14. ULUSAL ACİL TIP KONGRESİ
5TH INTERCONTINENTAL EMERGENCY MEDICINE CONGRESS
INTERNATIONAL CRITICAL CARE AND EMERGENCY MEDICINE CONGRESS
19-22 Nisan 2018 Kaya Palazzo Golf Resort Otel
ATUDER Acil Tıp Uzmanları Derneği

İntoksikasyon Yönetiminde Değişen Trendler

Doç. Dr. Yunsur ÇEVİK
Sağlık Bilimleri Üniversitesi
Acil Tıp Anabilim Dalı
Keçiören SUAM
Ankara-2018

Giriş

Resüsitasyon

- Uzamış resüsitasyon, kardiyak ve solunumsal cihazlar

IV %20
lipid emülsiyonu

Nalokson

No (DONT) only Antidot

Kalsiyum klorid 10%
Kalsiyum glukonat 10%

- Kardiyak stabilizasyondan bile öncelikli antidotlar!!
  - Nalokson, Siyanid antidot kit, Atropin

Hidroksikobalamin

Siyanid antidot kit

Flumazenil

Glukagon

Pridoksin

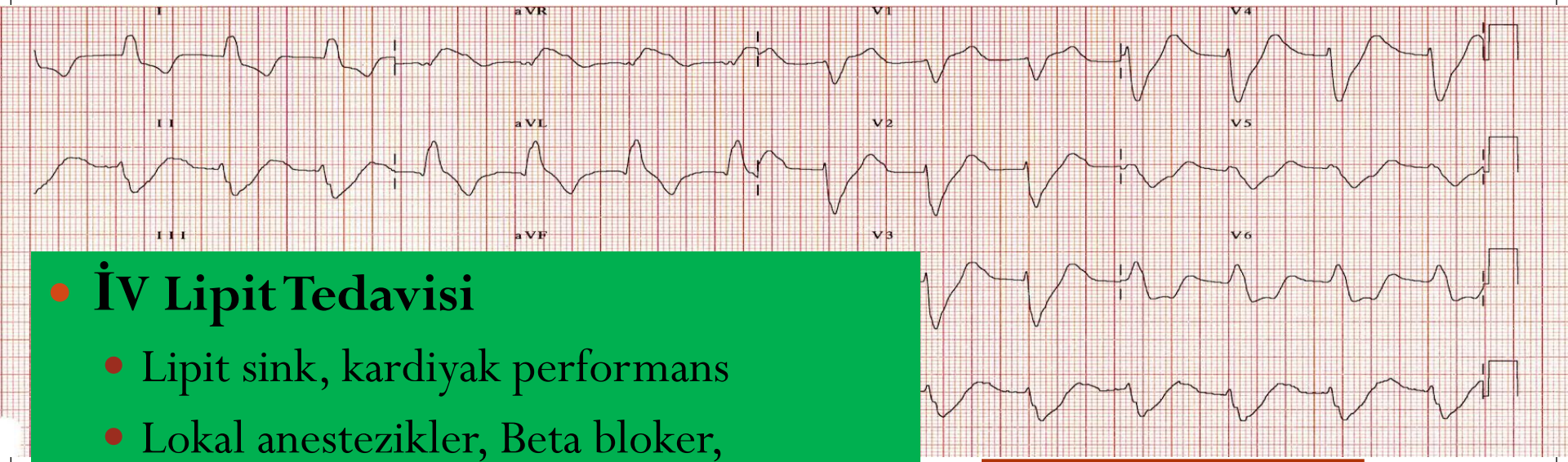
Digoksin Fab

Tiamin

Sodyum bikarbonat

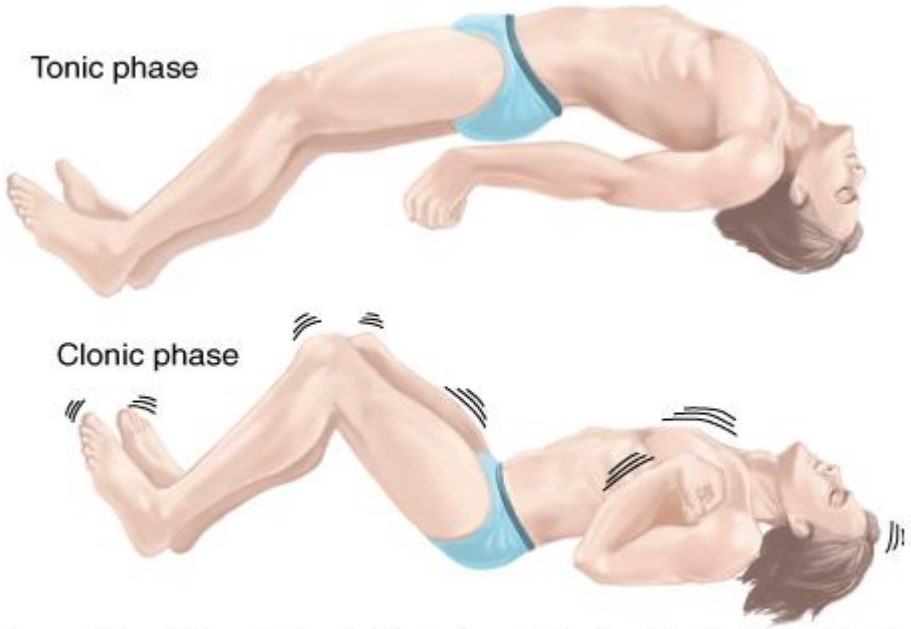
Metilen mavisi

- **Kardiyak aritmiler :…**antiaritmikler güvenli değil



- **İV Lipit Tedavisi**
  - Lipit sink, kardiyak performans
  - Lokal anestezikler, Beta bloker,
  - Ca kanal blokerleri, TAD…
  - 1.25 ml/kg, 025 ml/kg/dk

