Case Presentation & Tygacil (Tigecycline) Usage

Case 1 – Mr. Rassam

a. 24 year’s old, male, and medically free, from Yemen.
b. Admitted on 8/4/2014

i. With a 1-month Hx of Gunshots to Chest/Abdomen that was operated on in Yemen.

ii. After 1-month post laparotomy + Lt Nephrectomy + Splenectomy + Rt Nephrostomy + Tracheostomy patient.

iii. Was treated with unknown medications & unknown antibiotics.

O/E

I. CAO* 3

II. Temp 37.5 – Pulse 125/m – RR 16/m – BP 123/70 – 02% 97%

III. Ill Looking, cachectic, Pale, Jaundiced.

IV. Tracheostomy in situ.

V. Bilateral Harsh Breathing Sounds + Decreased AEB.

VI. Soft Abdomen with previous midline incision of previous surgery & 3 drains:

i. Lt UQ à Bile

ii. Rt Loin à Urine

iii. Lt Loin à Empty

Lab

<table>
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<td>Glu + 3</td>
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<tr>
<td>PO4</td>
<td>4.3</td>
<td>Bld + 3</td>
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<tr>
<td>Mg</td>
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<td>Ca</td>
<td>9</td>
<td>Red - Numerous</td>
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</tr>
<tr>
<td>Nasal Cx</td>
<td>Acinetobacter</td>
<td>Bld Cx</td>
<td>-ve</td>
</tr>
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<td>Sputum Cx</td>
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Additional Admission Labs

Chest + abdomen + pelvic CT scan (oral contrast)

a. Bilateral pleural effusion & more on RT side associated with atelectasis & ground glass opacities bilaterally with peribronchial thickening & LT fissural effusion.

b. Translucent tubular shadow from LT lung extending to the SC tissue (fistula). Drainage tubes in upper abdomen (1st one @ porta hepatis, 2nd one @ sub diaphragmatic region).

c. Ascites.
d. Double J Catheter in RT Kidney - UB.

Management of case

a) NPO + IV Fluids (Resuscitation)
b) TPN Protocol
c) I/O Charting
d) Bld + Urine + Sputum + Nasal Cx
e) Labs & Radiology (CXR+ Pan CT Scan + Nephrostogram)
f) Pre-Op assessment & evaluation (PRBCs + FFP)
g) Contact Isolation
h) IV Medications (Tygacil + Meropenem + Diflucan + Nexium + Clexane + Hydrocortisone + Perfalgan)

Consultations to

a. Cardiologist
b. Nephrologist
c. Pulmonologist
d. Urologist Surgeon
e. Infectious Disease Specialist

10/4/2014 (2 days post admission)

1st Surgery (Redo exploratory laparotomy with LT thoracotomy approach)

a) LT Lung decortication + LT Lung Bullet injury repair.
b) Gastro-Pleuro-Cutaneous Fistula excision.
c) Primary repair (double layer) of stomach.
d) LT hemicolectomy + End Ileostomy formation.
e) Feeding Jejunostomy Tube Insertion.
f) Pancreatic Necrosectomy.
g) LT Chest Tube + 2 free abdominal drains insertion.

10/4/2014 (2 days post admission)

1st Surgery (Urology Surgery)

a. RT Ureteroscopy
b. DJ Insertion

Post Op Day (0) to Day (3)

a. Patient transferred back to ICU-Surgical with same pre-op management.
b. Patient started on Enteral feeding by (Jejunostomy tube) with ensure milk.
c. Patient remained (Tachycardiac + Feverish).

Post Op Day (4) - 14/4/2014

i. We discovered wound dehiscence with fluid discharge from abdominal wound.
ii. 2nd Surgery (2nd laparotomy + Wound Repair with Component separation closure technique).
iii. Tissue Cultures obtained & (+ve for Staphylococcus spp – Coagulase Negative) & ONLY sensitive to tigecycline.

Post Op Day (4) - 14/4/2014

a. Patient transferred back to ICU-Surgical Intubated on Ventilator (atelectasis of LT lung & poor expansion with bad ABG’s).
b. Patient kept on same protocol (IV Fluids + TPN Protocol + Enteral feeding + 1/0 Charting + IV Medications (Tygacil + Meropenem + Diflucan + Nexium + Clexane + Perfalgan).
c. We added (Octreotide) to our list of medications for 5 days.
d. Patient remained (Tachycardiac + Feverish).

POST Op Day (10) - 20/4/2014

I. We discovered (by clinical & radiological evidence) a leak at the site of feeding Jejunostomy tube.
II. 3rd Surgery (laparotomy + Repair).
III. Same Pre-Op management but stopped the enteral feeding for few days.
IV. Patient remained (Tachycardiac + Feverish).

Post op day (18) - 28/4/2014

i. Patient fully extubated with Spontaneous Breathing after several trials over the past few days.
ii. Multiple interval blood & other Cx came back –ve.

iii. Oral fluid feeding resumed for the 1st time from initial trauma with success.
iv. Vital signs were near NORMAL for 48 hours.
v. Patient was able to ambulate for 1st time from initial trauma.

