

# City-Uide Halloween Edition



#### October 31st, 2017



**Cooper Medical School** of Rowan University





XDR TB

Zike

## CASE 1

#### Mobeen Danish, MD PGY4

 Emily A. Shay, MD PGY 5

# **HISTORY OF PRESENT ILLNESS**

- \* 38 y/o M presented to Cooper University Hospital at midnight in July, 2017 for worsening calf wound.
- He awoke with an area of painful redness that progressively worsened throughout the day.
- He felt febrile and had an episode of vomiting.
- He denied any recent trauma or insect bite to the area.
- Review of systems was otherwise unremarkable.

# MEDICAL & SOCIAL HISTORY

- PMHx: Chronic hepatitis B, not on treatment
  Medications: None
- Social Hx: nonsmoker, no illicit drug use, non drinker.
- Originally from China, in US for >10 years.
- Employed as a waiter in an Asian restaurant in Southern New Jersey.
- Allergies: NKDA

## **VITALS & PHYSICAL EXAM**

- ✤ VITALS: T 104.6F, BP 102/87, HR 122, RR 22, SpO2 99%
- **HEENT:** PERRLA, EOMI.
- CV: S1/S2 normal, tachycardic, no murmurs
- LUNGS: CTA, no wheezing, no ronchi
- ABD: soft, NT/ND, no organomegaly appreciated, no ascites.
- EXT: Left posterior calf induration with surrounding erythema extending into popliteal fossa.
- Remainder of the physical exam was unremarkable.

#### **INVESTIGATIVE STUDIES**



LFTs:

T-bili 0.6, D-bili 0.2, AST 51, ALT 61, ALP 24,

✤ T-protein 4.3, Albumin 2.6

## **INVESTIGATIVE STUDIES**



CT scan: Diffuse edema without subcutaneous air.

Thoughts....?



### **HOSPITAL COURSE**

Started on IV vancomycin, cefepime and clindamycin.

 Surgery was consulted for suspected necrotizing fasciitis and the patient was taken to the OR emergently for debridement.

In the OR, patient was found to have necrotic skin, soft tissue and fascia with viable muscle tissue and a 14 cm x 15 cm x 1 cm area was debrided.

## **HOSPITAL COURSE**

Vancomycin/cefepime/clindamycin were continued.

 Patient's blood cultures were reported to be positive with Gram negative rods.

Wound cultures from the OR - Pending

# MICRO



Plate gram stain



TCBS Agar



MAC Agar

### **CULTURE REPORT**

#### Blood and wound culture: Vibrio vulnificus

Antibiotics changed to ceftriaxone and doxycycline.

## **HOSPITAL COURSE**

Over the course of 6 week hospital stay, required multiple debridements for ongoing necrosis, though remained systemically well. \* At the last debridement, the wound "encompassed almost the entirety of his left lower extremity from the ankle to the groin" and measured 82 cm x 35 cm Required extensive skin grafting Completed prolonged course of ceftriaxone and doxycycline

## **FINAL DIAGNOSIS**

*Vibrio Vulnificus* bacteremia with severe left lower extremity necrotizing fasciitis.

Chronic Hepatitis B virus infection without evidence of cirrhosis

### **FOLLOW-UP**

Follow up: He is currently doing well; follows with plastic surgery for skin graft management.

Hep B status:
Core Ab IgM : Negative
Surface Antigen: Positive
E-Antigen: Negative
DNA: 2111 IU / mL

Hepatitis C Ab screen: Negative

## Citywide Case Presentation Case 2

MARIA NAGORI, MD PGY-5 10/31/2017

## Case presentation

- <u>CC:</u> 37 year-old Hispanic male with PMHx of IVDU presented to CUH as a transfer from OSH for management of L foot degloving injury, traumatic amputation of first two toes after injury at work.
- <u>HPI:</u> Patient L foot trapped into cement rolling machine leading to traumatic amputation of his L first two toes and degloving injury. Taken to OSH, and sent to CUH for possible re-implant of toes. Patient had pain in L foot, but denied any other symptoms.

## Case presentation

- <u>ROS</u>: Negative other than severe pain in L foot
- <u>Past Medical History:</u> Remote history of IVDU.
- <u>Past Surgical History:</u>None
- <u>Allergies:</u> PCN- causes hives and throat itching
- <u>Meds:</u>None
- <u>Social History:</u> Never smoked tobacco, no recent alcohol use, remote history of IVDU. Sexually active with wife, works in cement factory. Immigrated to US over 20 yrs ago from Mexico.

