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Clinical Toxicology

Association of renal function and symptoms with mortality in star fruit (*Averrhoa carambola*) intoxication

Published 26 April 2017, Pages 624-628

Choon-Bing Chua, Cheuk-Kwan Sun, Huan-Wen Tsui, Po-Jen Yang, Kuo-Hsin Lee, Chih-Wei Hsu & I-Ting Tsai

Background: Star fruit (SF) is a commonly available fruit produced and eaten in tropical and subtropical countries. Since 1993, various reports have described neurotoxicity after eating SF, but this clinical condition remains unfamiliar. We aimed to describe this clinical entity, the role of renal dysfunction in this disorder, treatment strategies, and prognosis of patients with SF intoxication.

Methods: We conducted a search of PubMed and Google Scholar databases from 1993 to 2016. We included reports describing patients with a clear history of SF ingestion with acute symptoms. We described the demographic characteristics, reported SF intake, treatments used, and outcomes.

Results: We reviewed totally 126 patients (male:female = 1.5:1) from 33 articles with mean age 54.4 ± 11 (range: 30–84). The most common symptom was hiccups (65%), whereas confusion and seizure were the most common symptoms associated with mortality (42% and 61%, respectively). Pre-intoxication renal function also affected mortality. While there was no mortality in patients with normal renal function (NRF), the mortality of patients among reported cases with chronic renal insufficiency and end-stage renal disease undergoing dialysis were 36% and 27%, respectively. With the inclusion of patients reported to have NRF, the overall mortality was 24%. Consistently, the number of SF consumed was substantially higher in the patients with NRF than those with renal functional impairment. The most common treatment strategy was hemodialysis (59%).

Conclusions: Patients with impaired renal function were at higher risks of SF intoxication. Severe neurologic symptoms mandate immediate medical intervention because of the association between their occurrence and high mortalities. Toxin removal through dialysis, rather than symptomatic relief, seems to be beneficial to patient survival. Early and continuous dialysis appears to alleviate severe symptoms and prevent symptom rebounds.

<http://dx.doi.org/10.1080/15563650.2017.1314490>

BACK

Clinical Toxicology

Loperamide metabolite-induced cardiomyopathy and QTc prolongation

Published 28 March 2017, Pages 659-661

Zabeer Bhatti, Jessica Norsworthy & Tamas Szombathy

Loperamide is an over-the-counter, peripherally acting, μ -opioid receptor agonist used for the treatment of diarrhea. In recent times users have found that at higher doses, loperamide crosses the blood–brain barrier and reaches central μ -receptors in the brain, leading to central opiate effects including euphoria and respiratory depression. We report a case of a 37-year-old female who attempted suicide with over 200 loperamide tablets. During her overdose, her QTc was significantly prolonged at >600 ms. Our case aims to add to the growing body of literature describing life-threatening ventricular arrhythmias associated with loperamide toxicity and further suggests that a metabolite of loperamide, desmethyloperamide, may play a role in the pathogenesis.

<http://dx.doi.org/10.1080/15563650.2017.1304555>

BACK

Critical Care

High-flow nasal cannula oxygen therapy is superior to conventional oxygen therapy but not to noninvasive mechanical ventilation on intubation rate: a systematic review and meta-analysis

July 2017, Volume 21, Published 12 July 2017

Huiying Zhao, Huixia Wang, Feng Sun, Shan Lyu and Youzhong An

Background: High-flow nasal cannula oxygen (HFNC) is a relatively new therapy used in adults with respiratory failure. Whether it is superior to conventional oxygen therapy (COT) or to noninvasive mechanical ventilation (NIV) remains unclear. The aim of the present study was to investigate whether HFNC was superior to either COT or NIV in adult acute respiratory failure patients.

Methods: A review of the literature was conducted from the electronic databases from inception up to 20 October 2016. Only randomized clinical trials comparing HFNC with COT or HFNC with NIV were included. The intubation rate was the primary outcome; secondary outcomes included the mechanical ventilation rate, the rate of escalation of respiratory support and mortality.

Results: Eleven studies that enrolled 3459 patients (HFNC, $n = 1681$) were included. There were eight studies comparing HFNC with COT, two comparing HFNC with NIV, and one comparing all three. HFNC was associated with a significant reduction in intubation rate (OR 0.52, 95% CI 0.34 to 0.79, $P = 0.002$), mechanical ventilation rate (OR 0.56, 95% CI 0.33 to 0.97, $P = 0.04$) and the rate of escalation of respiratory support (OR 0.45, 95% CI 0.31 to 0.67, $P < 0.0001$) when compared to COT. There was no difference in mortality between HFNC and COT utilization (OR 1.01, 95% CI 0.67 to 1.53, $P = 0.96$). When HFNC was compared to NIV, there was no difference in the intubation rate (OR 0.96; 95% CI 0.66 to 1.39, $P = 0.84$), the rate of escalation of respiratory support (OR 1.00, 95% CI 0.77 to 1.28, $P = 0.97$) or mortality (OR 0.85, 95% CI 0.43 to 1.68, $P = 0.65$).

