Hepatitis C Virus (HCV) and Kidney Transplantation

Purpose: To define:
- Pre-transplant testing of kidney transplant candidates for HCV antibody,
- HCV-positive Kidney Transplant Selection Criteria,
- Treatment options for HCV RNA-positive kidney candidates, and
- Post-transplant management of HCV RNA-positive recipients

Background
Hepatitis C is a risk factor for poor outcomes after kidney transplantation due to:
- New-onset diabetes after transplant
  - Accelerated atherosclerotic cardiovascular disease and cardiovascular mortality
- Liver failure
- Hepatocellular carcinoma
- Premature kidney allograft failure
  - Thrombotic microangiopathy
  - Immune complex glomerulonephritis

Procedures

Pre-transplant Testing
All kidney transplant candidates are screened for the presence of HCV antibody.

If positive, HCV RNA NAT is obtained

- HCV Ab +/RNA -:
  1. Ultrasound to rule out Chronic Liver Disease/Portal hypertension
  2. If negative, proceed with routine transplant evaluation

- HCV Ab +/RNA +:
  1. Ultrasound to define liver/spleen anatomy and determine presence of portal hypertension
  2. HCV Genotype analysis
  3. Hepatology consultation
     - Liver biopsy (Mandatory)
     - Discussion about treatment options
  4. Case discussed at Candidate Review Meeting for decision about candidacy for kidney transplantation

HCV+ Kidney Transplant Selection Criteria

Inclusion Criteria:
- Compensated liver disease
  1. Normal serum albumin
  2. Absence of coagulopathy
  3. Absence of portal hypertension

Exclusion criteria:
- Decompensated liver disease
iv. Encephalopathy
v. Coagulopathy: INR>1.8
vi. Hypoalbuminemia
• Portal Hypertension
   i. Ascites
   ii. Varices
• Advanced stage fibrosis
  o Bridging fibrosis alone may not be a contraindication to kidney transplantation as long as the liver disease is compensated and there is no evidence of portal hypertension

Treatment Options for HCV RNA+ Kidney Candidates:

1. No Treatment
2. Treatment options include various combinations of
   • Pegylated Interferon
   • Ribavirin
   • Direct Acting Antiviral (DAA) include:
     Sofosbuvir (first line)
     Simeprevir (first line)

For patients with preserved GFR:
• Genotype I & IV: Rx IF/Riba/Sobosbuvir x 12 wks
• Genotype II & III: Rx Sofosbuvir/Riba x 12-24 weeks

Issues Pertaining to Management

Pretransplant:
• FDA advises ribavarin be used “with caution” if CrCl<50mls/min due to risk of severe hemolytic anemia
• Sofosbuvir “No dosing recommendation for ESRD or Clcrea<30mls/min”
• There is no regimen that has a proven safety/efficacy profile in patients for CKD IV or ESRD.

Kidney Choice:
• HCV+ Patients will be offered the opportunity to receive a HCV+ allograft.
• This may reduce the expected waiting time.
• This may expose the patient to risk of a HCV with a different genotype.

Post transplant:
• Interferon contraindicated due to risk of rejection
• Protease inhibitors (Simepravir, telaprevir and bocepravir) are profound inhibitors of CYP450 3A/4 thus risk of CI toxicity and are best avoided after transplantation
• Sofosbuvir is not a PI, is not a CYP3A/4 inhibitor and has no PK interactions with immunosuppression
• Sofosbuvir/Ribavirin without IFN are Rx of choice for transplant recipients assuming GFR is adequate
• All HCV viremic patients will be referred to Hepatology for opinion on post transplant management
Original Date: 3/24/2014

Review Dates: 6/9/17 (revised), 5/22/20

This policy was reviewed and approved at QAPI on 5/22/20

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