## Case presentation

#### Physical Exam:

- Vitals: Temp- 98.1F (36.7 C), Pulse-98/min, BP-165/83 mmHg, Respirations- 18 breaths/minutes, SpO2- 96% on RA
- General: Young male in no distress, appears stated age
- MSK: Traumatic amputation of L first and second toe down to proximal phalanx, fracture/deformity of L second toe with nail bed avulsion/laceration with visible tendons on dorsum of L foot, diminished sensation in first two left toes

## Lab Data



Mag 1.7, Phos 4.6, Calcium 8.3

- 12.6% Lymph
- 3.3% Mono
- 0.02% Eos
- 0.05% Baso
- 83.2% Gran

# **Hospital Course**

**Day 0:** Given TDaP, taken to level I OR on arrival, I & D of L foot, completion amputation of 1<sup>st</sup> proximal and distal phalanx and percutaneous pinning of second metatarsal **Day 01/04:** I & D of L foot with wound vacuum change **Day 07:** L foot wound reconstruction: free vastus lateralis muscle flap, toe filet flap, STSG from L thigh, wound bed preparation with removal of scar, muscle, skin, fat, tendon.

Post op, patient febrile with Tmax 102.5F and leukocytosis (15.06), blood cx drawn, no ABX started.

**Day 12:** Left LE delta frame external fixation, I & D of L foot flap, **noted to have serous drainage**, **OR Cx sent to microbiology.** 

# **Hospital Course**

**Day 13:** Debridement of both dorsal foot flap (graft site) and L thigh (donor site). Noted to have **copious purulent material** at donor as well as graft site, **OR Cx sent**.

**Day 14:** Patient with persistent leukocytosis, but no fever, OR cx growing GNRs and GPCs, started on Ciprofloxacin (beta lactam allergy), and ID consult was placed.

# Summary

- 38 year old Hispanic male with PMHx of IVDU presented to CUH as transfer from OSH for L foot degloving injury and traumatic amputation of L first two toes.
- Patient had multiple I & Ds done, and had skin flap taken from L thigh to L foot.
- Developed fever/leukocytosis, noted to have purulent material at both donor and graft site in OR with GNRs and GPCs in wound Cx.

## Differential?

![](_page_23_Picture_1.jpeg)

## Microbiology

- Blood culture:
  - 9/10- Per x 2- Negative
  - 9/7- Per x 2- Negative
- <u>Foot</u>
  - 9/13- Fungal smear negative, Cx- Negative
  - 9/13- AFB- smear- negative, Cx- Negative
  - 9/13- smear- rare polys, no organisms, Cx- rare Aeromonas

#### hydrophila, rare CoNS

- <u>Thigh</u>
  - 9/13- Fungal- smear, negative, Cx-Negative
  - 9/13- AFB- smear, negative, Cx- Negative
  - 9/13- smear- few polys, rare GNRs, Cx- rare Aeromonas hydrophila
  - 9/11- Fungal- smear- negative, Cx- Negative
  - 9/11- AFB- smear, negative, Cx- Negative
  - 9/11- smear, no polys/organisms, Cx- rare Aeromonas Hydrophila (R to AMP/SULB, S to cefepime, quinolones, gentamicin, meropenem, tigecycline, tobramycin and TMP-SMX), rare CoNS.

# **Hospital Course**

**Day 14:** Patient seen by ID, exam normal except for large skin defect on L thigh covered with gauze with external fixator on L leg, L foot wrapped in surgical dressing with skin appearing swollen and weepy. Antibiotic modified: metronidazole and vancomycin added to ciprofloxacin

**Day 18:** I & D of L thigh wound and L flap site with primary closure of L thigh wound. No additional cultures obtained.

Antibiotics continued for 2 weeks from last OR debridement.

# Aeromonas hydrophila

![](_page_26_Picture_1.jpeg)

- Ubiquitous organism found in fresh and brackish water.
- Gram negative, non-sporulating facultative anaerobic rods, oxidase positive, usually βhemolytic on blood agar, grows well on MacConkey agar (may/may not ferment lactose).
- Most soft tissue infections are caused by exposure to fresh or brackish water.

# Aeromonas hydrophila

- Cellulitis develops within 8-48 hours after exposure, can lead to suppuration and necrosis around wound with systemic signs of infection, requiring surgical debridement.
- Bacteremia and sepsis are uncommon, and mostly reported in immunocompromised patients with underlying malignancy/cirrhosis.
- Uniformly resistant to penicillin, can produce β lactamases. Fluoroquinolones are drug of choice.

