Travma Hastasında Komplikasyonlar

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Plan:

- Komplikasyonun tanımı
- Önemi
- Travma hastasının takibi sırasında
- Hastane öncesi
- Tanı ve tedavi sırasında

- Bir hastalığın seyri sırasında veya hastalığın tedavisinde, hastalığın seyrini olumsuz olarak etkileyen , hastayı ağırlaştıran durumlara verilen isimdir.

Travma hastasının takibi sırasında

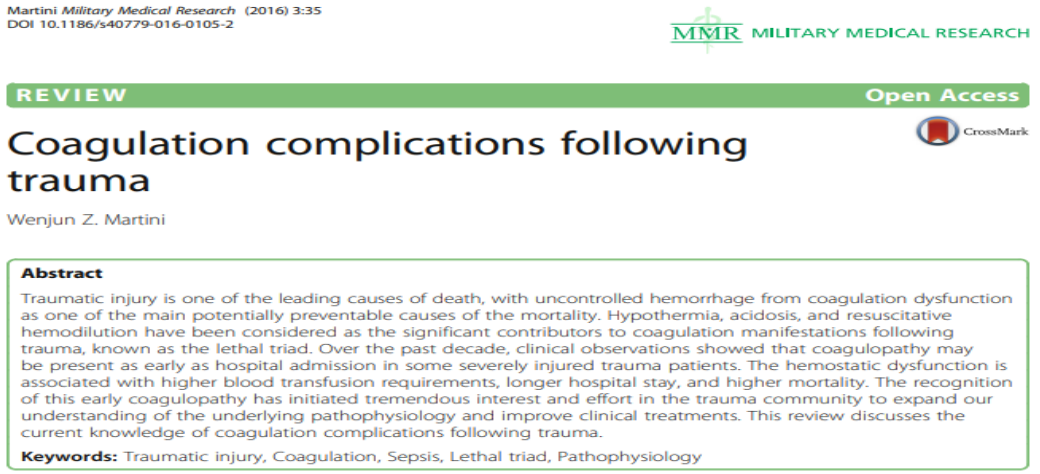

scientific reports

OPEN

The impact of infection complications after trauma differs according to trauma severity

Akira Komori[1,2], Hiroki Iriyama[1,2], Takako Kainoh[1], Makoto Aoki[3,4], Toshio Naito[2] & Toshikazu Abe[1,5]

The impact of infection on the prognosis of trauma patients according to severity remains unclear. We assessed the impact of infection complications on in-hospital mortality among patients with trauma according to severity. This retrospective cohort study used a nationwide registry of trauma patients. Patients aged ≥ 18 years with blunt or penetrating trauma who were admitted to intensive care units or general wards between 2004 and 2017 were included. We compared the baseline characteristics and outcomes between patients with and without infection and conducted a multivariable logistic regression analysis to investigate the impact of infection on in-hospital mortality according to trauma severity, which was classified as mild [Injury Severity Score (ISS) < 15], moderate (ISS 15–29), or severe (ISS ≥ 30). Among the 150,948 patients in this study, 10,338 (6.8%) developed infections. Patients with infection had greater in-hospital mortality than patients without infection [1085 (10.5%) vs. 2898 (2.1%), $p < 0.01$]. After adjusting for clinical characteristics, in-hospital mortality differed between trauma patients with and without infection according to trauma severity [17.1% (95% CI 15.2–18.9%) vs. 2.9% (95% CI 2.7–3.1%), $p < 0.01$, in patients with mild trauma; 14.8% (95% CI 13.3–16.3%) vs. 8.4% (95% CI 7.9–8.8%), $p < 0.01$, in patients with moderate trauma; and 13.5% (95% CI 11.2–15.7%) vs. 13.7% (95% CI 12.4–14.9%), $p = 0.86$, in patients with severe trauma]. In conclusion, the effect of infection complications in patients with trauma on in-hospital mortality differs by trauma severity.


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MMR MILITARY MEDICAL RESEARCH

REVIEW Open Access

Coagulation complications following trauma

Wenjun Z. Martini

Abstract

Traumatic injury is one of the leading causes of death, with uncontrolled hemorrhage from coagulation dysfunction as one of the main potentially preventable causes of the mortality. Hypothermia, acidosis, and resuscitative hemodilution have been considered as the significant contributors to coagulation manifestations following trauma, known as the lethal triad. Over the past decade, clinical observations showed that coagulopathy may be present as early as hospital admission in some severely injured trauma patients. The hemostatic dysfunction is associated with higher blood transfusion requirements, longer hospital stay, and higher mortality. The recognition of this early coagulopathy has initiated tremendous interest and effort in the trauma community to expand our understanding of the underlying pathophysiology and improve clinical treatments. This review discusses the current knowledge of coagulation complications following trauma.

