakunnas[7], Anna-Maria Koivusalo[7], Helena Isoniemi[8], Paul FW Strengers[3], Henk Groen[9], Herman GD Hendriks[10], Ton Lisman[1], Jacques Pirenne[11] and Robert J Porte[1*]

Complejo protrombínico: experiència insuficiente

– A. Tranexámico
  - No evidencia fuera del transplante hepático
  - Puede considerarse su uso

Postoperatorio

Objetivos:

- Control dolor
- Evitar /detectar descompensacions

- Trombopofilaxis

- Analgesia locoregional
  - Técnicas neuroaxiales / bloqueos periféricos
    - Plaquetas > 50-75.000 x 10^9, INR <1.5
    - Reducir dosis de anestésicos locales 30%
- Analgesia endovenosa

- Analgesia locoregional
  - ✓ Tecniques neuroaxiales
    - Intradural
    - Peridural: no catéter
  - ✓ Bloqueos periféricos: poca experiencia
    - TAP: oblicuo interno - transverso
    - BRILMA: ramas cutaneas nervios intercostales

- Analgesia endovenosa: reducir dosis (30%)
  - PCA morfina
  - PCA multimodal: tramadol ± metadona ± lidocaina ± ketamina ± metamizol

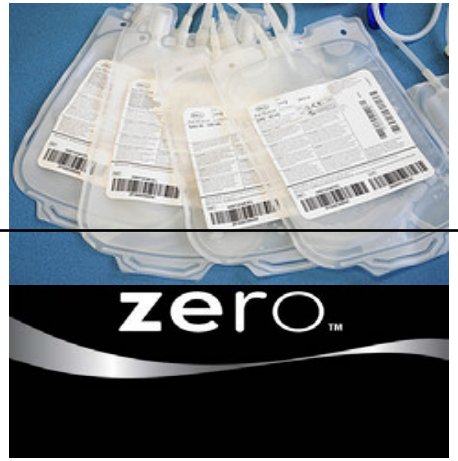
evitar AINES

- ✓ Analgesia de rescate
  - Paracetamol ≤ 3gr/d
  - Tramadol ≤ 200 mgr/d
  - Metamizol ≤ 3 gr/d

Trombopofilaxi ?...

"up to 300 U of packed red blood cells have been used"

Bontempo, 1985



"LT without the use of blood products is possible"

Ramos, 1994

"antihaemostatic therapy after liver transplantation may be relevant"

Lisman, 2013

perceived risk of bleeding complications but the cirrhotic patient should not be considered as an auto-anticoagulated patient. Therefore, thromboprophylaxis should be recommended in patients with liver cirrhosis at least when exposed to high-risk conditions for thrombotic complications. Low molecular

Senzolo, HBP, 2009

Overall, the aforementioned observations suggest that patients with chronic liver disease are not naturally "autoanticoagulated," as previously believed.

Tripodi, NEJM, 2011

Conclusions: **An elevated INR in the setting of CLD does not appear to protect against the development of hospital-acquired VTE. The notion that "auto-anticoagulation" protects against VTE is unfounded. Use of DVT prophylaxis was extremely low in this population.**

Dabbagh, Chest, 2010

Table 1 Incidence and prevalence of venous thromboembolism (VTE) (deep vein thrombosis and/or pulmonary embolism) in patients with chronic liver disease (CLD)

Author	Study design	Patients/Admissions	Incidence of VTE	Prevalence of VTE	VTE diagnoses included (exclusion criteria)
Northup *et al.* [26]	Case–control 1993–2001	Admissions for cirrhosis n = 21 000	0.5% (113)		DVT and PE (excluding patients with a history of VTE, patients on anticoagulation therapy and patients undergoing liver transplantation)
Gulley *et al.* [27]	Case–control 1995–2005	Cirrhosis n = 963 Hospital controls n = 12 405	1.87% (18)		DVT and PE (excluding patients with a history of VTE)
Dabbagh *et al.* [29]	Retrospective cohort 2000–2007	CLD or cirrhosis n = 190	6.3% (12)		DVT and PE (excluding patients with known active VTE, patients on anticoagulation therapy and patients receiving palliative care)
Lizarraga *et al.* [30]	Case–control 2004–2008	CLD n = 14 790	0.73% (108)		DVT and PE
Garcia-Fuster *et al.* [28]	Retrospective cohort 1992–2007	Cirrhosis n = 2074	0.8% (17)		DVT and PE
Wu and Nguyen [31]	Cross-sectional 1998–2006	Compensated cirrhosis n = 408 253 Decompensated cirrhosis n = 241 626 Hospital controls n = 575 057		0.81% (3307) 0.82% (1981) 0.76% (4370)	DVT and PE Phlebitis, iatrogen PE and infarction (excluding primary diagnosis of VTE)
Saleh *et al.* [32]	Retrospective cohort 1979–2006	Admissions for CLD (alcoholic) n = 4 927 000 Admissions for CLD (non-alcoholic) n = 4 656 000		0.6% (30 000) 0.9% (42 000)	DVT and PE
Aldawood *et al.* [33]	Retrospective cohort 2009	Cirrhosis n = 226		2.7% (6)	DVT and PE (excluding patients on anticoagulation therapy)
Ali *et al.* [34]	Cross-sectional 2005	Admissions for cirrhosis n = 449 798		1.8% (8321)	DVT, PE and other venous thromboses (excluding patients with a history of VTE)