# Aeromonas hydrophila

- Hypothesis was that organism introduced to L foot wound from water used in cement mixing. Introduced to L thigh wound in OR using same instruments back and forth form donor and graft site.
- Surgical leeches were not used in any procedure.

# Citywide Halloween Edition Monsters of the Deep

![](_page_29_Picture_1.jpeg)

![](_page_29_Picture_2.jpeg)

![](_page_29_Picture_3.jpeg)

## Citywide Case Presentation Case 3

Katherine Doktor, MD 10/31/2017

### CASE #3

- Pt is a 65 yo M who presented with worsening RUE pain & swelling.
- PMHx: cirrhosis from untreated hepatitis C, DM2
- He was cleaning crabs caught in Salem Bay on 8/19. Wore thick gloves, did not cut himself while cleaning the crabs, but states he always had cuts on his hands.
- Pt and his neighbor ate some of the crabs.
- About 9 hours after cleaning the crabs, he vomited and noticed his RUE started to swell and became painful. Denies f/c/NS, diarrhea. Neighbor did not become ill.

- RUE pain and swelling progressed and he presented to Salem ED on Monday, 8/21. Afebrile on presentation, but had WBC 15.8 with 52% bandemia. Plts 75. lactate 8.6.
- ER physical exam noted bullous lesion on anterior aspect of R wrist. He was given piperacillin/tazobactam, clindamycin and vancomycin IV. CT R forearm revealed soft edema but not gas or abscess.
- Transferred to CUH for surgical intervention. On arrival to CUH, pt reported "severe R hand pain and numbness and inability to move the digits of his R hand."

![](_page_32_Figure_3.jpeg)

#### • Physical exam:

• tight RUE, extending to upper arm with inability to move hand and pain with passive extension of the fingers.

#### • Initial surgery:

- Postoperative diagnosis: RUE infection with compartment syndrome of hand, forearm and arm.
- Procedures: R open carpal tunnel release, extensile, and right forearm, arm, hand fasciotomies and compartment release.
- Intraop: murky fluid throughout the arm, more at proximal wound after reaching down to the fascia. There was additional murky fluid in the extensor compartments.
- Pt returned to OR on 8/22, 8/23, and 8/24 for additional debridements.

## MICROBIOLOGY

#### **Blood cultures**

- OSH 8/21: Vibrio vulnificus (S: gentamicin) (anaerobic & aerobic bottles; positive in <12 hours)</li>
- 8.21 NG
- 8.22 NG

#### 8.21 OR Wound Cx

- R forearm deep tissue culture: GS-no polys or orgs; Cx rare *Vibrio vulnificus* 
  - Ampicillin MIC  $\leq$  2 (S) and Trimeth-Sulfa MIC  $\leq$  1/19 (S)
- RUE swab: GS-no polys or orgs; Cx rare Vibrio vulnificus
- R dorsal forearm: GS-no polys or orgs; Cx rare Vibrio vulnificus

## SUBSEQUENT COURSE

- Pt had episode unstable VTach in OR on 8/24. Postop in TICU, episode wide complex VTach and was defibrillated
- 2d echo with EF 25%. Pt underwent cardiac cath same day, which revealed severe multivessel coronary disease.
- Plans for OR on 8/25, were cancelled given the cardiac disease.
- On 8/28, became hypotensive, unresponsive to multiple pressors. Plastic Surgery did not think RUE wound was source of distributive shock. Pt remained hypotensive and died 12 hours later.

## Citywide Case Presentation Case 4

Justin Baptist, MD PGY-4 10/31/2017

## Case 4

- 46 year old Puerto Rican man, controlled Type 2 DM, chronic swelling ? lymphedema of left leg
- Crabbing in Delaware Bay over Labor Day weekend, minor trauma to left anterior shin on 9/2
- Over next 2 days increasing erythema, pain and swelling, evolution of bullous lesions on lower leg, no fever or chills but + dizziness
- Presented to ED on 9/5

#### Case 4

- Admission Temp 98.7, BP 93/53, HR 105, RR 20
  - Exam "edema, erythema and warmth of left lower leg" diffusely tender, compartments soft, good pulses
- Labs and Imaging
  - WBC 5.6 (48 PMN, 34 Bands) Hg 14.9, platelets 147
  - Glucose 168, Cr 1.44, AST 21. ALT 33, Bili 1.0, Lactate 3.5
  - Leg X-ray: "prominent soft tissues likely representing edema"
  - Doppler Negative for DVT
- Emergency Surgery evaluation day of admission:
  - + fluctuance at wound, ballotable fluid collection at medial malleolus, + cellulitis with bullae starting over medial calf
  - Level 1 to OR for suspected nec fasciitis

#### Case 4

- OR Procedure:
  - I and D of LLE, debridement of skin and subcutaneous tissue and fascia down to muscle.
- Findings:
  - "the medial wound was 15 x 4 x 4 with some nonviable tissue. Lateral wound was 7 x 10 x 3 with nonviable tissue of the skin and subcutaneous tissue as well as multiple pockets of murky fluid"
- OR cultures: Vibrio vulnificus
- Admission Blood cultures : negative

Volume 109 Number 4

15 August 1988

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#### **Annals of Internal Medicine**

EDITORIALS

Vibrio vulnificus-A New Monster of the Deep?

