Up In Arms: A Case of Non-Traumatic Acute Compartment Syndrome of the Posterior Upper Arm

Lesley-Ann McCook MD, Travis Park MD, Virginia Velez Quinones MD, Christopher Wood DO

HCA Florida JFK Hospital

INTRODUCTION

- Compartment syndrome of the lower limb and forearm is a well-known pathology following trauma; however, involvement of the upper arm is seen much less frequently.
- We present a rare case of non-traumatic acute compartment syndrome of the posterior upper arm in a 24-year-old female following drug intoxication.

CASE DESCRIPTION

- A 24-year-old female with a PMH of anxiety and polysubstance abuse presented via EMS after being found unresponsive at home with a bottle of Percocet beside her. She was admitted to the ICU for further evaluation and management of acute toxic metabolic encephalopathy and acute hypercapnic respiratory failure in setting of drug overdose.
- She was found to have urine toxicology positive for cocaine and opioids, acute kidney injury with elevated creatinine kinase of 47,000 U/L. She was intubated for airway protection and fluid resuscitated.
- Physical examination revealed asymmetric, tender, mildly tense swelling and warmth of the right posterior upper arm
- The orthopedic service was consulted for concerns of acute compartment syndrome. CT shoulder without contrast revealed extensive soft tissue/ subcutaneous stranding with multiple areas of low density muscular edematous expansion throughout involving the deltoid posteriorly, subscapularis, and serratus anterior muscles.
- Emergent fasciotomy with placement of a JP drain was then done. Following compartment release, ICU level care was continued for management of her other critical illnesses. The patient ultimately continued to show clinical improvement without complications of irreversible injury to muscles or nerves.

IMAGING





Figures 1 & 2: CT Shoulder W/O Contrast Demonstrating Edematous Expansion Within Upper Arm Compartments

DISCUSSION

- An acute compartment syndrome of the upper arm is rare but should be recognized because it is a limb- and life-threatening condition.
- There are several circumstances that can lead to a compartment syndrome of the upper extremity with trauma, particularly involving long bone fractures, being the most common.
- Through this case, we aim to shed light on the less common nontraumatic causes, such as prolonged limb compression following severe drug or alcohol intoxication.
- An early diagnosis is essential because time from diagnosis to fasciotomy is the most important factor influencing outcome.
- Diagnosis is primarily based on clinical suspicion and physical exam findings. Imaging and measurement of compartment pressure are adjuncts to diagnosis however are not required.
- Timely fasciotomy to decompress all involved compartments is vital to prevent devastating consequences such as muscle necrosis, nerve injury, amputation, renal failure, and death.

REFERENCES

- Wippermann B, Schmidt U, Nerlich M. Behandlungsergebnisse beim Kompartmentsyndrom des Oberarms [Results of treatment of compartment syndrome of the upper arm]. Unfallchirurg. 1991 May;94(5):231-5. German. PMID: 1866636.
- Maeckelbergh L, Colen S, Anné L. Upper arm compartment syndrome: a case report and review of the literature. Orthop Surg. 2013 Aug;5(3):229-32. doi: 10.1111/os.12054. PMID: 24002844; PMCID: PMC6583133.
- Gourgiotis S, Villias C, Germanos S, Foukas A, Ridolfini MP. Acute limb compartment syndrome: a review. J Surg Educ. 2007 May-Jun;64(3):178-86. doi: 10.1016/j.jsurg.2007.03.006. PMID: 17574182.