The 4th Seminar of Infection in Transplantation and Cancer

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Espinas Palace, Tehran, Iran

Save Lives by Preventing Infection in Transplant and Cancer Patients

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Case presentation +1

- Herein we report a 30-year-old man with decompensated liver disease resulting from alcoholic cirrhosis underwent liver transplantation at our center.
- 3 month after transplant presented with acute onset shaking chills and fevers , dyspnea and pleuretic chest pain.
- Graft function and immunosuppressive regimen had been stable at the most recent clinic visit, Medications included tacrolimus, mycophenolate mofetil, prednisone

Case presentation

- Who underwent liver transplantation from a deceased donor.
- Pretransplant screenings for donor and recipient such as HIV, HBV, HCV, HDV, CMV, EBV, and syphilis for donor and HIV, HAV, HBV, HCV, HDV, CMV, EBV, VZV, PPD, IGRA, and syphilis for the recipient were negative
- CMV (D+,R-)
- No Pre-transplant bacterial infection
- MELD 26

Case presentation

- Piperacillin/Tazobactam
- Valcyte
- Trimethoprim/Sulfamethoxazole
- Fluconazole

Prophylaxis were initiated at the time of transplant

Case presentation

- Vital signs on presentation revealed a temperature of 101.2°F, pulse 98 beats per minute, respirations 30 breaths per minute, blood pressure 137/99 mm mercury, and a room air oxygen saturation of 97%.

Case presentation

Cr:2.8 mg/dL (0.6-1.1 mg/dL),

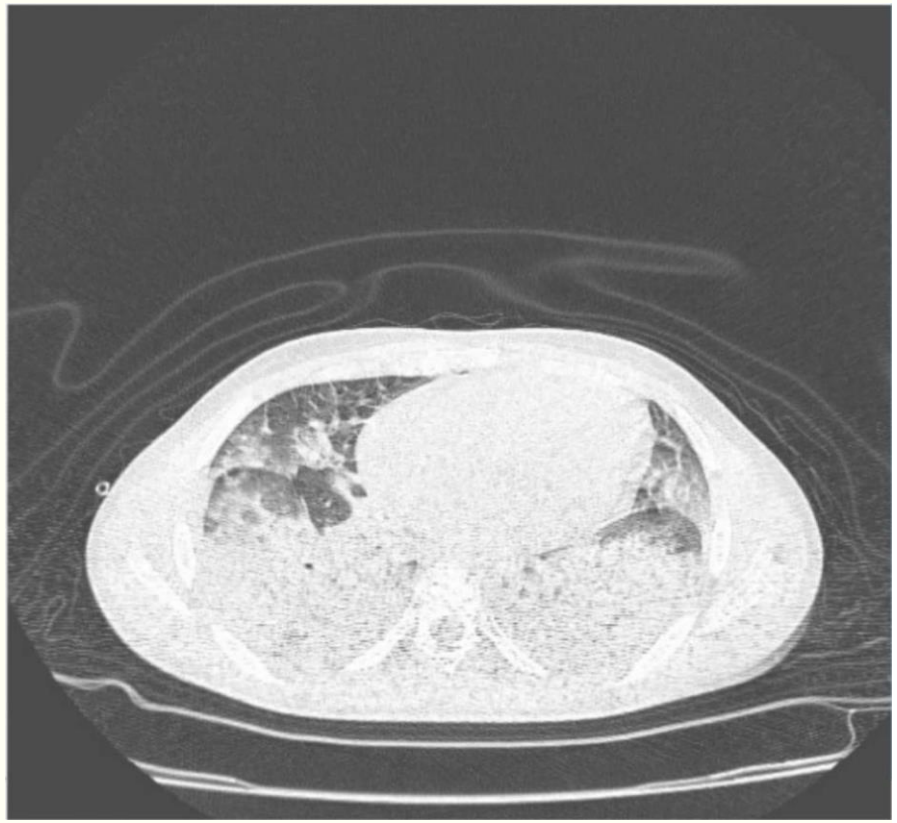
CBC:

