

PAIN & DISABILITYSM

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Electrical Injuries - WORK-UP

Lab Studies:

- In all patients who by history or physical examination appear to have more than a trivial electrical injury/exposure, obtain the following:

CBC (hemoglobin, hematocrit, white count, red cell indices), electrolytes (sodium, potassium, chloride, carbon dioxide, urea and glucose), creatinine, and urinalysis (specific gravity, pH, color and tests for glucose and hemoglobin). This set gives important baseline values for future treatment.

- In addition to the more common tests, an assessment of muscle damage should be done by ordering:

CPK, total and fractionated, if elevated

Urine myoglobin, if urine gives positive hemoglobin test

Serum myoglobin if the urine is positive for myoglobin

These tests measure the extent of muscle damage in a very effective way. High levels of CPK, identified as muscle with often some elevation in the myocardial component, are seen in any significant exposure to low and high voltage circuits. Lightning rarely will cause an elevation.

If there is extensive muscle damage, there will be myoglobinemia and myoglobinuria.

- In any cases where there is arrest or loss of consciousness, arterial blood gas analysis and a complete drug screen test should strongly be considered.

Imaging Studies:

- Chest X-Ray(CXR): If clinically indicated due to chest trauma , shortness of breath or history of CPR at the scene.
 - Blunt trauma directly from involuntary contraction of muscles or indirectly from falling secondary to involuntary contraction of muscles, will require imaging studies directed toward discovering possible fractures or even internal injuries.
 - These should be approached in the same fashion as with blunt trauma by other causes and appropriate testing should be ordered as indicated.

Other Tests:

- Electrocardiogram (ECG):
 - An ECG is indicated in any person who is suspected to have electrical injury. If arrhythmias are encountered or if patient had a high voltage injury, monitoring is indicated.
 - If no arrhythmias are encountered, further ECG studies are not necessary.
- Electroencephalogram (EEG):
 - An EEG may be indicated in a person who is unconscious or in arrest.
 - Whether it will need to be done in the ED depends on a number of institutional factors. It is not critical to early care decision making.

Procedures:

- An intravenous access should be obtained in all persons who have electrical injury. Consider a central line in those with more than trivial burns and in those who were

unconscious or arrested in order to monitor fluid status.

- Fasciotomies of burned extremities may be required in high voltage injuries. Consultation with surgeons with experience in electrical burn injury should be obtained early in the high voltage burned patient, as appropriate early fasciotomy may save a limb.

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