

A Comparison of Drug-Related and Other Cause Compartment Syndrome

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Background: Traditionally seen after traumatic injury, compartment syndrome (CS) is increasingly being reported as a sequela of drug overdose. In this study, we compare drug-related CS to non-drug-related CS.

Hypothesis/Research Question: How do patients with drug-related CS differ in comparison to those without drug overdose?

Methods: This retrospective chart review included adult subjects who received a diagnosis of acute CS at a tertiary care medical center. Patients with orbital or abdominal CS were excluded. Drug exposure was identified by history or quantitative laboratory evidence of recent ethanol or drug use. Patients were further stratified into traumatic and atraumatic arms. Data were abstracted for demographics, etiology, laboratory values, patient outcomes, admission and discharge diagnoses, hospital length/cost of stay, and discharge medications. Results were analyzed using comparative statistics. This study received Institutional Review Board approval.

Results: Between 1/1/12-10/10/15, 117 cases met inclusion criteria. In patients with traumatic CS (75/117), there were no significant differences between the drug-related and non-drug-related arms. In patients with nontraumatic CS (42/117), 15 were drug-associated, including opioids (60%), benzodiazepines (33%), ethanol (33%), antidepressants (20%), antipsychotics (13%), gabapentin (13%), cocaine (13%), and other (27%). Patients with drug-associated nontraumatic CS were younger (41.1 vs 58.3 years, $p=0.001$); had higher peak CPKs (52733 vs 19775 U/L, $p=0.006$); higher frequency of rhabdomyolysis (100 vs 37%, $p<0.001$); more acute renal failure (80 vs 44%, $p=0.027$); and a higher incidence of hyperkalemia (67 vs 26%, $p=0.012$) than non-drug exposed counterparts. There were nonsignificant trends towards longer lengths of stay (20.2 vs 11.7 days) and higher costs of hospitalization (\$51,651 vs \$42,906). Of the 111/117 patients who survived, 106 were discharged with opioids.

Discussion: Drug intoxication had no significant associations in patients with traumatic CS, perhaps because the intoxication was coincidental or a risk factor for injury. Patients with nontraumatic drug-related CS tended to have periods of "down" time, with more muscle necrosis and associated complications.

Conclusion: Drug intoxication or overdose is associated with higher morbidity in patients with nontraumatic CS.