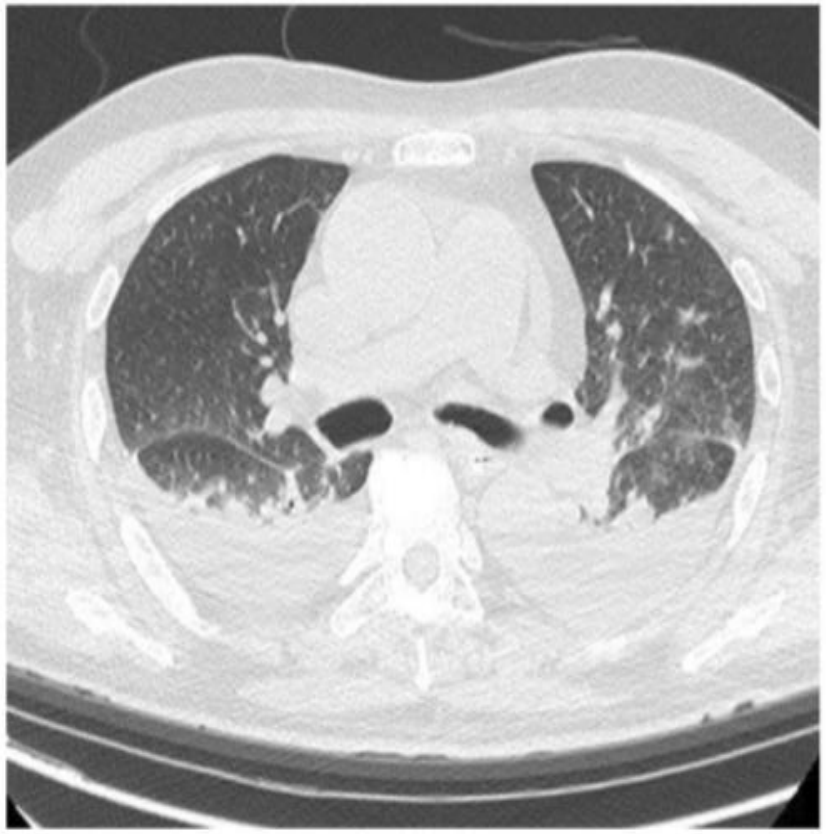
WBC:0.7 , P:64%

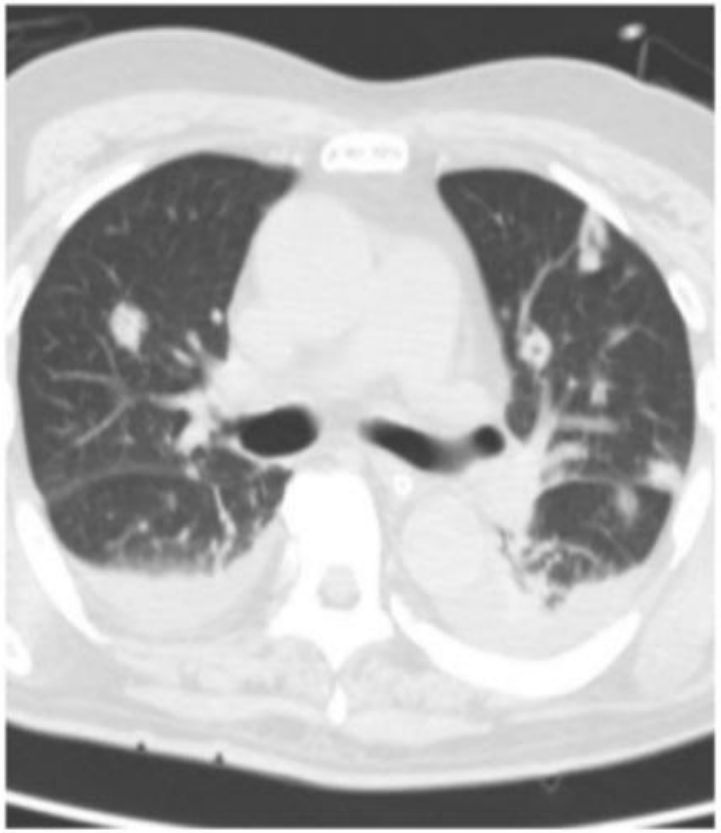
Hg:14.6 g/dl

Plt: 186000

Case presentation +2







Case presentation +2

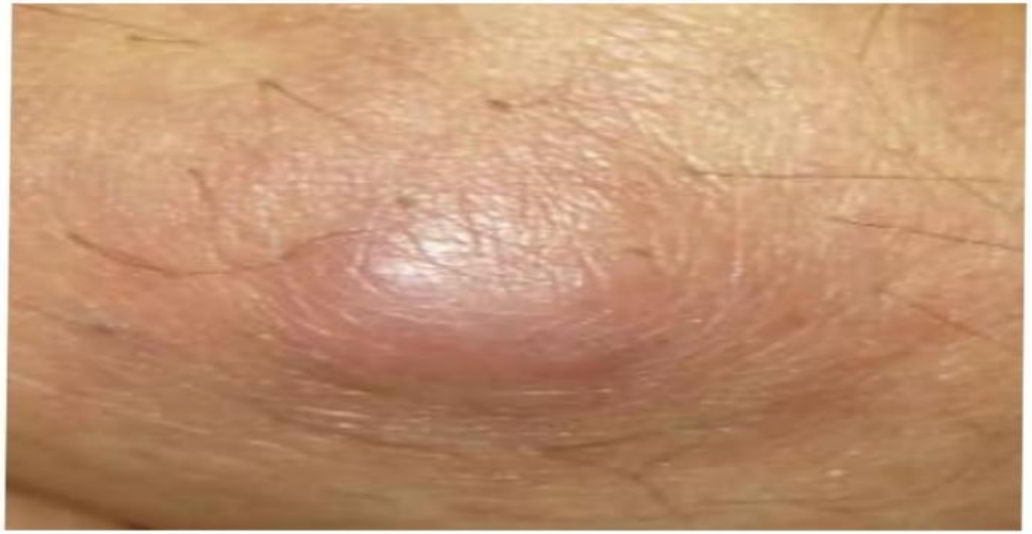
- Thoracentesis were done that revealed empyema and chest tube in placed .
- Broad spectrum antibiotic were started (meropenem/levofloxacin/vancomycin).

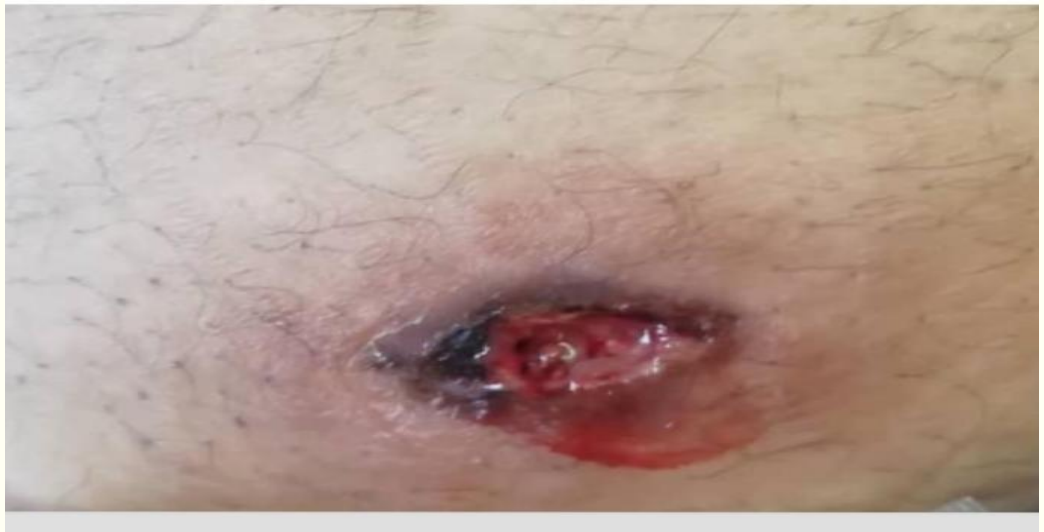
Case presentation +6

- And due to nonresponsive pneumonia , bronchoscopy and BAL were requested

Case presentation +6

- Simultaneously he had skin ulcer on abdomen from 10 days before admission thus biopsy were done .





Case presentation

- Skin biopsy of abdomen revealed cutaneus ulcer with supputative granoloma and fungal element with septated hyphae that was compatible with aspergillosis

Case presentation +10

- Voriconazole was added to antibiotic regimen ,while the patient was received various combined antibiotic(meropenem/levofloxacin/vancomycin) and antifungal therapies without improvements,bronchoalveolar lavage demonstrated aspergillosis and Klebsiella pneumonea.
- That culture of bronchoalveolar lavage revealed pandrug-resistant (PDR) Klebsiella as nonsusceptible to all licensed, routinely available antibiotics .
- Bacterial identification and antibiotic susceptibility test (AST) was done using automated Vitec 2 system (bioMerieux, France). .