- **Nöbetler**
  - Benzodiazepin, barbituratlar
  - Pridoksin, Dekstroz, sodyum…
  - Fenitoin güvenli değil..
- **Ajitasyon**
  - Antipsikotikler uygun değil (antikolinerjik durum)



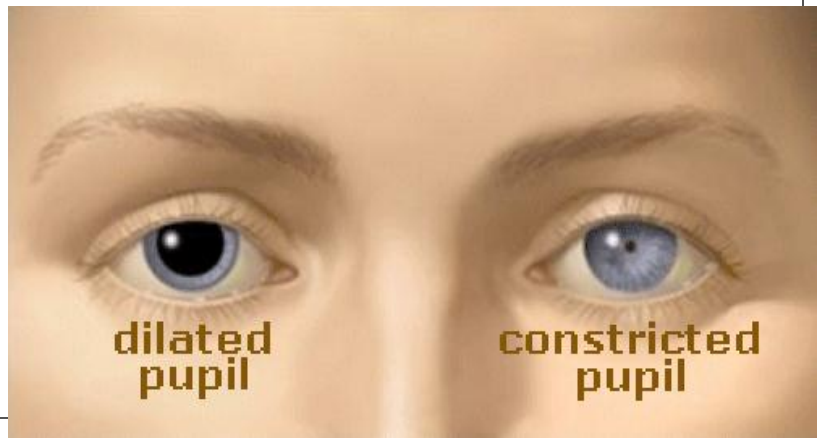
Source: McKean S, Ross JJ, Dressler DD, Brotman DJ, Ginsberg JS: *Principles and Practice of Hospital Medicine*: www.accessmedicine.com

- **Hipertermi**
  - Seratonin sendromu (siproheptadin)
  - Sempatomimetikler (benzodiazepinler)
  - Nöromüsküler malign sendrom (bromokriptin, dantrolen)
- **Hipotermi** (opioid, etanol, fenotiazinler…)

Risk Değerlendirme

- Hikaye
  - Güvenilmez anamnez

- Fizik Muayene
  - Genel görünüm:
  - SSS-Göz:
  - Cilt:
  - KVS:
  - AC:
  - Abdomen:



Toxidrome Symptoms

CHOLINERGIC

Muscarinic (DUMBELLS)
Diarrhea, diaphoresis
Urination
Miosis
Bradycardia
Bronchorrhea
Emesis
Lacrimation
Lethargic
Salivation

Nicotinic: Days of Week
Mydriasis
Tachycardia
Weakness
Tremors
Fasciculations
Seizures
Somnolent

ANTICHOLINERGIC

Hyperthermia (HOT as a hare)
Flushed (RED as a beet)
Dry skin (DRY as a bone)
Dilated pupils (BLIND as a bat)
Delirium, hallucinations (MAD as a hatter)
Urinary retention (DRY as a bone)
Tachycardia

OPIOID

Miosis
Hypoventilation
Depressed mental status/coma
Withdrawal
Diarrhea
Mydriasis
Goose flesh
Tachycardia
Lacrimation
Hypertension
Yawning
Cramps
Hallucinations
Seizures (with ethyl alcohol [ETOH] and benzodiazepine withdrawal)

Sympathomimetic

Hyperthermic
Flushed
Diaphoretic
Mydriatic
Agitated
Tachycardic
Seizures

Diagnostik Testler

- Asetaminofen !!
- EKG
- İlaç ve toksin düzeyi
- Özellikle çocuk ve medikolegal nedenler

