BURNS: ELECTRICAL INJURY

PURPOSE: To outline the management of the patient injured by electrical contact/ current.

SUPPORTIVE DATA: Electrical burns include lightning and TASER (Thomas A. Swift's Electric Rifle) injury. It may be high or low voltage, direct or alternating current. The current often flows along nerves and blood vessels creating internal injury. The electrical entry site is typically yellow, charred and depressed. Superficial tissues generally cool faster than deeper tissue resulting in deep muscle/tissue injury.

The exit site is dry with depressed edges and may appear as if the electrical current exploded upon exit. If the victim is thrown as a result of electrical contact secondary injury may include: cervical spine injury, fractures, and head trauma. Systemic complications include: cardiac dysrhythmias, myocardial injury, respiratory paralysis, rhabdomyolysis, renal failure, neurologic deficits, paralytic ileus, perforated viscus, vascular damage, clotting, and sepsis.

The American Burns Association consensus formula for fluid resuscitation is as follows:

- Fluid
  - Ringer’s Lactate without dextrose: 2-4 mL/kg x % second and third degree burn surface area
- Volume
  - Half of total calculated volume given over the first 8 hours post-burn injury
  - Second half of total calculated volume given over the second 16 hours post-burn injury
  - Half of first day calculated volume given over next 24 hours and spread evenly
  - Increased fluids may be ordered to prevent rhabdomyolysis in patients sustaining high voltage or soft tissue injuries

All patients with electrical injury burns are admitted to the ICU for at least 24 hours.

ASSESSMENT:

1. Assess the following on admission and a minimum of every 1 hour x 24 hours, then per unit routine:
   - Respiratory rate, quality, oxygen saturation, pulse oximetry
   - Arrhythmias
     - Ventricular fibrillation
     - Non-specific ST segment and T wave changes
     - Supraventricular tachycardias (SVT)
     - Right bundle branch block (RBBB)
     - Focal ectopic arrhythmias
   - Urine output, quantity, and color
   - Nerve and circulation checks to affected area
   - For deep tissue injury surrounding affected area (decreased pulses, decreased circulation, firmness and tenderness to surrounding tissue, and non-blanching tissue)
2. Weigh patient upon admission.
3. Assess the following a minimum of every 4 hours:
   - Abdomen: Bowel sounds, distension, guarding
   - Entry and exit wounds for signs of infection
4. Assess pain level, a minimum of every 4 hours (ICU: every 2 hours).
5. Monitor lab values as obtained: potassium, arterial blood gases, myoglobinuria, white blood cell count, lactate levels, creatine kinase (CK).
6. Obtain and monitor serial troponins and 12 lead ECG as ordered every 6 hours x 24 hours.

PAIN MANAGEMENT:

7. Administer continuous/routine pain medication as ordered.
8. Administer additional pain medication as ordered. Recommendation: a minimum of 30

minutes prior to all procedures/dressing changes.

FLUID REPLACEMENT:

9. Administer fluids as ordered: order to include type, volume, rate, and route.

WOUND CARE:

10. Implement burn wound dressing procedure as ordered:
    - Burn Service R.N. will debride wound as necessary
    - If patient out of Burn Area, collaborate with primary provider regarding burn service consultation

POSITIONING:

11. Elevate burned extremities at all times.
12. Apply splints/rehabilitative appliances to prevent contractures.

REPORTABLE CONDITONS:

13. Notify the provider immediately for:
    - Arrhythmias
    - Deterioration neurovascular status
    - Signs of respiratory depression
    - Urine output:
        - Less than 30 mL/hour (adults)
        - Less than 1 mL/kg/hour (pediatric patients)
    - Pink tinged, bloody, or tea-colored urine
    - Signs of wound infection
    - Abnormal lab values
    - Inability to relieve pain
    - Absent bowel sounds, distension

COLLABORATION:

14. Collaborate with the following as indicated:
    - Rehabilitative medicine, PT/OT
    - Pediatric specialist
    - Dietary
    - Psychiatry
    - Social Services
    - Burn Pharmacy

PATIENT/FAMILY TEACHING:

15. Instruct on the following:
    - Notification of RN for increased pain or decreased sensation to dressed wounds
    - Pain management
    - Burn wound management
    - Medications
    - Activity/immobility
    - Life style changes
    - Purpose of dressings, splints, appliances, procedures, isolation
    - Need for increased nutrition to promote wound healing
    - Signs/symptoms of infection, pneumonia

ADDITIONAL STANDARDS:

16. Refer to the following as indicated:
    - Artificial airway
    - Mechanical Ventilation
    - Burns: Chemical/Thermal Injury
    - Grieving
    - Immobility
    - Intravenous Therapy
    - Pain Management
    - Restraints
    - Sedation and Analgesia (Intravenous) – ICU
    - Wound Management/ Vacuum Assisted Closure Therapy
    - Central Venous Catheter

DOCUMENTATION:

17. Document in accordance with documentation standards.

18. Document in iView, Quick View, Systems Assessment and Burn Care Management Navigator Bars

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