Case presentation +10

Bronchial aspirate culture analysis detected an infection caused by PDR Klebsiella pneumoniae, resistant to imipenem, ertapenem, piperacillin/tazobactam, ampicillin, Tigecycline, ceftazidime, ceftriaxon cefepime, cefoxitin ,amikacin,Gentamicin,levofloxacin, ciprofloxacin, trimethoprim/sulfamethoxazole.

After various combined antibiotic therapies without improvements, (Imipenem HD-EI/Colistin/Tygacil(were started

Case presentation +16

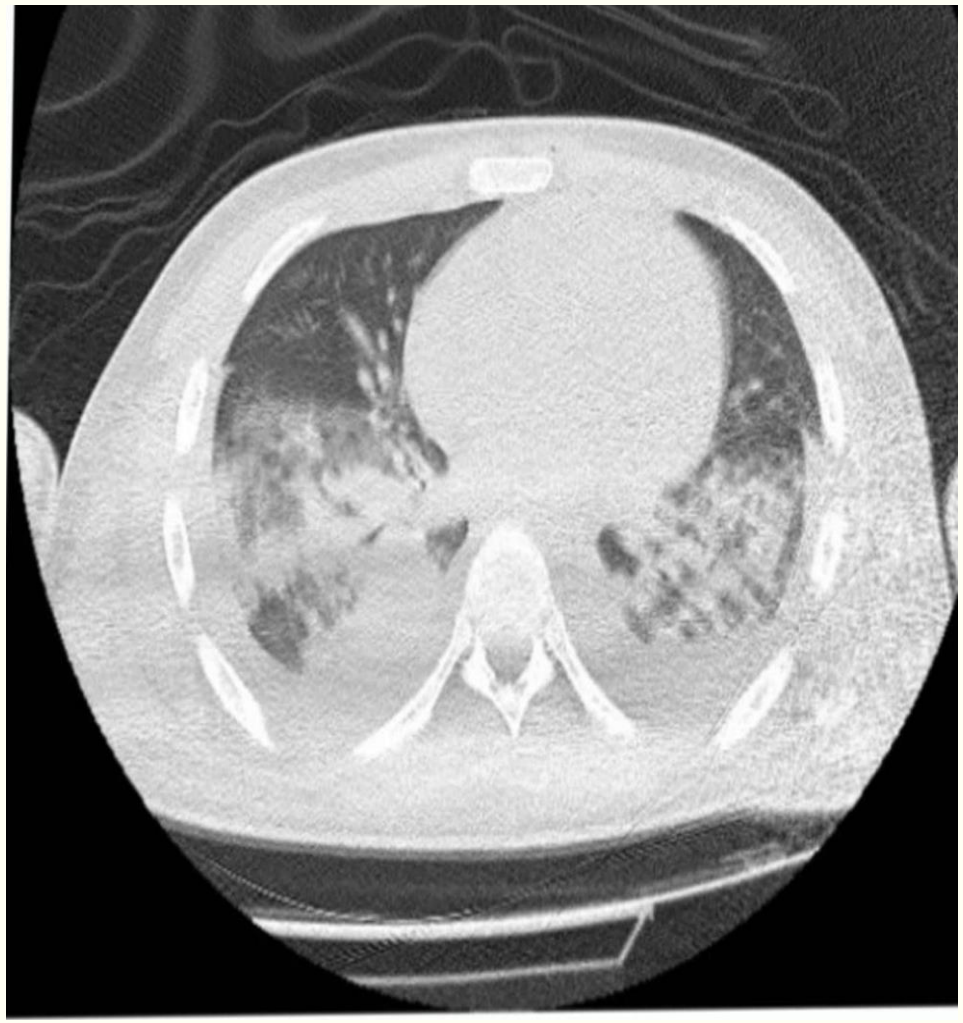
After various combined antibiotic therapies without improvements, (Imipenem HD-EI/Colistin/Tygacil)