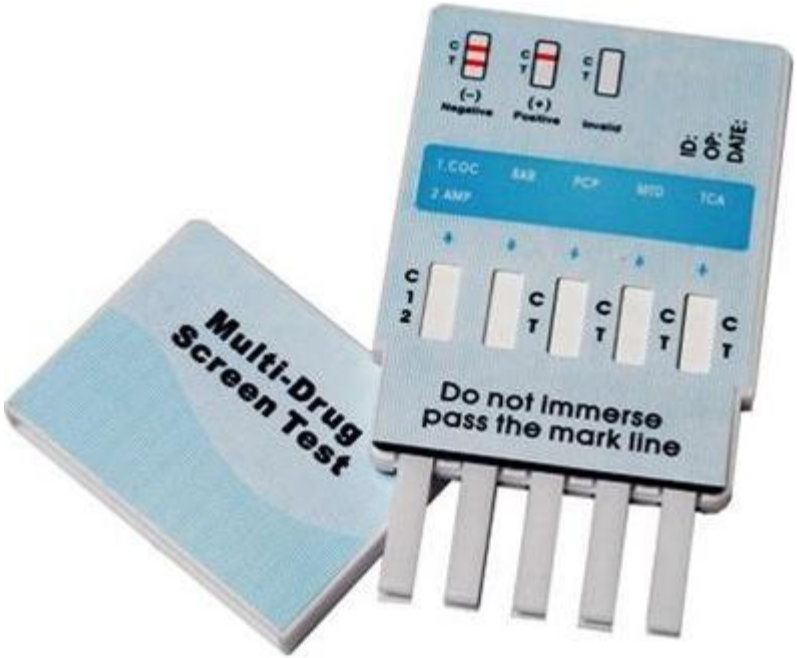


TABLE 139.3

Toxicologic Electrocardiogram Manifestations

SEGMENT/INTERVAL	APPEARANCE	AGENT(S)	SEGMENT/INTERVAL	APPEARANCE	AGENT(S)
P wave	Absent	Digoxin Cholinergics Hyperkalemia	QT/QTc	Prolonged	Antipsychotics (typical and atypical), citalopram, hydrofluoric acid, methadone, ethylene glycol (oxalate byproduct)
	Notched	Quinidine			
PR interval	Prolonged	Beta-antagonists, calcium-channel antagonists, magnesium	T wave	Peaked	Hydrofluoric acid (hyperkalemia)
				Flattened	Lithium
QRS interval	Prolonged	Type 1 antidysrhythmics, cocaine, diphenhydramine, tricyclic antidepressants	U wave		Barium, beta-agonists, lithium, methylxanthines (caffeine, theophylline), toluene
ST segment	Scooped	Digoxin ("Salvador Dali's moustache")			

Dekontaminasyon

- Peronel koruyucu ekipmanlar !
  - Alan ve Kaba dekontaminasyon
  - Göz Dekontaminasyonu : Kristalloid sıvı,Göz Ph'sı…
  - Gastrointestinal Dekontaminasyon

Gastrointestinal Dekontaminasyon

- **Emezis:** İpeka şurubu
- Dünyanın birçok yerinde bulunması problem..
- ABD'de üretimi durdurulmuş…
- Destekleyen yayın yok. Zararı biliniyor. Kullanmaya gerek yok

Gastrointestinal Dekontaminasyon

- **Gastrik boşaltma**:
  - En az 2 asırdan beri kullanılmakta…
  - Son yıllarda komplikasyonlarından duyulan endişe…

Gastrointestinal Dekontaminasyon

- **Orogastrik Lavaj**
  - 36-40 F (22-24 F çocuk) orogastrik
  - Sol yana- baş 20 derece aşağı
  - Tüp yerinde mi?
  - Ilık suyla (200 ml, 10 mL/kg çocukta)
  - Temiz sıvı gelinceye kadar

Gastrointestinal Dekontaminasyon

- Orogastrik lavaj; Endikasyonu sınırlı, Komplikasyonları önemli
- 3 soru
  - Önemli bir toksisiteye yol açabilen bir madde mi?
  - GİS dekontaminasyonu klinik sonucu etkiler mi?
  - Yarar-zarar oranı, zarar yönünde olabilir mi?

REVIEW ARTICLE

Position paper update: gastric lavage for gastrointestinal decontamination

B. E. BENSON[1], K. HOPPU[2], W. G. TROUTMAN[1], R. BEDRY[2], A. ERDMAN[1], J. HÖJER[2], B. MÉGARBANE[2], R. THANACOODY[2], and E. M. CARAVATI[1]

[1]*American Academy of Clinical Toxicology, McLean, VA, USA*
[2]*European Association of Poisons Centres and Clinical Toxicologists, Brussels, Belgium*

Clinical Toxicology 2013

- Gastrik lavajın rutin uygulanması önerilmiyor..
- Zehirlenmelerde yararını gösteren kanıt yok…
- Gastrik lavaj yerine Aktif kömür, gözlem ve destek tedavisi düşünülmelidir…

ANALYSIS OF GASTRIC LAVAGE REPORTED TO A STATEWIDE POISON CONTROL SYSTEM

Jimmy Donkor, MD,* Patil Armenian, MD,* Isaac N. Hartman, BS,* and Rais Vohra, MD*†

The Journal of Emergency Medicine 2016;51 (4): 394–400,

- Gastrik lavaj invaziv ve ciddi komplikasyonları olan bir işlem
- Tavsiye edilmemesine rağmen hala acil servislerde kullanılmaktadır

Tarama sonucu
63 makalenin sadece 4'ü sorularımıza yeterli cevap verebilir nitelikte

BestBETs

Parasetamol zehirlenmesinde;
Gastrik lavaj, tek başına aktif kömür verilmesinden daha az etkilidir.

Comment(s)
The 1997 Joint Position Statement by the American Academy of Clinical Toxicology, European Association of Poisons Centres and Clinical Toxicologists (5) stated gastric lavage should not be routinely used for poisoned patients. A similar statement from the British Poisons Centres indicates that gastric lavage is only to be used within 60 minutes of overdose and only with drugs not absorbed by charcoal.

etamol poisoning

Research Fellow
Research Fellow
val Infirmary
01
004

Last Modified: 5th October 2004

82 makale bulunuyor fakat 81'i ilgisiz veya yetersiz

BestBETs
BEST EVIDENCE TOPICS

TCA overdozunda gastrik lavajın etkili olduğunu gösteren bir kanıt yoktur.

Gastric Lavage in Tricyclic Antidepressant Overdose

Report By:	Stewart Teece - *Clinical Research Fellow*
Search checked by	Kirsten Hogg - *Clinical Research Fellow*
Institution:	Manchester Royal Infirmary
Date Submitted:	23rd January 2001
Date Completed:	23rd January 2003
Last Modified:	5th October 2004
Status:	Green (complete)

Lityum overdozunda gastrik lavajın etkinliğiyle ilgili bir kanıt yoktur.