Post op day (19) - 29/4/2014

I. Ventilator stopped & Tracheostomy removed.
II. Tygacil with Meropenem stopped & patient Started on Piperacillin/Tazobactam.
III. Kept on Vancomycin.
IV. Stopped feeding by Jejunostomy tube.
V. Kept in ICU – Surgical with oral fluid feeding & observation of multiple spikes of fever & Tachycardia.

Post op day (23) - 03/05/2014

i. Jejunostomy feeding tube removed.
ii. CT Chest/Abdomen/Pelvis (Normal Study).
iii. Kept in ICU – Surgical with oral fluid feeding & observation of multiple spikes of fever & Tachycardia.

Post op day (24) - 04/05/2014

I. Non ionic contrast meal (Normal Study).

Post op day (27) - 07/05/2014

i. Piperacillin/Tazobactam changed to Tienam.
ii. TPN stopped & Full regular diet given.
iii. CT Pulmonary Angio done (Normal Study).

Post op day (32) - 12/05/2014

I. Patient transferred to floor.
II. Regular diet (High Protein) & Oral medications.
III. Fully ambulating.

Post op day (44) - 24/05/2014

i. Patient discharged home.
ii. Patient came back to near normal level of activity & independence.
iii. V/S was normal for > 48 hrs.
iv. WBC & CRP went down to near normal levels.
v. All Cx came back –ve.
vi. All Radiological Studies came back as normal studies.

Case 2 – Mr. Qannaff

I. 20 year’s old, male, and medically free, from Yemen.
II. Admitted on 04/02/2014 – NO formal Hx – Per Reports

Citation: Mashaqi KAI (2015) Case Presentation & Tygacil (Tigecycline) Usage. MOJ Surg 2(4): 00026. DOI: 10.15406/mojs.2015.02.00026
III. With a 1-week Hx. of High Velocity Gunshots to Abdomen that was operated on in Yemen.

IV. After 1-week post laparotomy + 2 drains found inside abdominal cavity with multiple visceral injuries (liver/pancreas/duodenum/gastric/IVC vs. Portal??).

V. Was treated with unknown medications & unknown antibiotics.

O/E

i. CA but disoriented.

ii. Paraplegic

iii. Temp 37.2 – Pulse 120/m – RR 31/m – BP 132/90 – O2% 98%

iv. Ill looking, cachectic, Pale but NOT Jaundiced.

v. Bilateral Harsh Breathing Sounds + Decreased AE @ Basal Rt.

vi. Tender Abdomen + previous midline incision of previous surgery + bullet inlet @ RT Para midline + outlet @ LT lumbar & 2 drains:-

Rt loin à Bile
Rt Loin à Bile

Admission Labs

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<tr>
<td>Mg</td>
<td>1.9↓</td>
<td>Urine Analysis</td>
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<td>Red - Numerous</td>
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Additional Admission Labs

Chest + abdomen + pelvic CT scan (triple contrast)

Lumbosacral MRI

a) L2 vertebral fracture with injury to cord.

Management of case

Intubation + Full Sedation

a) NPO + IV Fluids (Resuscitation)

b) TPN Protocol
c) I/O Charting
d) Bld + Urine + Sputum + Nasal Cx
e) Labs & Radiology (CXR+ Pan CT Scan)
f) Pre-Op assessment & evaluation (PRBCs + FFP)
g) Contact Isolation
h) IV Medications (Meropenem + Nexium + Clexane)

Consultations to

I. Neurosurgeon
II. Pulmonologist
III. Infectious Disease Specialist
IV. ENT Surgeon

05/02/2014 (1 days post admission)

i. 1st Surgery (Exploratory laparotomy) with

ii. Resection of distal stomach + duodenum + head of pancreas.

iii. Retroperitoneal exploration & evacuation of multiple bilomas.

iv. CBD Tube drainage.

v. 2 free abdominal drains inserted with 2 VAC dressings.

vi. Multiple packs inserted.

vii. Findings (Type V complex pancreatic – duodenal injuries).

Post Op Day (0) to Day (2)

a. Patient transferred back to ICU-Surgical with same pre-op management.

b. Blood transfused with FFP in regular basis.

c. Vancomycin added to Rx regimen.

d. Sandostatin added to Rx regimen.

e. Clexane changed to Hibor.

f. Patient remained (Tachycardiac + Feverish).

Post Op Day (3) - 08/02/2014

i. 2nd Surgery (Laparotomy + Removal of Packing + Gastrojejunostomy + choledochojejunostomy + pancreaticojejunostomy).
ii. Patient transferred back to ICU-Surgical Intubated on Ventilator.

iii. Patient kept on same protocol (IV Fluids + I/O Charting + IV Medications (Meropenem + Vancomycin + Nexium + Hibor).

iv. Patient remained (Tachycardiac + Feverish).