Conclusions: Compared to COT, HFNC reduced the rate of intubation, mechanical ventilation and the escalation of respiratory support. When compared to NIV, HFNC showed no better outcomes. Large-scale randomized controlled trials are necessary to prove our findings.

<https://doi.org/10.1186/s13054-017-1760-8>

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Critical Care

The future of mechanical ventilation: lessons from the present and the past

July 2017, Volume 21, Published 12 July 2017

Luciano Gattinoni, John J. Marini, Francesca Collino, Giorgia Maiolo, Francesca Rapetti, Tommaso Tonetti, Francesco Vasques and Micheal Quintel

The adverse effects of mechanical ventilation in acute respiratory distress syndrome (ARDS) arise from two main causes: unphysiological increases of transpulmonary pressure and unphysiological increases/decreases of pleural pressure during positive or negative pressure ventilation. The transpulmonary pressure-related side effects primarily account for ventilator-induced lung injury (VILI) while the pleural pressure-related side effects primarily account for hemodynamic alterations. The changes of transpulmonary pressure and pleural pressure resulting from a given applied driving pressure depend on the relative elastances of the lung and chest wall. The term 'volutrauma' should refer to excessive strain, while 'barotrauma' should refer to excessive stress. Strains exceeding 1.5, corresponding to a stress above ~20 cmH₂O in humans, are severely damaging in experimental animals. Apart from high tidal volumes and high transpulmonary pressures, the respiratory rate and inspiratory flow may also play roles in the genesis of VILI. We do not know which fraction of mortality is attributable to VILI with ventilation comparable to that reported in recent clinical practice surveys (tidal volume ~7.5 ml/kg, positive end-expiratory pressure (PEEP) ~8 cmH₂O, rate ~20 bpm, associated mortality ~35%). Therefore, a more complete and individually personalized understanding of ARDS lung mechanics and its interaction with the ventilator is needed to improve future care. Knowledge of functional lung size would allow the quantitative estimation of strain. The determination of lung inhomogeneity/stress raisers would help assess local stresses; the measurement of lung recruitability would guide PEEP selection to optimize lung size and homogeneity. Finding a safety threshold for mechanical power, normalized to functional lung volume and tissue heterogeneity, may help precisely define the safety limits of ventilating the individual in question. When a mechanical ventilation set cannot be found to avoid an excessive risk of VILI, alternative methods (such as the artificial lung) should be considered.

<https://doi.org/10.1186/s13054-017-1750-x>

BACK

Annals of Emergency Medicine

Clostridium difficile Infection Among US Emergency Department Patients With Diarrhea and No Vomiting

July 2017, Volume 70, Issue 1, Pages 19-27

Abrahamian FM, Talan DA, Krishnadasan A, Citron DM, Paulick AL, Anderson LJ, Goldstein EJC, Moran GJ

Study objective. Although validated risk-stratification tools have been used to send low-risk febrile neutropenic patients home from clinic and inpatient settings, there is a dearth of research evaluating these scores in the emergency department (ED). We compare the predictive accuracy of the Multinational Association for Supportive Care in Cancer (MASCC) and Clinical Index of Stable Febrile Neutropenia (CISNE) scores for patients with chemotherapy-induced febrile neutropenia and presenting to the ED.

Methods. We conducted a retrospective cohort study to evaluate all patients with febrile neutropenia (temperature 38C [100.4F], absolute neutrophil count < 1,000 cells/mL) who presented to 2 academic EDs from June 2012 through January 2015. MASCC and CISNE scores were calculated for all subjects, and each visit was evaluated for several outcome variables, including inpatient length of stay, upgrade in level of care, clinical deterioration, positive blood culture results, and death. Descriptive statistics are reported and continuous variables were analyzed with Wilcoxon rank sum.

Results. During our study period, 230 patients presented with chemotherapy-induced febrile neutropenia. The CISNE score identified 53 (23%) of these patients as low risk and was highly specific in the identification of a low-risk cohort for all outcome variables (98.3% specific, 95% confidence interval [CI] 89.7% to 99.9%; positive predictive value 98.1%, 95% CI 88.6% to 99.9%). Median length of stay was shorter for low-risk versus high-risk CISNE patients (3-day difference; P <.001). The MASCC score was much less specific (54.2%; 95% CI 40.8% to 67.1%) in the identification of a low-risk cohort.