BestBETs

BEST EVIDENCE TOPICS

No clinical evidence for gastric lavage in lithium overdose

Report By:	Stewart Teece - *Clinical Research Fellow*
Search checked by	Ian Crawford - *Clinical Research Fellow*
Institution:	Manchester Royal Infirmary
Date Submitted:	26th February 2002
Date Completed:	18th January 2005
Last Modified:	11th September 2004
Status:	Green (complete)

Gastrik lavajın demir bileşikleri overdozunda etkinliğiyle ilgili bir kanıt yoktur

BestBETs

BEST EVIDENCE TOPICS

No good evidence supports gastric lavage in iron overdose

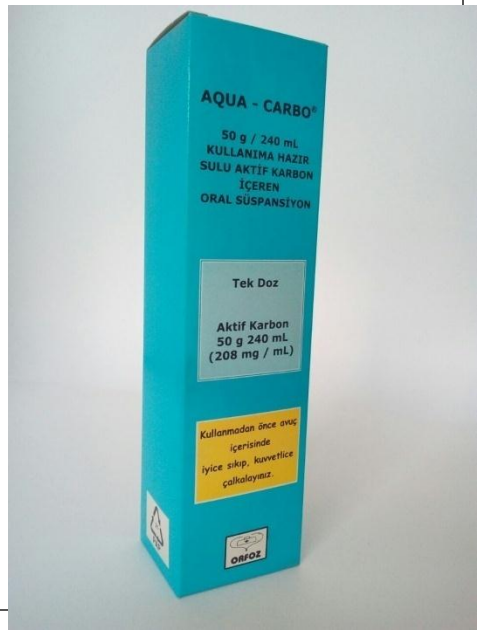
Report By:	Stewart Teece - *Research Fellow*
Search checked by	Ian Crawford - *Research Fellow*
Institution:	Manchester Royal Infirmary
Date Submitted:	1st March 2000
Date Completed:	7th November 2002
Last Modified:	5th October 2004
Status:	Green (complete)

O Halde Gastrik Lavaj Yapalım mı?

- Kısaca ;
- Potansiyel ölümcül ajan alımı sonrası ilk 1 saat
- Antidotu yoksa
- Aktif kömüre bağlanamıyorsa
- Gastrik Lavaj belki…

Gastrointestinal Dekontaminasyon

- Tek doz Aktif Kömür
  - Gözenekli ve geniş yüzey alanı
  - Aktif kömür/Toksin oranı:10/1 (50-100 gr)
  - Kontrendike;
    - Aktik kömüre bağlanmayan maddeler
    - Koroziv alım
    - Korunmasız hava yolu
    - GİS perforasyonu…
- Komplikasyon.!!!
  - Kusma, aspirasyon



3 parçalı Soru
[Yüksek doz TCA almış yetişkin]'de [aktif kömür] [ilaç absorbsiyonu ve komplikasyonları azatmada] etkili midir?
Klinik senaryo
25 yaşında bir kadın, acil servise yüksek doz amitriptilin alarak başvuruyor.
Aktif kömürden fayda görüp görmeyeceğini merak ediyorsun?

67 makale Medline'da ve 125 tane de Embase'de saptanmış, sadece 8'i her üç soruyu kapsıyormuş

estBETs
T EVIDENCE TOPICS

Little evidence for activated charcoal in tricyclic antidepressant overdose

Report By:	Claire Park - *Medical S*
Search checked by	Katrina Richell-Herren
Institution:	Manchester Royal Infi
Current web editor:	Richard Body - *Clinica*
Date Submitted:	1st March 2000
Last Modified:	12th June 2008
Status:	Green (complete)

TCA overdozunda aktif kömürün etkinliğini gösteren kanıt yok.
Deneysel çalışmalar ilaç emilimini azalttığını ifade etmektedir. Bu nedenle aktif kömür önemli zehirlenmelerde pulmoner aspirasyon gibi potansiyel riskleri de göz önüne alarak verilebilir.

