EM CASE OF THE WEEK.

BROWARD HEALTH MEDICAL CENTER
DEPARTMENT OF EMERGENCY MEDICINE

BROWARD HEALTH
Care Warriors

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Fractures in the ED

A 37-year-old male with no past medical history presents to the ED as a high index case after colliding with another player during a soccer match. The patient had an open dislocation of the left tibiotalur joint. His only complaint was pain at the site of injury, he denied any other injuries. Patient was hemodynamically stable with vital signs within normal limits.

On physical exam he is alert and oriented X3 with no appreciable additional trauma. His distal tibia is exposed, penetrating the skin medially with the entire inferior articular surface visible. He retained full ROM in all digits as well as intact sensation to the extremity. Pedal and posterior tibial pulses were intact with good color, capillary refill, and warmth of the foot. Imaging showed an angulated comminuted fracture of the distal 1/3 of the fibula, dislocation of the talus and medial movement of the tibia.

What is the Gustilo Anderson classification of the fracture?

A. I
B. II
C. III-A
D. III-B
E. III-C

What antibiotics would you administer to this patient?

A. Cefazolin
B. Cefazolin + Gentamicin
C. Cefazolin + Gentamicin + Ciprofloxacin
D. Cefazolin + Gentamicin +Penicillin

EM Case of the Week is a weekly "pop quiz" for ED staff.

The goal is to educate all ED personnel by sharing common pearls and pitfalls involving the care of ED patients. We intend on providing better patient care through better education for our nurses and staff.

BROWARD HEALTH MEDICAL CENTER

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1. C (III-A)
2. B (Cefazolin + Gentamycin)

Gustilo and Anderson Classification of Open Fracture				
Type	Wound	Contamination	Soft Tissue Injury	Bone Injury
I	<1cm	Clean	Minimal	Minimal comminution
II	>1cm	Moderate	Moderate	Moderate comminution
III-A,B,C	>10cm	High	Severe; B- requires tissue reconstruction; C- requires vascular reconstruction	Severe comminution or segmentation

Fracture Type	Antibiotics
I & II	1st gen Cephalosporin
III-A,B,C	1st gen Cephalosporin + Aminoglycoside Water contact + flouroquinolone Farm/Bowel injury + Penicillin G (anaerobes)

Evaluation of the patient

- With any trauma it is important to complete an initial trauma survey following ABCDE
- Injury mechanism will help predetermine the severity of fracture before imaging is acquired
- Once the patient is stabilized, assess the extent of injury at the fracture site
- Examine the wound for debris and extent of injury including soft tissue
- Apply pressure to control bleeding
- Neurovascular compromise is a serious concern and should be evaluated in the primary survey. Prompt identification of vascular injury can prevent distal limb loss.
- If neurovascular compromise is present, prompt reduction is indicated before imaging
    - Recheck pulses/motor/sensory function after reduction
- Imaging is key to an accurate diagnosis: order X-rays initially

Management in the ED

- Orthopedic surgery consultation should occur early
- Classification of the fracture, using Gustillo/Anderson, determines antibiotic choices, however it is primarily used by the orthopedic surgeon to guide surgical management.
- All open fractures require IV antibiotics. 1st Generation cephalosporins are 1st line, with cefazolin as the drug of choice.
    - As above, high grade fractures will receive, additionally, aminoglycosides with other treatments added based on exposures
- Antibiotics should be initiated within 3 hours of arrival; time to antibiotic administration is key to preventing infection
- Reassess patient and neurovascular status
- Manage pain with appropriate medication
- Start wound irrigation with sterile saline and place saline soaked dressing on wound site
- Splint to prevent further dislocation/tissue damage



For a list of educational lectures, grand rounds, workshops, and didactics please visit ***BrowardER.com*** and **click** on the ***"Conference"*** **link**.

All are welcome to attend!

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Key Points

- Whenever a trauma or high index patient arrives in the ED it is important to perform a complete assessment of the patient to identify all injuries
- Primary trauma survey
    - ABCDE; Airway, Breathing, Circulation, Disability, Exposure
- Secondary trauma survery
    - Head to toe exam
- When dealing with extremity injuries it is important to assess for vascular compromise, muscular and neurologic function
- With open fractures and penetrating injuries determine when the patient was last vaccinated for tetanus; if >5 years ago or if patient is unconscious or a poor historian administer the vaccine.

Radiographic views for identifying fractures by location

Anatomic region	Plain radiograph fracture views
Wrist	All patients: AP, lateral Oblique: Fracture suspected but AP/lateral negative* Scaphoid: Scaphoid fracture suspected
Elbow	AP, lateral, oblique
Shoulder	AP, scapular Y
Knee	AP, lateral, oblique¶ (internal or externally rotated) Sunrise (axial, tangential): patellar injury
Foot	AP, lateral Oblique: If fracture seen
Tibia, femur, humerus, and forearm	AP, lateral
Ankle	AP, lateral, and mortise△

AP: anterior posterior.
* Allows view of the scaphoid-trapezoid-trapezium articulation.
¶ Provides a different projection of the femoral condyles and tibial tuberosities as well as a cleaner view of the medial and lateral margins of the patella.
△ The mortise view requires 10 to 20 degrees of internal rotation and allows the tibia and fibula to be viewed without superimposition on one another.

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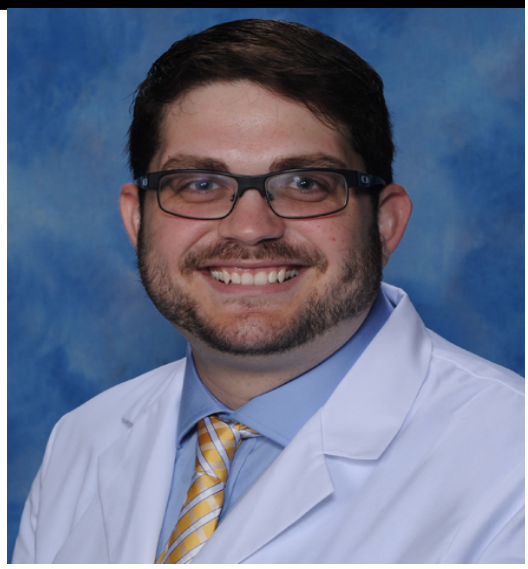

This month's case was written by Scott Nettboy, a 4th year medical student from NSU-COM. He did his emergency medicine rotation at Broward Health North in August 2017. Scott plans on pursuing a career in Critical Care Medicine.

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