![](_page_40_Picture_6.jpeg)

## Summary of Cooper Vibrio vulnificus Cases, Summer 2017

- Last Case at Cooper back in 2010, acquired in Gulf Coast
- 3 Cases: July-September '17
- All had early surgery, one (cirrhosis) died, 2 left with extensive wounds
- 1<sup>st</sup> patient- ingestion vs injury, a waiter, handled seafood
- 2<sup>nd</sup> and 3<sup>rd</sup> patients with history of crabbing in Delaware Bay
- Similar case in Lewes, DE (courtesy Dr. Olewiler and Dr. Chasanov)

![](_page_41_Picture_7.jpeg)

2010 V. vulnificus case

#### With Global Warming, Expect More Deadly Vibrio Cases

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![](_page_42_Picture_2.jpeg)

Judy Stone, CONTRIBUTOR null FULL BIO V Opinions expressed by Forbes Contributors are their own.

The tiny *Vibrio* bacterium making headlines this past week is far more dangerous than the sharks causing panic along some Florida beaches. You should get to know a bit about *Vibrio* because, as waters warm globally, we can expect to see far more cases of the deadly *Vibrio* bacterium.

![](_page_42_Picture_5.jpeg)

#### **Forbes Magazine**

2

![](_page_42_Picture_7.jpeg)

#### Climate influence on *Vibrio* and associated human diseases during the past half-century in the coastal North Atlantic

Luigi Vezzulli<sup>a,1</sup>, Chiara Grande<sup>a</sup>, Philip C. Reid<sup>b</sup>, Pierre Hélaouët<sup>b</sup>, Martin Edwards<sup>b,c</sup>, Manfred G. Höfle<sup>d</sup>, Ingrid Brettar<sup>d</sup>, Rita R. Colwell<sup>e,f,1</sup>, and Carla Pruzzo<sup>a</sup>

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![](_page_43_Figure_0.jpeg)

#### August-October Delaware Bay WARMING COASTAL WATERS

![](_page_43_Figure_2.jpeg)

http://www.climatecentral.org/ gallery/graphics/coastal-watertemperature-trends

## Map of Delaware Bay

![](_page_44_Figure_1.jpeg)

![](_page_44_Figure_2.jpeg)

![](_page_45_Figure_0.jpeg)

MMWR Summary of Notifiable Diseases, 2015

Abbreviation: N = not reportable.

In 2015, a total of 1,323 cases of vibriosis were reported. California, Florida, Texas, and Massachusetts reported the greatest number of cases.

The incidence of *vibriosis* has shown an overall increase since becoming a nationally notifiable disease in 2007 (*3*). Cases reported to NNDSS increased from 0.25 cases per 100,000 in 2007 to 0.42 cases per 100,000 population in 2015.

#### **Geographic Location**

Of the 1,252 vibriosis cases, 325 (26%) were reported from Gulf Coast states, 425 (34%) from Pacific Coast states, 325 (26%) from Atlantic Coast states, and 177 (14%) from non-coastal states (Figure 1).

The Vibrio species reported most frequently from Gulf Coast states were V. alginolyticus 91 (28%), V. vulnificus 64 (21%), and V. parahaemolyticus 62 (20%). The Vibrio species reported most frequently from non-Gulf Coast states were V. parahaemolyticus 543 (59%), V. alginolyticus 148 (16%), and V. vulnificus 60 (7%).

#### Figure 1. Number of cases of Vibrio infections (excluding toxigenic *V. cholerae* O1 and O139), by state, 2014 (N=1,252 from 46 states and the District of Columbia).

![](_page_46_Figure_4.jpeg)

## Conclusions

- Vibrio vulnificus is an emerging pathogen in this area, presenting as summertime infections after water exposures in Delaware Bay
- The expanding range of non-cholera vibriosis may be related to rising water temperatures

![](_page_47_Picture_3.jpeg)

At least in New Jersey!! And it is having an impact on the practice of Infectious Diseases