**Post Op Day (7) - 12/02/2014**

i. 3rd Surgery (Wound Exploration + Debridement + Dressing + Removal of VAC Dressing).

ii. Sputum Cx (+ve for Acinetobacter)

**Post Op Day (11) - 16/02/2014**

i. 4th Surgery (Wound Exploration + partial closure with vicryl mesh + component separation technique).

D/C drains (2)

**Post Op Day (13) - 18/02/2014**

i. 5th Surgery (Exploratory Laparotomy + Retroperitoneal drainage of subpancreatic fluids + Dressing + progressive closure).

ii. Tissue Cx (+ve for Acinetobacter)

iii. Colistin added to the Rx regimen.

iv. Extubated on 02 mask

v. Patient remained (Tachycardiac + Feverish).

**Post Op Day (15) - 20/02/2014**

i. Patient started on (Ensure Milk by NGT + Apple Juice).

**Post Op Day (17) - 22/02/2014**

a. 6th Surgery (Closure of abdominal wall).

b. Blood Cx (+ve for Acinetobacter) & Tygacil added to the Rx regimen.

c. Re-intubated due to Respiratory Distress.

**Post Op Day (18) - 23/02/2014**

a. Enteral feeding started.

b. D/C Chest Tube.

c. Meropenem stopped.

d. Flagyl added to the Rx regimen.

e. Patient remained (Tachycardiac + Feverish).

**Post Op Day (20) - 25/02/2014**

i. 7th Surgery (Wound lavage under GA + Dressing).

ii. CXR à white LT lung due to collapse.

iii. Patient is still intubated.

iv. Blood Cx (-ve).

v. Sputum Cx (+ve Acinetobacter).

vi. TPN Started.

vii. Patient remained (Tachycardiac + Feverish).

**Post Op Day (22) - 27/02/2014**

i. Trial of Extubation à Failed.

ii. 8th Surgery (Tracheostomy + DUGA).

**Post Op Day (24) - 01/03/2014**

i. D/C Ventilator.

ii. V/S was normal for > 48 hrs.

iii. All Cx came back –ve.

**Post op day (26) - 03/03/2014**

i. Patient discharged to Yemen, AMA by MEDEVAC.

ii. Patient is considered a HIGH risk for non-professional management with risk of death but AMA.

**Why tygacil?**

a. Tygacil (tigecycline) has in vitro activity against a wider range of pathogens

b. Resistant Gram +v: Enterococcus faecalis (VRE), Enterococcus faecium (VRE), Staphylococcus aureus (MRSA), Staphylococcus epidermidis (MRSE)

c. Resistant Gram –ve: Acinetobacter baumannii, E. Coli, Klebsiella pneumoniae, Stentrophomonas maltophilia, Tygacil is not affected by (ESBLs).


**Tygacil (tigecycline) has in vitro activity against a wider range of pathogens**

I. Anaerobes: Bacteroides (distasonis, fragilis, ovatus, thetaiotaomicron, uniformis, vulgaris), Clostridium perfringens, others

II. Gram +ve: Enterococcus (avium, casseliflavus, faecalis, faecium, gallinarum), Staphylococcus (aureus, epidermidis, haemolyticus), Streptococcus (pyogenes, agalactiae, anginosus grp)

III. Gram –ve: Aeromonas hydrophila, Citrobacter (freundii, koserr), Enterobacter (doacae, aerogenes), E.Coli, Klebsiella (oxygena, pneumoniae) Serratia marcescens, Pasteurella multocida

**Tygacil (tigecycline) has in vitro activity against a wider range of pathogens**

i. Gram +ve: New- Streptococcus Pneumoniae, including cases with concurrent bacteremia

Why Tygacil?

a. Clinical coverage: Expanded broad-spectrum coverage including resistant gram positive, resistant gram negative, and anaerobes

b. Efficacy: Proven as empiric mono therapy in patients with cIAI.

c. Dosing Regimen: Does not require dosage adjustments for patients with renal impairment regardless of severity. No adjustments with mild-to-moderate hepatic impairment.

d. Drug Interactions: Low potential for drug-drug interactions

e. Results: Efficacy in treatment

f. Convenient: Q 12 hr dosing

IV Antibiotic choice

2009 Infectious diseases society of america guidelines for treatment of cIAI

Optimal dosing: To ensure maximum efficacy & minimal toxicity & to reduce antimicrobial resistance, for empiric Rx of cIAI, guidelines suggest 100 mg initial dose of tigecycline, followed by 50 mg every 12 hrs.

cIAI: community acquired infections: Guidelines recommend tigecycline as single-agent Rx for initial empiric Rx in adults with infections of mild-to moderate severity & perforated or abscessed appendicitis.

Treatment duration:

a) According to guidelines, antimicrobial therapy should be limited to 4-7 days, unless it is difficult to achieve adequate source control.

b) The recommended duration of Rx with Tygacil for cIAI is 5 to 14 days.