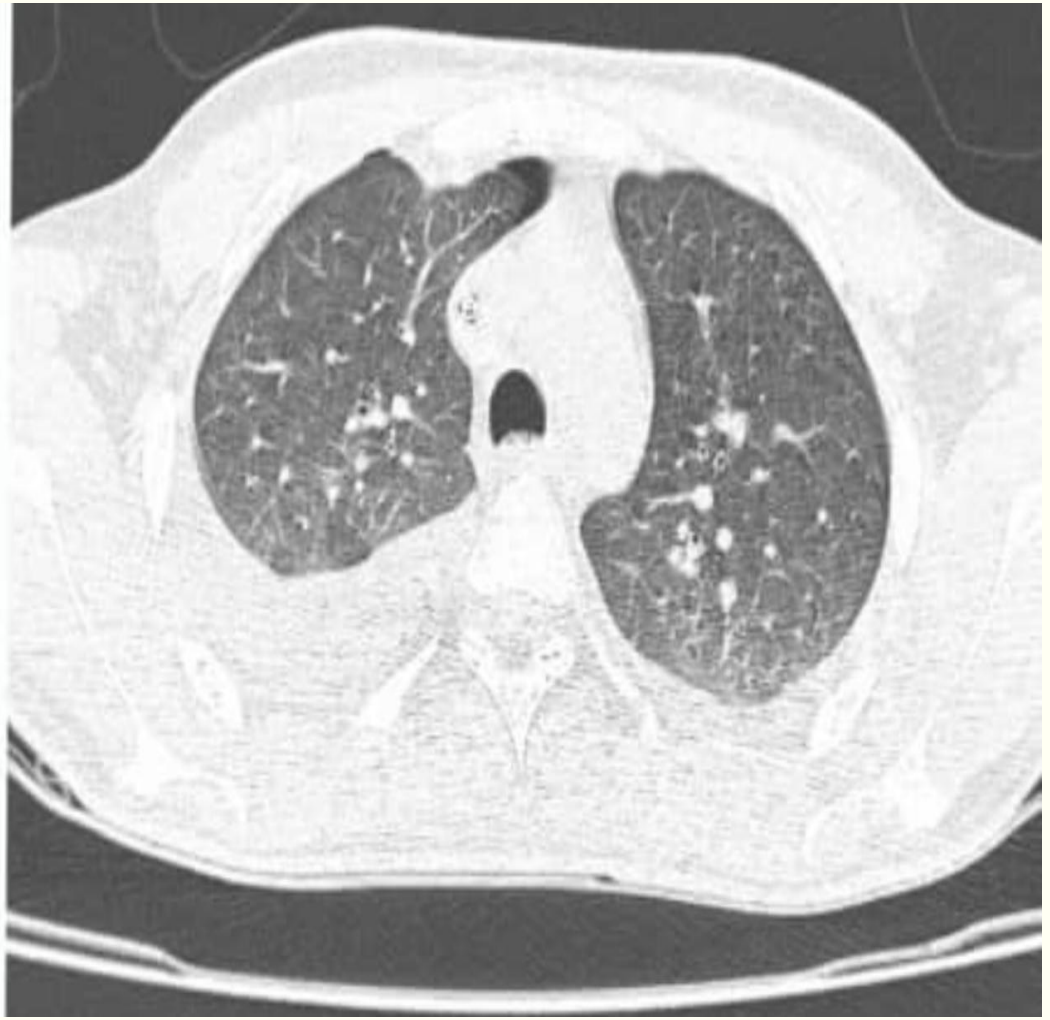
Replaced with ceftazidime-avibactam and voriconazole.

Case presentation

- At the end of 2 weeks therapy with ceftazidime-avibactam we have imaging and clinical response.
- He was discharged home with continued oral antifungal treatment.
- The patient did not show any relapses for up to 18 weeks.

Case presentation





Risk factor for CRE in LT

- CRE carriage before/after transplant
- High-MELD score
- Multiorgan transplant
- Reintervention
- AKI or RRT
- Prolonged mechanical ventilation
- Graft rejection

Antimicrobial Resistance in Organ Transplant Recipients

Maddalena Giannella, MD, PhD[a,b,*], Matteo Rinaldi, MD[a,b], Pierluigi Viale, MD[a,b]

