

Case of carbapenem-resistant Enterobacterales (CRE)

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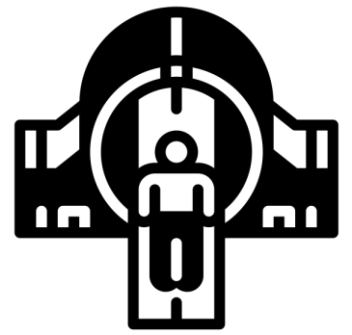
Patient information



- 45-year-old F with HIV (CD4 160/10%) who was brought in by EMS for abdominal pain
- 1 mo prior had disseminated histoplasmosis and started on antifungal therapy and ART
- ED: In shock and started on vasopressors + liposomal amphotericin B, meropenem and vancomycin



Patient information



- CT A/P showed perforated bowel → emergently to the OR
- OR: Bowel ischemia and necrosis with 2 perforations in ileum and colostomy was preformed
- Transferred to ICU, critically ill, requiring mechanical ventilation



Initial blood cultures

	Klebsiella pneumoniae ssp pneumoniae MIC INTERP	
\$ Amikacin	<=2 ug/ml	Susceptible
\$\$ Ampicillin + Sulbactam	>=32 ug/ml	Resistant
\$\$\$\$ Aztreonam	>=64 ug/ml	Resistant
\$ Cefazolin	>=64 ug/ml	Resistant
\$ Cefazolin Urine	>=64 ug/ml	Resistant *
\$\$ Cefepime	4 ug/ml	Susceptible
\$\$ Cefoxitin	>=64 ug/ml	Resistant
\$\$ Ceftazidime	16 ug/ml	Intermediate
\$ Ceftriaxone	>=64 ug/ml	Resistant
\$\$\$\$ Ertapenem	<=0.5 ug/ml	Susceptible
\$ Gentamicin	>=16 ug/ml	Resistant
\$ Levofloxacin	>=8 ug/ml	Resistant
\$\$ Meropenem	<=0.25 ug/ml	Susceptible
\$ Nitrofurantoin	256 ug/ml	Resistant *
\$\$ Piperacillin + Tazobactam	>=128 ug/ml	Resistant
\$\$ Tetracycline	>=16 ug/ml	Resistant *
\$\$\$ Tigecycline	>=8 ug/ml	Resistant *
Tobramycin	>=16 ug/ml	Resistant
\$ Trimethoprim + Sulfamethoxazole	>=320 ug/ml	Resistant



Hospital course

- Complicated by fevers, distal limb ischemia and *C. difficile*
- Prolonged bacteremia
- Repeat imaging: Worsening multiloculated intra-abdominal fluid collections, likely due to anastomotic leak
- On HD18, aspiration of intra-abdominal fluid collection grew carbapenem-resistant *K. pneumoniae*



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MIC INTERP

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\$ Cefazolin Urine	>=64 ug/ml	Resistant *
\$\$ Cefepime	>=64 ug/ml	Resistant
Cefiderocol		
\$\$ Cefoxitin	32 ug/ml	Resistant
\$\$ Ceftazidime	>=64 ug/ml	Resistant
Ceftazidime + \$\$\$\$ Avibactam		
\$ Ceftriaxone	>=64 ug/ml	Resistant
\$\$\$ Eravacycline		
\$\$\$\$ Ertapenem	>=8 ug/ml	Resistant
\$ Gentamicin	>=16 ug/ml	Resistant
Imipenem-relebactam		
\$ Levofloxacin	4 ug/ml	Resistant
\$\$ Meropenem	>=16 ug/ml	Resistant (C) ²
Meropenem + \$\$\$\$ Vaborbactam		
\$ Nitrofurantoin	256 ug/ml	Resistant *
Piperacillin + \$\$ Tazobactam	>=128 ug/ml	Resistant
\$\$ Tetracycline	>=16 ug/ml	Resistant *
\$\$\$ Tigecycline	<=0.5 ug/ml	Susceptible *
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Trimethoprim + \$ Sulfamethoxazole	>=320 ug/ml	Resistant

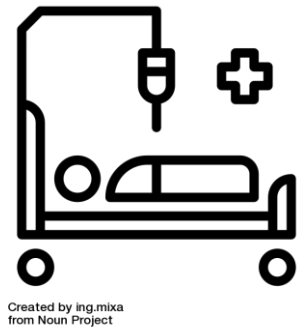


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Cefiderocol		
\$\$ Cefoxitin	32 ug/ml	Resistant
\$\$ Ceftazidime	>=64 ug/ml	Resistant
Ceftazidime + \$\$\$\$ Avibactam		2 ug/ml Susceptible
\$ Ceftriaxone	>=64 ug/ml	Resistant
\$\$\$ Eravacycline		0.125 ug/ml Susceptible
\$\$\$\$ Ertapenem	>=8 ug/ml	Resistant
\$ Gentamicin	>=16 ug/ml	Resistant
Imipenem-relebactam		1.5 ug/ml Intermediate
\$ Levofloxacin	4 ug/ml	Resistant
\$\$ Meropenem	>=16 ug/ml	Resistant (C) ²
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*Phenotypic testing (mCIM) for carbapenemase production was negative



Hospital course



- Started on meropenem-vaborbactam
- Unfortunately, no additional surgeries or drainage procedures could be performed
- 1 month later changed to comfort care and discharged on hospice



Infection prevention considerations



Placed on contact isolation per hospital policy



Investigated as a hospital-onset (HO) infection



No additional cases of HO-CRE were identified recently in that unit



Suspected development of CRE likely related to antibiotic exposure rather than new infection acquired in the hospital

Takeaway points

- CRE tends to occur in patients chronically ill and critically ill
- Risk factors: frequent healthcare exposures, medical devices and prolonged antibiotic use
- Not all CRE isolates have carbapenemase genes
- CRE has a high mortality, despite new antibiotics active against CRE