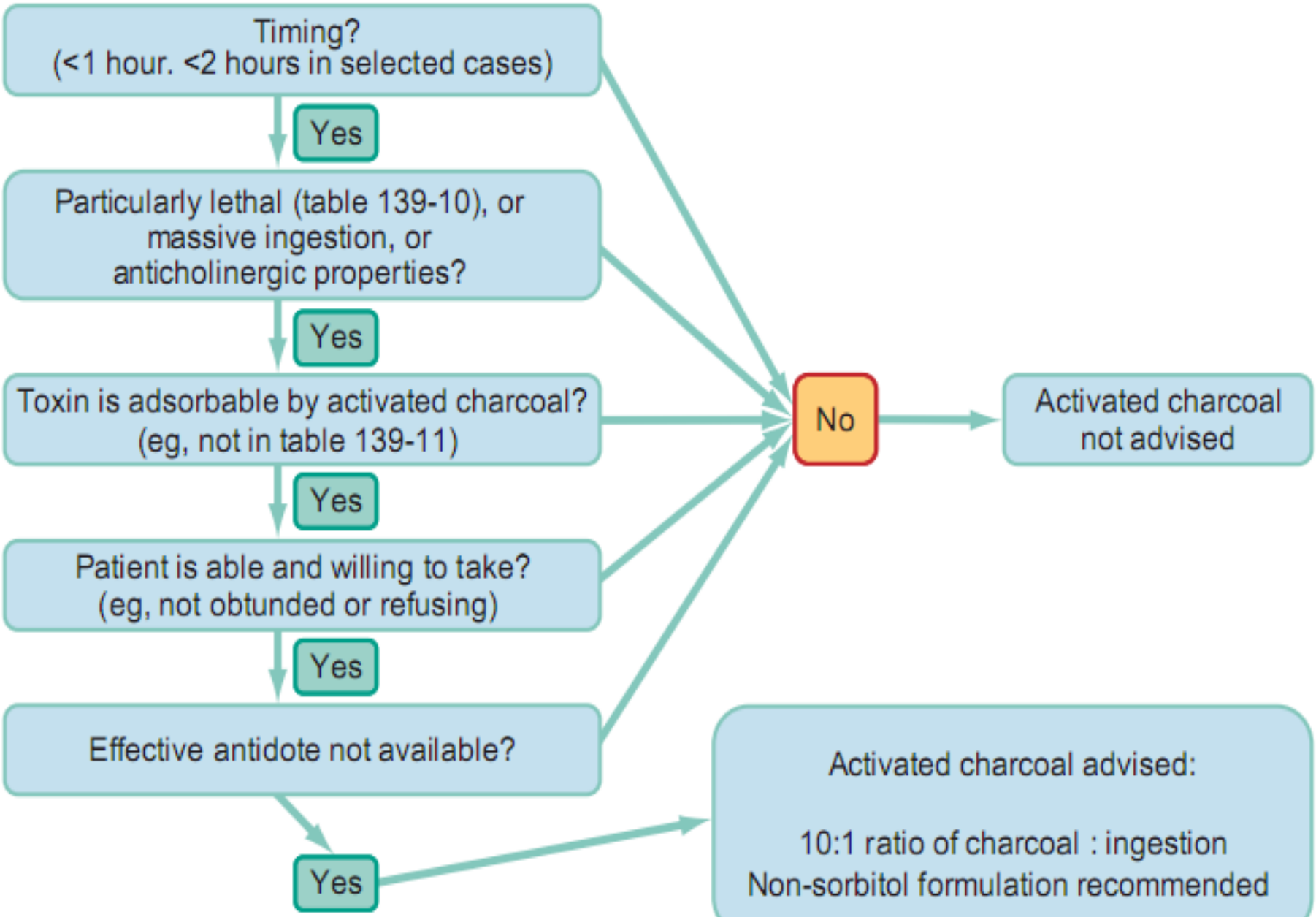


Fig. 139.1. Indications for early administration of activated charcoal 1 hour post-ingestion.

Gastrointestinal Dekontaminasyon

- Tüm Barsak İrrigasyonu
  - Polietilen Glikol elektrolit lavaj solüsyonu
  - Baş 30 derece yukarda
  - Metoklopramid destekli
  - 2Lt/saat, çocukta 25mL/kg/saat
  - Berrak rektal sıvı gelinceye kadar

Demir >60 mg/kg alımı
Hayatı tehdit eden diltiazem veya verapamil alımı
Uyuşturucu paket taşıyıcılar
Kurşun, lityum, Arsenik

Eliminasyonun Arttırılması

- Çoklu Doz Aktif Kömür
  - Enterohepatik, enteroenterik, enterogastrik
  - Gastrik bezoar, motilitede azalma, perforasyon !!
  - Doz 10:1, sonra %50, 4-6 saatte bir

ABCDQ
Aminophylline/theophylline
Barbiturates
Carbamazepine/concretion forming drugs
(eg, salicylates)
Dapsone
Quinine

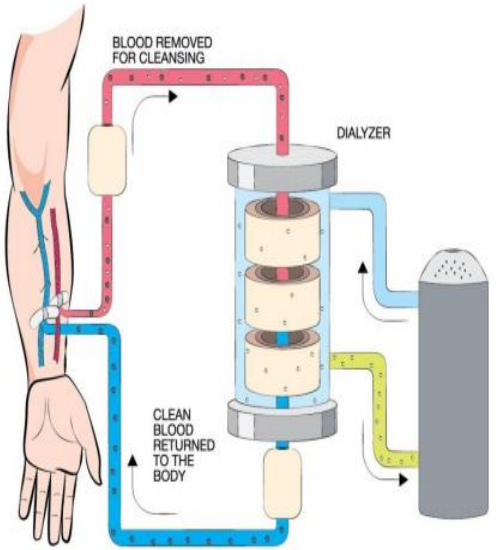
Eliminasyonun Arttırılması

- Üriner Alkalinizasyon
- Asidik ilaçların iyonizasyonu ve atılımı (emilimi engeller)
  - Salisilat
  - Fenobarbital
  - Metotreksat
  - Hipokalemi ve volüm kaybı!!!

- Üriner Alkalinizasyon
- 1 Meq/kg iv bolus $NaHCO_3$
- 100 Meq 1L %5Dextroz içinde 4 saatte
- 20 mEq KCL ilave edilmeli
- İdrar pH hedefi 7.5-8.5 (her 15-30 dk'da kontrol)
- Her 2-4 saatte K ve HCO_3 düzeyi kontrol

