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Amphotercin Washout of Fungal Peritonitis in Liver Transplant Recipient: A Novel Approach

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Background

Invasive fungal infection (IFI) has been shown to have significant prevalence as well as morbidity and mortality among the organ transplant recipient population. From 2001-2006 a prospective surveillance study consisting of 15 US transplant centers was conducted resulting in screening of 18,000 transplant recipients with identification of 1208 patients with invasive fungal infections. The pertinent results of the study showed an increase in fungal infections during the period of the study with an aim at focusing on the incidence, timing and mortality to improve prevention and treatment (1). From 2003-2012 a retrospective study identified 120 liver transplant recipients of which 13.5% were shown to have fungal infections (2). A review paper found a range in the literature of 5-42% of patients having at least one fungal infection post-transplant (3).

Fungal peritonitis is often difficult to diagnosis early due to lack of symptoms or specific clinical findings. Studies have shown that fungal infections usually occur within the first 3 months of liver transplantation. (1,4). The risk factors identified are multiple including, long continuous parenteral nutrition time, poorly controlled high blood sugar, long-term mechanical ventilation, rejection treatment, cytomegalovirus (CMV) viremia or disease, acute hepatic insufficiency, early graft failure, re-transplantation, prolonged preoperative hospitalization (particularly in the intensive care unit (ICU), preoperative use of broad-spectrum antibiotics, fungal colonization (2). A study with 152 liver recipients identified 2 independent risk factors for IFI as renal insufficiency requiring CVV or HD and correlation with the amount of fresh frozen plasma transfused (4). A review of 10 centers in Europe over 3 years in which 1208 liver transplants were performed resulted in 42 invasive fungal infections identified. The most significant risk factors were found to be respectively re-operation, presence of choledocojejunostomy and initial operating time of >8hrs (5).

Patient Description

HPI: A 64 y/o female presented electively for orthotopic liver transplant.

Allergies: NKDA
PMH: Cirrhosis, Hepatitis C, GERD, Bacterial peritonitis
PSH: Cesarean section, Ventral hernia repair, Multiple paracentesis
Social Hx: Former smoker, No ETOH or Drug use
Fam Hx: Non-contributory

Pertinent clinical information:
- -Poor nutrition
- -Chronic hyponatremia
- -Nephrology recommendations for CVVHD in the OR until reperfusion of transplanted liver

Intervention and Rationale

The patient continued to have significant ascites, requiring paracentesis which showed profound PMNs, signifying what was originally thought to be a secondary bacterial peritonitis with staph epidermidis from the cultures as a morbidity of the liver transplant however, further cultures resulted in identification of Candida species

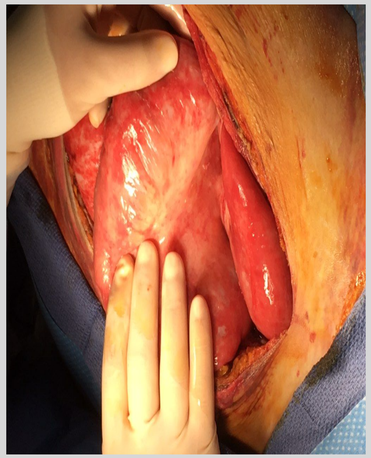
A meta-analysis of 23 papers noted that abdominal washout with antibiotics compared to saline showed a significant decrease in morbidity (12).

Previous studies have also shown some successes with using direct application of antifungal medications including anti-fungal medication washout in patients with peritoneal dialysis catheters developing fungal peritonitis and also using antifungals for bladder irrigation in candiduria as well as intra-vitreal injections for fungal endophthalmitis (13,14).

An intraoperative discussion with the infectious disease team lead to the decision to use an amphotericin dwell during abdominal washout.

Pre Intervention Bowel

1



Operative Interventions

Index Operation: Orthotopic liver transplant with roux en y choledocojejunostomy biliary reconstruction and placement of gastrojejunostomy tube-Transfused 20UPRBC, 6FFP, 2 Platelets, 1 Cryo

POD 9 Dx Hand assisted laparoscopy for peritonitis, enterotomy with primary repair, revision reinforcement of jejunojejunostomy anastomosis

POD 22 Exploratory Laparotomy, saline washout, small bowel resection, removal of gastrojejunostomy tube, liver biopsy, placement of Abthera Vac

POD 24 Exploratory Laparotomy, saline washout, creation of end ileostomy, Dobhoff tube, Amphotericin B Dwell (30 min), Abthera Vac

POD 26 Exploratory Laparotomy, Saline washout, Right hemicolectomy, Amphotericin B Dwell (30 min), Abdominal wall closure with Wound Vac placement

POD 41 Sacral Wound Debridement

POD 103 Diagnostic Laparoscopy, Stamm Gastrojejunostomy feeding tube, EGD

POD 174 Exploratory Laparotomy, Ileostomy Takedown with Ileocolonic Anastomosis

Response to Treatment

Discussion

The patient progressed well after resolution of fungal infection and was at acute rehab at one point. However, now has returned to inpatient status. Invasive fungal infection still carries high morbidity and mortality among organ transplant recipients despite advances in techniques, medical care and immunosuppression
It is reasonable based on prior studies showing success with abdominal washout and multiple uses of topical antifungal medications to use a multimodal approach with both intravenous medication and topical application of amphotericin B. The transplant patient is at higher of risk of complications due to immunosuppression and often multiple co-morbidities and/or malnutrition.This patient population should be considered for aggressive treatment measures with any complication.

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