KEYWORDS

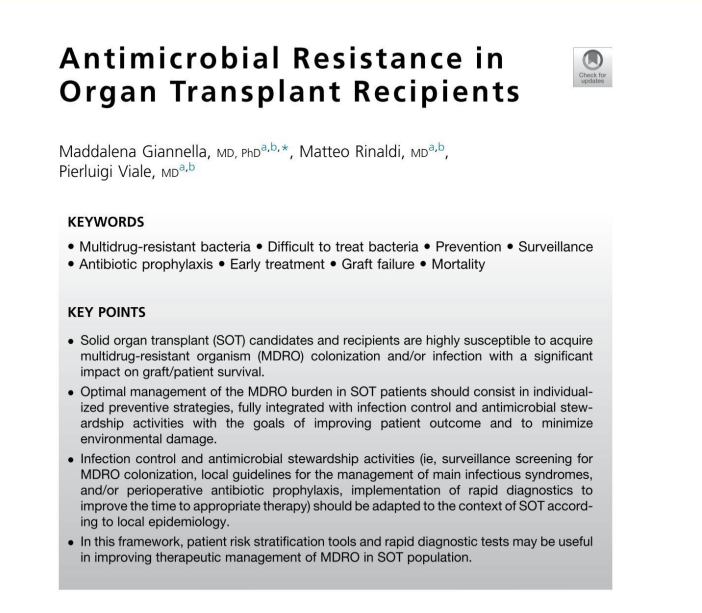
• Multidrug-resistant bacteria • Difficult to treat bacteria • Prevention • Surveillance • Antibiotic prophylaxis • Early treatment • Graft failure • Mortality

KEY POINTS

- Solid organ transplant (SOT) candidates and recipients are highly susceptible to acquire multidrug-resistant organism (MDRO) colonization and/or infection with a significant impact on graft/patient survival.
- Optimal management of the MDRO burden in SOT patients should consist in individualized preventive strategies, fully integrated with infection control and antimicrobial stewardship activities with the goals of improving patient outcome and to minimize environmental damage.
- Infection control and antimicrobial stewardship activities (ie, surveillance screening for MDRO colonization, local guidelines for the management of main infectious syndromes, and/or perioperative antibiotic prophylaxis, implementation of rapid diagnostics to improve the time to appropriate therapy) should be adapted to the context of SOT according to local epidemiology.
- In this framework, patient risk stratification tools and rapid diagnostic tests may be useful in improving therapeutic management of MDRO in SOT population.

CAZ-AVI

- **Ceftazidime-avibactam (CAZ-AVI) is a new cephalosporin/β-lactamase inhibitor combination, approved for the treatment of complicated urinary tract, intra-abdominal infections, and nosocomial pneumonia due to gram-negative, or other serious gram-negative infections.**



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RF for Aspergillosis in LT

Transplant type	Risk factor
Liver transplant recipients	
Early (0-3 mo)	• Re-transplantation • Renal failure, particularly requiring renal replacement therapy • Fulminant hepatic failure • MELD > 30 • Reoperation involving thoracic or intra-abdominal cavity
Late (>3 mo)	• Cytomegalovirus infection • Creatinine > 3.3 g/dL

WILEY Clinical TRANSPLANTATION
The Journal of Clinical and Translational Research

Patients identified at risk for late IA

- Had more than 6 g of accumulative prednisone in the third month after transplantation
- Post-transplant renal failure,
- Post-transplant hemodialysis
- leukopenia (<500/mm3)
- Chronic graft dysfunction

Transpl Infect Dis. 2023;25:e14049.

Co-infections

- CMV infection is a risk factor for IA in LT recipients‹thun SOT recipients (including liver), universal CMV prophylaxis significantly reduced the incidence of bacterial and fungal infections.

- P.aeruginosa and klebsiella infection was associated with an increased incidence of concurrent A. fumigatus.

Transpl Infect Dis. 2023;25:e14049.

Journal of
Clinical Medicine

MDPI

Review

Invasive Fungal Infections after Liver Transplantation

- **suggested ICU admission and a baseline MELD score > 24 considering a prophylaxis against IA in patients with acute alcoholic hepatitis.**

J. Clin. Med. 2023, 12, 3238.
https://doi.org/10.3390/jcm12093238

- Voriconazole is the treatment of choice in most patients; isavuconazole, posaconazole, and L-AmB are important alternative agents.

- Combination therapy can be used in select patients with more extensive infection and in those with significant and ongoing immunosuppression.

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DOI: 10.1111/tid.14049

TRANSPLANT INFECTIOUS DISEASE

REVIEW

Invasive aspergillosis in liver transplant recipients

Should immunosuppressive therapy be reduced?

- **Reduction of immunosuppression is part of the recommendations for the treatment of IA in SOT but it should be done cautiously because it may also promote immune reconstitution syndrome and compromising graft .**

Take home message

- **Invasive fungal infections (Candida and Aspergillus) and MDRO remain one of the most common infectious complications after organ transplantation, and liver transplant recipients (LTRs) have the highest mortality rate.**

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Thank You!