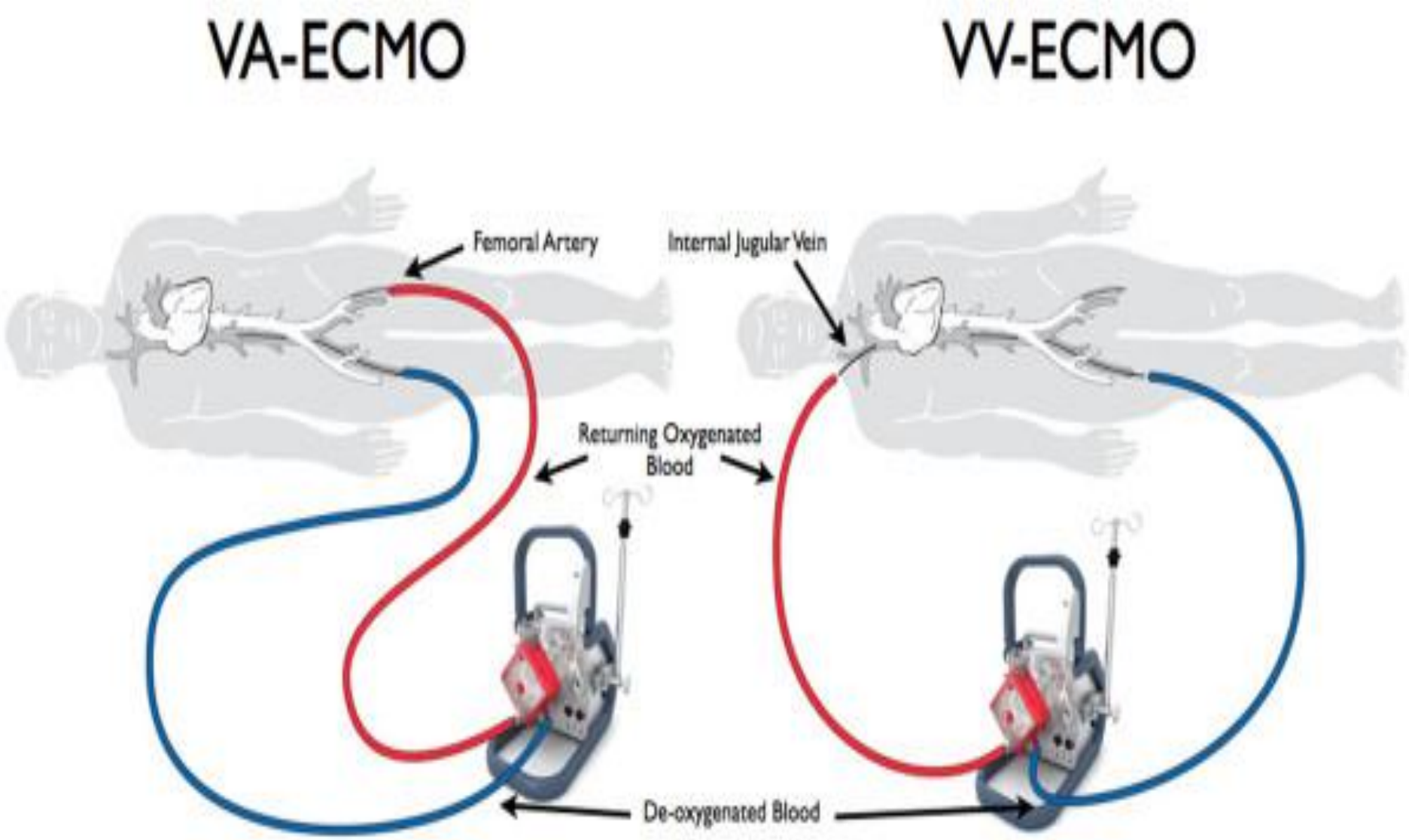
Ekstrakorporeal Uzaklaştırma

- Hemodiyaliz,
- Hemoperfüzyon
- Devamlı Renal replasman tedavisi



  - Düşük molekül hacmi(<1.0 L/kg),
  - Düşük moleküler ağırlık (ağırlık (<500 Da),
  - Rölatif olarak düşük proteinlere bağlanma
  - Düşük endojen klirens

ECMO (Extracorporeal Membrane Oxygenation)



ECMO related parts & equipment

System console

Oxygenator

Centrifugal pump

Return cannula

Access cannula

Warmer

Air/O_2 blender

Zehirlenme ve ECMO

Rev Med Liege. 2017 Mar;72(3):115-120.

[How I treat … severe beta-blocker poisoning : pharmacological approaches and ECMO].

[Article in French; Abstract available in French from the publisher]

Horward P[1], Lambermont B[2], Defraigne JO[3], Gurdebeke C[4], Morimont P[3].

Author information

Abstract in **English**, French

We report the case of a woman with severe beta-blocker poisoning who, after failure of pharmacological therapy, was supported with an ECMO (ExtraCorporeal Membrane Oxygenation) device. We discuss conventional pharmacological treatments and other approaches that have emerged over the past decade such as high dose insulin therapy and lipid emulsions. Major advance has been achieved in the field of ECMO devices and their management. ECMO is now the first line device for refractory acute cardiac and/or pulmonary failure. Finally, we review the role of veno-arterial ECMO in cardiodepressive drug poisoning.

KEYWORDS: Beta; ECMO ; Poisoning; Cardiogenic shock ; blockers

ECMO refrakter akut kardiyak veya solunum yetmezliği için ilk sıra tedavidir.

Clin Toxicol (Phila). 2013 Jun;51(5):385-93. doi: 10.3109/15563650.2013.800876. Epub 2013 May 23.

Extracorporeal membrane oxygenation in the treatment of poisoned patients.

de Lange DW[1], Sikma MA, Meulenbelt J.

