Acute Lower Extremity Compartment Syndrome (ALECS) Screening Protocol in Critically Ill Trauma Patients

Reference:

Scientific Literature Reviews

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Podiatric Relevance:
Acute lower extremity compartment syndrome (ALECS) is associated with a high mortality rate in trauma victims and necessitates fasciotomy. The presented protocol provides a guideline to screen trauma patients for acute lower extremity compartment syndrome if they are at high risk.

Methods:
This prospective observational study included screening of 45 intensive care patients in the Shock Trauma Unit who met at least one high risk criterion, including pulmonary artery catheter-directed shock resuscitation, open or closed tibial shaft fracture, major vascular injury below the aortic trifurcation, abdominal compartment syndrome, pelvic or lower extremity crush injury. Screening started at admission and was repeated every 4 hour for the first 48 hours. The screening began with physical exam, including lower leg circumference, pain assessment, neurological exam, and vascular exam. Compartment pressures were measured in suspected patients. Positive screening, (Delta) P<30 mmHg (where (Delta) P is the difference between the diastolic blood pressure and the compartment pressure), led to an aggressive four compartment fasciotomy.

Results:
The incidence of acute lower extremity compartment syndrome in the screened patients was 20% (nine of the 45 patients) over a six month period. Screening allowed early diagnosis during the intensive care stay. Fasciotomy was the treatment and resulted in no limb loss or neurologic dysfunction. The patients who developed acute lower extremity compartment syndrome, 67% died vs. 17% who did not develop acute lower extremity compartment syndrome. Of the screened patients, none developed acute lower extremity compartment syndrome and 6% died.

Conclusions:
Acute lower extremity compartment syndrome is associated with a high mortality rate in the critically ill trauma patients. Using the presented protocol for screening high risk trauma patients may assist in identifying those at risk.