THE SUCCESSFUL USE OF CRRT IN A PATIENT WITH NECROTIZING FASCIITIS

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NECROTIZING INFECTION

• Group A Streptococcus
• Attacks the skin and fascia, causing:
  1. tissue destruction
  2. thrombosis of blood vessels
  3. systemic toxicity

NECROTIZING INFECTION

• Symptoms:
  1. Erythema
  2. Hypotension
  3. Pain
  4. Fever / Malaise

• Treatment:
  1. Surgical exploration and debridement
  2. Antibiotic therapy (Clindamycin and Penicillin)
  3. Hemodynamic Support
  4. IVIG

SEVERE SEPSIS

• Diagnosis is based on SIRS
• SIRS = systemic inflammatory response
• Symptoms:
  1. increase RR
  2. increase HR
  3. increase or decrease temperature
  4. increase or decrease WBC
  5. IN ADDITION an acute dysfunction of 2 or more organs

• Treatment:
  1. Intubation and ventilation
  2. Massive IV volume
  3. Vasopressors and Inotropes
  4. Antibiotic Therapy
  5. Nutritional Support
  6. Activated Protein C (Xigris)

ACTIVATED PROTEIN C is used to inhibit inflammation, inhibit coagulation, promote fibrinolysis, and balance homeostasis.

ACUTE RENAL FAILURE

• Sudden onset, rapid deterioration and reversible
• The inability of the kidney to excrete waste, concentrate urine and regulate electrolytes
• Categories
  1. pre renal
  2. intra renal
  3. prost renal
• Etiology: interference with the vascular supply to the kidney, such as shock, burns and sepsis.
• Treatment: 1. early recognition and treatment
  2. CRRT

CONTINUOUS RENAL REPLACEMENT THERAPY
• A slow continuous form of dialysis.
• Indications: 1. ARF
  2. Fluid Overload
  3. Electrolyte balance
• Supplies: 1. double lumen large bore catheter (11.5)
  2. highly porous hemofilter
  3. PrismOcal solution
  4. CRRT machine

• Advantages: 1. Minimal hemodynamic impact
  2. Increased net salt and water removal
  3. Improved kidney oxygen supply by concentrating circulating volumes
  4. Management of sepsis, by removal of endotoxins
• Anti Coagulation considerations include heparin and citrate.

CASE STUDY
HISTORY
• 43 year old female, previously health
• To ER with complaints of:
  * pain, swelling and redness of the left leg
  * SOB on exertion
  * generalized weakness
  * temperature 39.1c

DIAGNOSTICS
• ABG- pH 7.23 pCO2 (N)
  HCO3 17.9 pO2 (N)
• Hbg 74 Na 129 CK 711
  WBC 9.2 K 2.9 Lactate 1.1
  Plt 89 Cr 159
• CT—highly suspicious of necrotizing fasciitis

DIAGNOSIS AND INTERVENTION
• Dx= highly suspicious of necrotizing fasciitis = sepsis
• Initial Intervention=OR for I&D and debridement of necrotizing fasciitis and fasciotomies
ICU DAY 1 - DAY 3

- Hypotension (74/40)
  - Treatment:
    1. fluid boluses
    2. packed cells
    3. pentaspan
    4. albumin
    5. phenylephrine gtt.
- Contact Precautions
- Antibiotic Therapy
- Temperature 38.9
- WBC 32.9
- U/O less than 20 ml/hr

ICU DAY 4

- Creatine 247
- BUN 8.9
- CVP 16-20
- Fluid Balance positive by 10.5 liters
- IVIG 140 gm
- Temperature 38.9
- WBC 32.9
- U/O less than 20 ml/hr
- Weight increased by 10 kg in the past 48 hrs
- CRRT initiated: continuous veno-venous hemodialysis mode
  - Goal to 1. remove solute and fluid
  - 2. Balance electrolytes
  - 3. Detoxify the blood
- Other Interventions
  - * BP stabilized therefore, phenylephrine weaned and discontinued.
  - * HCO3 low therefore, bicarb gtt initiated
  - * Nutritional support by inserting SBFT and Promote feeds initiated.

ICU DAY 5 - DAY 8

- Wound oozing profusely
- Hbg dropped to 54 therefore, treated with PRBC and heparin was discontinued on the CRRT machine
- Temperature was down to 37.9
- WBC was down to 24.5

Renal Improvement:
- Creatine was 280, now 128
- BUN was 12.1, now 3.0
- CVP between 8-12
- U/O 40 ml/hr
- Fluid balance is 5 litres positive

CRRT WAS DISCONTINUED ON ICU DAY 9
ICU DAY 10 - DAY 12

• Lasix gtt with albumin Q8H was initiated, to facilitate the continuation of fluid removal
• U/O increased to 200 ml/hr
• Temperature normalized
• Weight was being maintained
• CVP was stable between 8-12

On day 12 our patient was extubated
On day 15 she transferred to the medical ward

She was later transferred to a rehabilitation ward and then discharged home.

SUMMARY

- 6 OR’S
- 4 CT’S
- 9 units of albumin

CRRT WAS COMPLETED FOR 5 DAYS

Intubated and ventilated for 12 days.

In this situation CRRT benefited a sepsis and renal failure patient by:
1. restoring renal function
2. stabilizing electrolytes
3. restoring fluid balance
4. maintaining hemodynamic stability
5. removing endotoxins

LENGTH OF STAY WAS SHORTENED.

References