Author information

1 Department of Intensive Care Medicine, University Medical Center Utrecht, 3584 CX Utrecht, the Netherlands.

Abstract

CONTEXT: Although extracorporeal membrane oxygenation (ECMO) was used in many patients following its introduction in 1972, most hospitals had abandoned this experimental treatment for adult patients. Recently, improvements in the ECMO circuitry rendered it more biocompatible. The surprisingly low mortality in patients with severe acute respiratory distress syndrome who were treated with ECMO in the influenza A/H1N1 pandemic of 2009 resurrected interest in ECMO in many intensive care units around the world.

OBJECTIVES: This article reviews the different techniques of ECMO, the indications, contraindications and complications of its use, its role in poisoned patients and the ethics of its use.

METHODS: We searched Pubmed, Toxnet, Cochrane database and Embase from 1966 to September 2012 using the search terms ("extracorporeal membrane oxygenation", 'extracorporeal life support', 'ECMO', 'ECLS', 'assist-device', and 'intox*' or 'poison*'). These searches identified 242 papers of which 116 described ECMO in conditions other than intoxications or were reviews. In total 46 publications selected for this manuscript were case reports or case series involving poisoned patients. ECMO TECHNIQUES: Two types of ECMO are used: veno-venous ECMO (VV-ECMO) or veno-arterial ECMO (VA-ECMO). VV-ECMO is used for patients with severe ARDS to secure adequate oxygenation of the organs while protecting the lungs from harmful ventilation pressures or prolonged inspiratory fraction of oxygen. VA-ECMO can be used whenever the patient remains in shock despite adequate fluid resuscitation and is refractory to administration of inotropes and vasopressors.
INDICATIONS: The organ support that can be applied with ECMO makes it especially useful in patients with severe poisoning as the clinical impact of the intoxication is often temporary; ECMO can be used as a 'bridge to recovery'.

CONTRAINDICATIONS: Absolute contraindications are uncontrolled coagulopathy and severe intracranial bleeding, which precludes the use of anticoagulation therapy. Relative contraindications to ECMO include advanced age, severe irreversible brain injury, untreatable metastatic cancer, severe organ dysfunction (some suggest a Sequential Organ Failure Assessment (SOFA) score > 15), and high pressure positive pressure ventilation for more than 7 days.

COMPLICATIONS: The most common complication of ECMO is either bleeding at the cannulation site (in VV-ECMO) or bleeding at the surgical entry site (in VA-ECMO). Overall bleeding complications currently occur in 10-36% patients, and intracranial haemorrhage is seen in up to 6% of patients. ECMO should be reserved, therefore, for the most severely ill poisoned patients with a high risk of death. ECMO in poisoned patients. There are no randomised trials of ECMO in poisoned patients with refractory shock or who have ARDS caused by an intoxication. VV-ECMO can be considered in patients with type I and II respiratory failure. In patients with life-threatening haemodynamic instability, VA-ECMO can be considered when shock persists despite volume administration, inotropes and vasoconstrictors, and (sometimes) intra-aortic balloon counterpulsation. Typical examples include poisoning due to calcium channel antagonists, beta-blockers, tricyclic antidepressants, chloroquine and colchicine. ETHICS OF ECMO USE: It is only ethical to use such a costly intervention (£19,252 and US$

Intensive Care Med (2017) 43:1538–1539
DOI 10.1007/s00134-017-4842-9

LETTER

Extracorporeal membrane oxygenation for poisoning in adult patients: outcomes and predictors of mortality

Kollengode Ramanathan[1*], Chuen S. Tan[2], Peter Rycus[3] and Graeme MacLaren[1]

ECMO ile desteklenen zehirlenmiş yetişkin hastaların sağkalım oranı %59,
inhalasyon veya aspirasyon içinVV-ECMO uygulananlarda ise bu oran %90'lara yaklaşmıştır..

J. Med. Toxicol. (2016) 12:95–99
DOI 10.1007/s13181-015-0486-8

TOXICOLOGY INVESTIGATION

Extracorporeal Membrane Oxygenation (ECMO) for Severe Toxicological Exposures: Review of the Toxicology Investigators Consortium (ToxIC)

- ECMO ‘nun zehirlenmelerde kullanımı yeni ve kısıtlı.
- Şiddetli zehirlenmelerde kardiyovasküler kolaps öncesi yapılırsa geçerli ve etkili bir tedavi olabilir

chult[4,6] · S. Yin[7] ·

onclusion

CMO was rarely used for toxicological exposures in the CMT ToxIC Registry. When utilized, it was for a variety pharmaceutical and non-pharmaceutical exposures in both lults and pediatric patients. In most cases, ECMO was ad-inistered prior to cardiac arrest, and the survival rate was gh. If available, ECMO may be a valid treatment modality r severe poisoning exposures prior to cardiovascular llapse.