Keywords: Traumatic injury, Coagulation, Sepsis, Lethal triad, Pathophysiology

Hastalığın seyri sırasında yaşanabilecek komplikasyonlar

- Ventilatör ilişkili pnömoni
- Kateter ilişkili infeksiyon
- Sepsis
- Travma ilişkili koagülopati
- DVT / Pulmoner emboli

ORIGINAL CONTRIBUTION Open Access

Complications and in-hospital mortality in trauma patients treated in intensive care units in the United States, 2013

Meghan Prin[1*] and Guohua Li[1,2]

- **Nörolojik Komplikasyonlar**
- Deliryum (%30'a varan sıklık)
- Uzamış sedasyon, immobilite
- ICP artışı, sekonder beyin hasarı

- **Diğer Komplikasyonlar**
- Dekübit ülseri
- Bası yaraları
- İmmobilite ilişkili komplikasyonlar

Önleyici Stratejiler

- Standart bakım protokolleri
  - ✓ İnvaziv ve gelişmiş hemodinamik monitörizasyon
  - ✓ POCUS ve yatak başı ultrason
  - ✓ Mekanik ventilasyon ileri analizleri (EIT vb.)
  - ✓ EEG, pupillometri, ICP
  - ✓ Renal erken uyarı (idrara çıkış)
  - ✓ Sepsis erken uyarı algoritmaları
  - ✓ Laktat ve mikrosirkülasyon izlem
  - ✓ AI ve tele-ICU tabanlı uyarı sistemleri
- Multidisipliner ekip yönetimi
  - Braden Skalası, Waterlow Skalası
- Eğitim & simülasyon
- Bir komplikasyon diğerini tetikler

A-HAVAYOLU KOMPLİKASYONLARI

- Zor hava yolu / entübasyon zorluğu
- Özofageal entübasyon
- Endobronşiyal entübasyon (sağ ana bronşa)
- Aşırı entübasyon denemelerine bağlı hipoksi
- Aspirasyon (mide içeriği, kan)
- Havayolu travmasına bağlı ödem → ani havayolu kapanması
- Krikotiroidotomi / trakeostomi komplikasyonları
    - Kanama
    - Alt hava yolu yaralanması

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Complications following thoracic trauma managed with tube thoracostomy

Richard Menger, Georgianna Telford, Patrick Kim, Meredith R. Bergey, Juron Foreman, Babak Sarani, Jose Pascual, Patrick Reilly, Charles W. Schwab, Carrie A. Sims *

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B-SOLUNUM KOMPLİKASYONLARI

- Pnömotoraks (travmatik veya iatrojenik)
- **Tansiyon pnömotoraks (gecikmiş tanı)**
- Hemotoraks / masif hemotoraks
- Pnömomediastinum
- Pulmoner kontüzyona bağlı ciddi hipoksi
- Ventilasyon yetmezliği
- Toraks tüpü komplikasyonları
  - Yanlış yerleşim
  - Parankim yaralanması
  - İnterkostal damar/nerv hasarı
  - Enfeksiyon / ampiyem

