

**The Development of Acute Kidney Injury in Burn Patients
Undergoing Computed Tomography with Intravenous Contrast**

**Friday, November 9, 2018
11:15 – 11:30 am**

**Author and
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Objective:

Upon completion of the lecture, attendees should be better prepared to:

- Discuss the frequency of contrast induced nephropathy in hospitalized patients
- Recognize rate of acute kidney injury in burn patients
- Consider the possible impact that contrast CT scans may play in the burn patient's development of acute kidney injury

Abstract:

Introduction: Acute kidney injury (AKI) is a major complication of significant burn injuries and may indicate a poor patient prognosis. Contrast-induced nephropathy is one of the common causes of acute renal failure in hospitalized patients. Patients that sustain both burn injuries and blunt traumatic injuries may require computed tomography (CT) imaging as part of their initial workup. The purpose of this investigation was to determine if burn patients that received CT imaging with intravenous contrast were more likely to develop acute kidney injury during their admission.

Methods: This is a retrospective chart review of patients admitted to a level I trauma with greater than 10% TBSA burns. Patients were excluded if they were admitted for less than 48 hours or died within 48 hours of admission. The electronic medical record was used to extract patient data such as mechanism of injury, total body surface area, length of stay, baseline creatinine, peak creatinine, if CT with contrast was done, and amount of fluid given over the initial 24 and 48 hours. The data was analyzed using student's t-test and Fisher exact test.

Results: A total of 77 patients were included in the study. The average age was 44.3 years and 70.1% of the group was male. The average TBSA was 22.6%, ranging from 10%-80%. Seven of the 77 patients underwent CT scans with IV contrast. The rate of AKI in the total population was 13%. The rate of AKI between patients who did or did not receive CT scans was not statistically significant (14.3 vs 13.9%, $p=.58$). There was no significant difference in the amount of fluids per TBSA given within the first 24 hours between those who developed an AKI and those who did not. Patients who received a CT scan trended towards a higher TBSA (34.6 vs 21.4%, $p=.056$). Patients who developed an AKI had a significantly higher TBSA than those who did not (45.6 vs 19.2%, $p<.0001$). Overall mortality was 10.4%.

Discussion: There was no significant difference in the development of acute kidney injury in burn patients who received CT scans with IV contrast on admission. This may

be due in part to the relatively small numbers of patients that have both burns and blunt traumatic injuries. The extent of the burn remains a significant risk factor for the development of acute kidney injury. Larger multicenter studies should be undertaken to determine how IV contrast affects burn patients during their initial resuscitation. Trauma and burn centers should be aware of the added potential renal insult that CT scans with contrast may incur to a burn patient. However, this should not prevent a thorough evaluation to rule out additional life threatening injuries in the burn trauma patient.

References and Resources:

Clark A, Neyra J, Madni T et al. Acute kidney injury after burn. *Burns*. 2017 Aug;43(5):898-908.

Disclosure:

Jessica R. Burgess – No Relevant Financial Relationships to Disclose
Prachi Mehta – No Relevant Financial Relationships to Disclose