Taburculuk Kararı

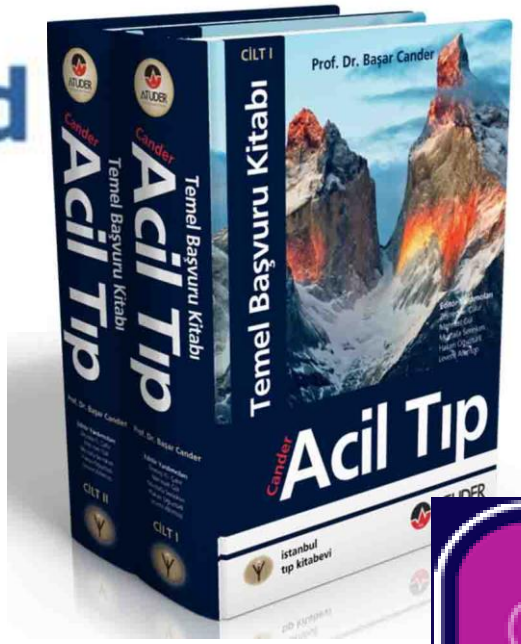
- Şiddetli zehirlenme işaretleri olan hastalar; yoğun bakım
  - (nöbet, ısrarlı kardiyovasküler anstabilite, önemli metabolik bozukluk….gibi)
- Gelişte asemptomatik de olsa tehlikeli bir madde alımı veya yavaş salınımlı potansiyel tehlikeli ajan alımı; en az 24 saat gözlem
  - (kalsiyum kanal blokerleri, selektif norepinefrin reuptake inhibitörleri, yeni kuşak antipsikotikler…)
- Asemptomatik ve beklenen toksisitesi minimum olan alımlar; 6-8 saat gözlem yeterli

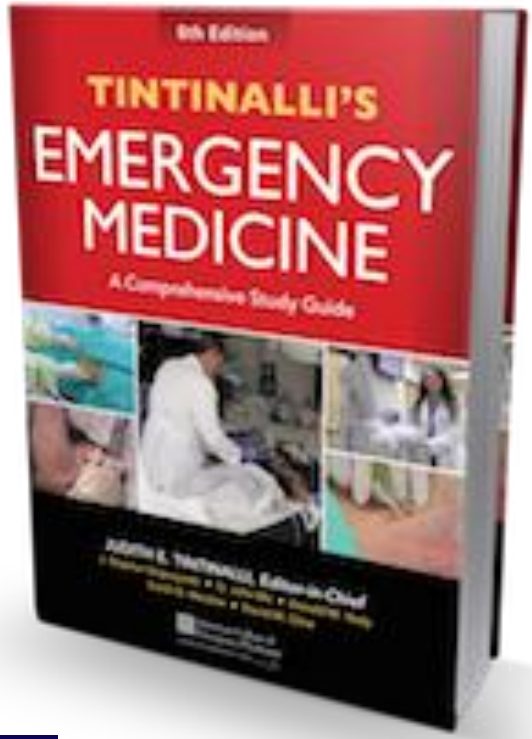
Sonuç ve Beklenti

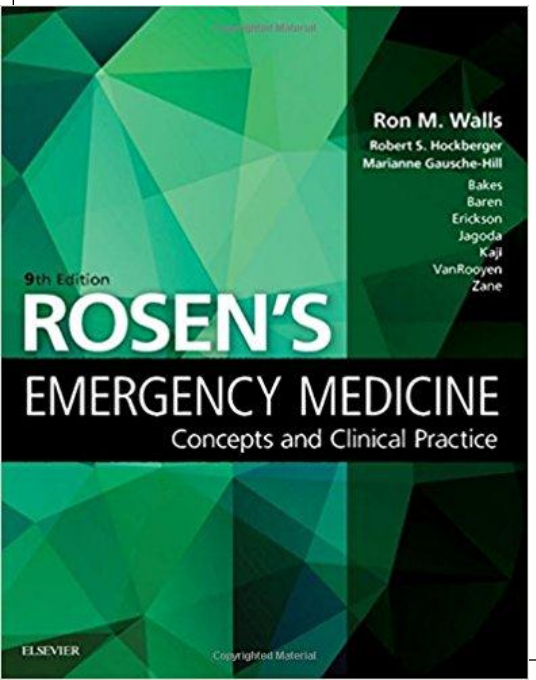
- İpeka şurubunun acil servis bakımında yeri yoktur
- Gastrik lavaj rutin bakımın bir parçası değildir
- Antidotu olmayan ve potansiyel ölümcül ajanlar için zamanında (1 saat..) uyanık ve koopere hastaya verilen aktif kömür hala kullanışlı
- ECMO giderek daha çok kullanılacak ve faydalı görünüyor
- Asıl beklenti antidotların etkin kullanımı…Yeni Antidotlar yeni umutlar….

Teşekkürler

PubMed
National Library of Medicine NLM







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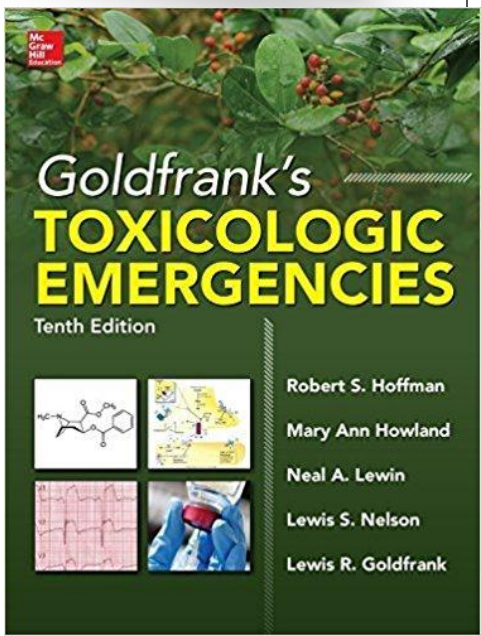


ATUDER KAPADOKYA TOKSİKOLOJİ SEMPOZYUMU
KAPATOKS 2018
ACİL TIP
SAĞLIK BİLİMLERİ ÜNİVERSİTESİ
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Acil Tıp Uzmanları Derneği
21 - 23 EYLÜL 2018
RAMADA CAPPADOCIA
ÜRGÜP, NEVŞEHİR
BUTO