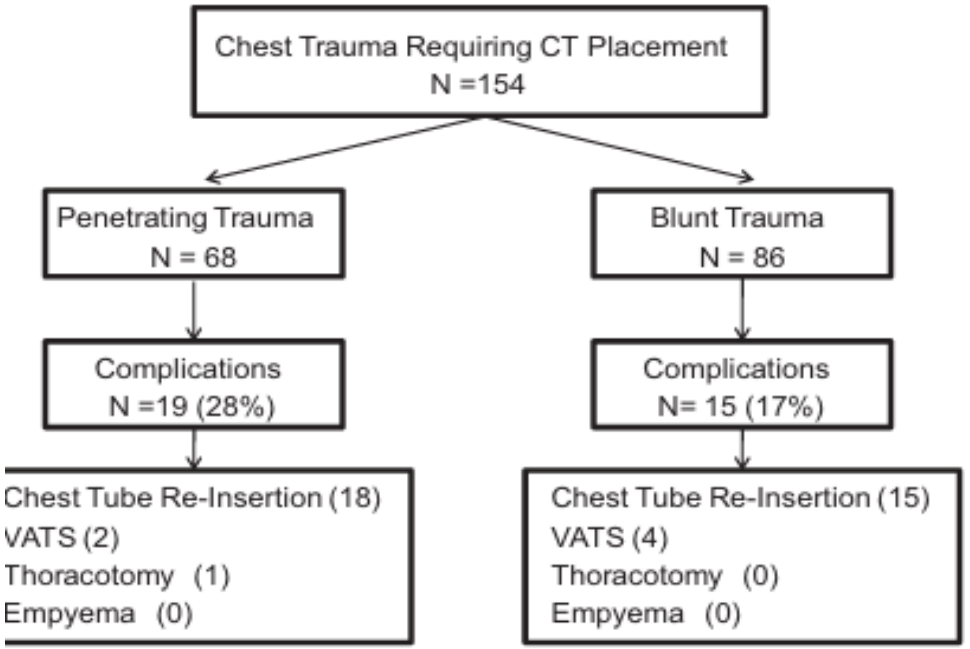


Fig. 1. Chest tube trauma complications and management.

C-SİRKÜLASYON KOMPLİKASYONLARI

- Hipovolemik şok → gecikmiş kanama kontrolü
- Travmatik koagülopati / masif transfüzyon komplikasyonları
  - Hipokalsemi
  - Hipotermi
  - Dilüsyonel koagülopati
  - TRALI / TACO
- Kardiyak tamponad (gecikmiş tanı)
- Travmatik aort / büyük damar yaralanmalarının atlanması
- Vasküler erişim komplikasyonları
  - Arter ponksiyonu
  - Hematom, hemotoraks, pnömotoraks
  - Hava embolisi
- Perikardiyal veya torasik yaralanmaların geç fark edilmesi

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Traumatic injury is one of the leading causes of death, with uncontrolled hemorrhage from coagulation dysfunction as one of the main potentially preventable causes of the mortality. Hypothermia, acidosis, and resuscitative hemodilution have been considered as the significant contributors to coagulation manifestations following trauma, known as the lethal triad. Over the past decade, clinical observations showed that coagulopathy may be present as early as hospital admission in some severely injured trauma patients. The hemostatic dysfunction is associated with higher blood transfusion requirements, longer hospital stay, and higher mortality. The recognition of this early coagulopathy has initiated tremendous interest and effort in the trauma community to expand our understanding of the underlying pathophysiology and improve clinical treatments. This review discusses the current knowledge of coagulation complications following trauma.

Keywords: Traumatic injury, Coagulation, Sepsis, Lethal triad, Pathophysiology

NÖROLOJİK (D – Disability) KOMPLİKASYONLARI

- Sekonder beyin hasarı
  - Hipoksi
  - Hipotansiyon
  - Hiperkapni
  - Hipoglisemi
- Artan kafa içi basıncı (ICP)
- Nörojenik şok
- Travma sonrası nöbet
- Spinal kord yaralanmasının kötüleşmesi
  - Uygunsuz taşıma
  - Yetersiz immobilizasyon

ÇEVRE (E – Exposure) KOMPLİKASYONLARI

- Hipotermi (resüsitasyon sırasında sık)
- Cilt/yanık yaralanmalarının gözden kaçması
- Gecikmiş diyafragma yaralanması tanısı
- Gizli kanama alanlarının atlanması
  - Retroperitoneal
  - Pelvik
  - İntraperitoneal küçük perforasyonlar

- Tanıda gecikme veya tanı atlama
  - Acil değerlendirme
  - Görüntüleme
  - Bilinçli tercih
- İşlemsel/ iatrojenik
  - Deneyim eksikliği
  - Yeterli ekip ve ekipman eksikliği
- Enfeksiyöz komplikasyonlar
  - Aşı ve antibiyotik



RESEARCH Open Access

Trauma complications and in-hospital mortality: failure-to-rescue

Toshikazu Abe[1,2*], Akira Komori[3], Atsushi Shiraishi[4], Takehiro Sugiyama[1,5,6], Hiroki Iriyama[3], Takako Kainoh[3] and Daizoh Saitoh[7]

Abstract

Background: Reducing medical errors and minimizing complications have become the focus of quality improvement in medicine. Failure-to-rescue (FTR) is defined as death after a surgical complication, which is an institution-level surgical safety and quality metric that is an important variable affecting mortality rates in hospitals. This study aims to examine whether complication and FTR are different across low- and high-mortality hospitals for trauma care.

Methods: This was a retrospective cohort study performed at trauma care hospitals registered at Japan Trauma Data Bank (JTDB) from 2004 to 2017. Trauma patients aged ≥ 15 years with injury severity score (ISS) of ≥ 3 and those who survived for > 48 h after hospital admission were included. The hospitals in JTDB were categorized into three groups by standardized mortality rate. We compared trauma complications, FTR, and in-hospital mortality by a standardized mortality rate (divided by the institute-level quartile).