Conclusion. Our results suggest that the CISNE score may be the most appropriate febrile neutropenia risk-stratification tool for use in the ED.

<http://dx.doi.org/10.1016/j.annemergmed.2016.12.013>

BACK

Annals of Emergency Medicine

Does This Patient With Chest Pain Have Acute Coronary Syndrome?

July 2017, Volume 70, Issue 1, Pages 44-45

Sameer Sharif, Suneel Upadhye

The accuracy of individual risk factors, symptoms, and signs in isolation to diagnose acute coronary syndrome is poor. The history, ECG, age, risk factors, and troponin score (HEART) and the Thrombolysis in Myocardial Infarction (TIMI) score have strong diagnostic value and should be used as part of the clinical assessment of these patients.

<http://dx.doi.org/10.1016/j.annemergmed.2016.09.039>

BACK

American Journal of Emergency Medicine

The impact of ED crowding on early interventions and mortality in patients with severe sepsis

July 2017, Volume 35, Issue 7, Pages 953-960

Gaieski DF, Agarwal AK, Mikkelsen ME, Drumheller B, Cham Sante S, Shofer FS, Goyal M, Pines JM.

Objective: Critically ill patients require significant time and care coordination in the emergency department (ED). We hypothesized that ED crowding would delay time to intravenous fluids and antibiotics, decrease utilization of protocolized care, and increase mortality for patients with severe sepsis or septic shock.

Methods: This was a retrospective cohort study of severe sepsis patients admitted to the hospital from the ED between January 2005 and February 2010. Associations between four validated measures of ED crowding (occupancy, waiting patients, admitted patients, and patient-hours) assigned at triage, and time of day, time to antibiotics and fluids, and mortality were tested by analyzing trends across crowding quartiles.

Results: During the study period, 2913 severe sepsis patients were admitted to the hospital and 1127 (38.7%) qualified for protocolized care. In-hospital mortality was 14.3% overall and 26% for patients qualifying for protocolized care. Time to IV fluids was delayed as ED occupancy rate increased and as patient hours increased. Time to antibiotics increased as occupancy rates, patient hours, and the number of boarding inpatients increased. Implementation rates of protocolized care decreased from 71.3% to 50.5% ($p < 0.0001$, OR 0.39) as the number of ED inpatient boarders increased; initiation of protocolized care was significantly higher as occupancy increased (OR 1.52). Mortality was unaffected by crowding parameters in all analyses.

Conclusions: With increased ED crowding, time to critical severe sepsis therapies significantly increased and protocolized care initiation decreased. As crowding increases, EDs must implement systems that optimize delivery of time-sensitive therapies to critically ill patients.

<http://dx.doi.org/10.1016/j.ajem.2017.01.061>

BACK

American Journal of Emergency Medicine

The emergency medicine management of severe alcohol withdrawal

July 2017, Volume 35, Issue 7, Pages 1005-1011

Long D, Long B, Koyfman A.

Introduction: Alcohol use is widespread, and withdrawal symptoms are common after decreased alcohol intake. Severe alcohol withdrawal may manifest with delirium tremens, and new therapies may assist in management of this life-threatening condition.

Objective: To provide an evidence-based review of the emergency medicine management of alcohol withdrawal and delirium tremens.

Discussion: The underlying pathophysiology of alcohol withdrawal syndrome (AWS) is central nervous system hyperexcitation. Stages of withdrawal include initial withdrawal symptoms, hallucinations, seizures, and delirium tremens. Management focuses on early diagnosis, resuscitation, and providing medications with gamma-aminobutyric acid (GABA) receptor activity. Benzodiazepines with symptom-triggered therapy have been the predominant medication class utilized and should remain the first treatment option with rapid escalation of dosing. Treatment resistant withdrawal warrants the use of phenobarbital or propofol, both demonstrating efficacy in management. Propofol can be used as an induction agent to decrease the effects of withdrawal. Dexmedetomidine does not address the underlying pathophysiology but may reduce the need for intubation. Ketamine requires further study. Overall, benzodiazepines remain the cornerstone of treatment. Outpatient management of patients with minimal symptoms is possible.

Conclusions: Alcohol withdrawal syndrome can result in significant morbidity and mortality. Physicians must rapidly diagnose these conditions while evaluating for other diseases. Benzodiazepines are the predominant medication class utilized, with adjunctive treatments including propofol or phenobarbital in patients with withdrawal resistant to benzodiazepines. Dexmedetomidine and ketamine require further study.

<http://dx.doi.org/10.1016/j.ajem.2017.02.002>

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Sources

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