Incidencia
TVP/TEP
0.5 - 6.3%

Sakai T, Anesth Analg 2006; 103: 1329

Tripodi A, J Thromb Haemost 2011;9:1713–23

- Factores de riesgo

  - ✓ Comuns: edad, raza, AC
    neoplasia, cirurgia, immob

  - ✓ Especificos:
    - NASH
    - Hipoalbuminemia
    - Child

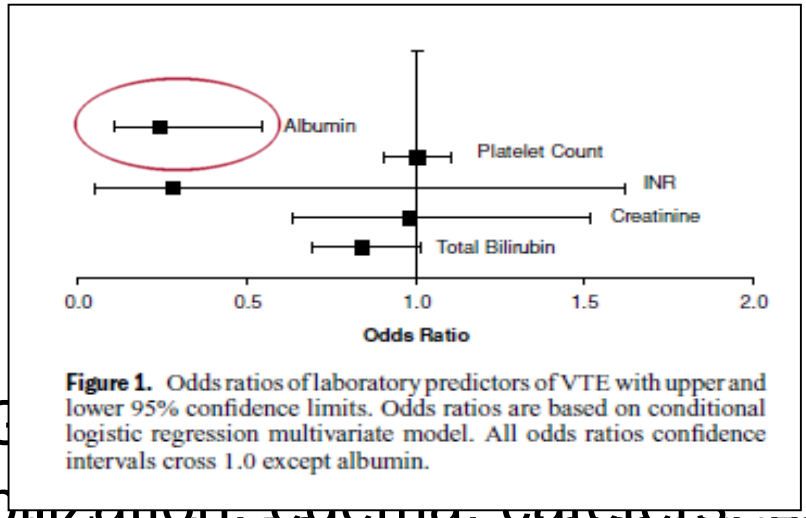


Figure 1. Odds ratios of laboratory predictors of VTE with upper and lower 95% confidence limits. Odds ratios are based on conditional logistic regression multivariate model. All odds ratios confidence intervals cross 1.0 except albumin.

Northup, Am J Gastroenterol 2006;101:1524-28

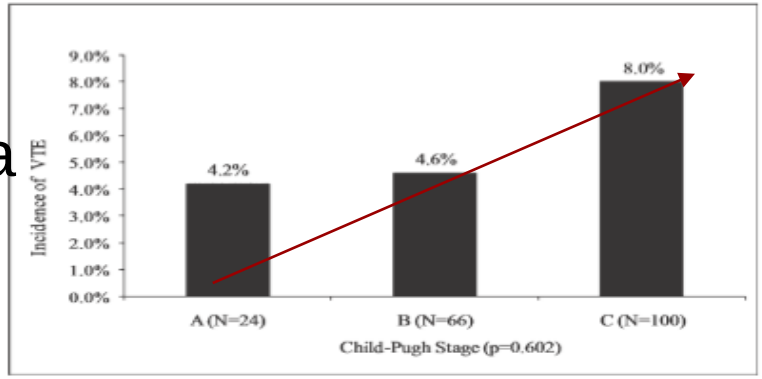


FIGURE 1. Incidence of venous thromboembolism based on Child-Pugh Stage.

Dabbagh, CHEST, 2010; 137:1145–1149

Table 3 Venous Thromboembolism Prophylaxis in Patients with Liver Cirrhosis and/or Thrombocytopenia: Strategies of Prevention

Spontaneous Hemorrhagic Risk		Recommendation
Low risk: Platelet count > 90,000	> $50x10^9$	Pharmacological prophylaxis*
Intermediate risk: Platelet count 50,000–90,000		Pharmacological prophylaxis*
High risk: Platelet count < 50,000		Prophylaxis in selected cases*
		Nonpharmacological methods†

*VTE prophylaxis should be performed as long as the additional risk factor for thrombosis is present.
†Graduated compression stockings, intermittent pneumatic compression, devices, and venous foot pumps.

> 1 FR & ausencia de riesgo de sangrado

varices II-III

insuficiencia renal

Koliscak, AJ.HSP 2012; 62:658-663

Tufano, Semin Throm and Hemost 2011; 37:267-274

- ✓ Enoxaparina: 0.5 mg x Kg /d
  si Cr > 1.3 ml/min o FG >50 ml/min: Tinzaparina

- ✓ Iniciar > 8h post cirurgia si no evidencia de sangrado

Resumen

- Pre operatorio
  - Avaluació multidisciplicar benefici / risc
  - Cirurgia mayor = centro especialitzado

- Intra operatorio
  - Mantenir perfusió / drenatge hepàtics
  - No corregir alteracions asinptomaticas de la coagulación
  - Evitar sobrecarega volémica; tendencia restrictiva

- Post operatorio
  - Reducir dosis analgesicos
  - Vigilar descompensacions
  - Considerar tromboprofilaxis

Gracias

J. Pollock, 1948