Results: Among 184,214 patients that were enrolled, the rate of any complication was 12.7%. The overall mortality rate was 3.7%, and the mortality rate among trauma patients without complications was only 2.8% (non-precedented deaths). However, the mortality rate among trauma patients with any complications was 10.2% (FTR). Hospitals were categorized into high- (40 facilities with 44,773 patients), average- (72 facilities with 102,368 patients), and low- (39 facilities with 37,073 patients) mortality hospitals, using the hospital ranking of a standardized mortality rate. High-mortality hospitals showed lower ISS than low-mortality hospitals [10 (IQR, 9–18) vs. 11 (IQR, 9–20), $P < 0.01$]. Patients in high-mortality hospitals showed more complications (14.2% vs. 11.2%, $P < 0.01$), in-hospital mortality (5.1% vs. 2.5%, $P < 0.01$), FTR (13.6% vs. 7.4%, $P < 0.01$), and non-precedented deaths (3.6% vs. 1.9%, $P < 0.01$) than those in low-mortality hospitals.

Conclusions: Unlike reports of elective surgery, complication rates and FTR are associated with in-hospital mortality rates at the center level in trauma care.

Keywords: Injuries, Hospital mortality, Indicators, Quality

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EMERGENCY RADIOLOGY

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Traumatic injuries: imaging and intervention in post-traumatic complications (delayed intervention)

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apeutic angiography and image-guided drainage. Subsequent complications, which do not necessarily negatively influence the final outcome, are often predictable, virtually obligatory consequences of the successful NOM of high-grade or complex abdominal injuries. Between 50 and 60% of those patients with grade-IV or grade-V liver or splenic lacerations require some type of interventional treatment; therefore, indiscriminate discharge of patients with solid organ injury managed conservatively may be potentially harmful. As the incidence of complications is higher

that a strict imaging follow-up is performed until complete disappearance of these lesions. If needed, embolization of parenchymal vascular lesions should be performed as selectively as possible in order to avoid functional parenchyma loss and to reduce the risk of secondary infection of hematoma or ischemic tissue. Technical improvements, such as microcatheter systems and direct percutaneous approach to targeted lesions, have widened the potential for safe endovascular management of acquired vascular malformations. Advantages and disadvantages relative to the different

Önleyici Stratejiler

Original Article

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Delayed injuries in the emergency department in hospitalised trauma patients

Serhat Orun[1], Ayhan Akoz[2], Ali Duman[2], Kenan Ahmet Turkdogan[2], Mevlüt Türe[3] and Derya Unlu[4]

Abstract

Introduction: Busy emergency departments are associated with medical errors in care and evaluation for unstable trauma patients. Our study aimed to determine the extent, causes and adverse clinical consequences of missed injuries and delayed diagnoses in patients hospitalised with trauma in a Turkish Level 3 emergency department, and provide recommendations for emergency service workers and supervisors to help them reduce the number of injury diagnoses that are delayed.

Methods: In our prospective study, a total of 515 emergency department patients presenting with trauma between 1 July 2014 and 1 July 2015 were examined by an emergency physician and by a consultant, if necessary. Identified injuries were recorded using case forms, and hospitalised patients were discharged when their treatment was completed. After the patients were discharged their files were reviewed again and new injuries, different from those recorded in the case forms, were investigated.

Results: Of the 515 patients included, it was shown that an injury diagnosis had been delayed in 21 (3.9%). Of these injuries, 65% were related to the musculoskeletal system. Insufficient clinical evaluation of 95% of the patients who had a missed injury was identified, and, in 70% of missed injuries, the radiology reports had been delayed or incorrectly completed.

Conclusion: We believe that the delayed injury rate can be reduced in trauma patients with the use of fast and reliable radiological support and the intervention of a multidisciplinary trauma team.

Birden fazla faktörden kaynaklanır

- Anamnez eksikliği
- Aynı anda birden fazla görev
- Birden fazla bölüm değerlendirmesi
- Acil servislerin aşırı kalabalık olması ve radyolojik hatalar
- Çalışmamızda radyolojik hata oranı %70
- Radyoloji hekimine yeterli klinik bilgi verilmemesi
- Radyolojik rapor gecikmesi veya yanlış raporlama
- Asistan deneyimi
- Travma ekibi eksikliği

- Hızlı ve güvenilir radyolojik destek alan multidisipliner bir travma ekibinin müdahalesiyle
- Travma hastalarında gecikmiş yaralanma sayısının önemli ölçüde azalacağına inanıyoruz.

- Teşekkürler..