Hepatitis C and Kidney Disease

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Thanks to our speaker!
Outline

• The relationship between hepatitis C and kidney disease.
• The treatment options for hepatitis C in kidney disease patients who are on dialysis or not on dialysis
• How the new medicines that cure hepatitis C have expanded options for patients needing a kidney transplant.
Hepatitis C (hep C)

• Viral infection
  – Different viral strains (genotypes)
• Often has no symptoms but the infection stays in the body of most patients who are affected
• Sometimes it is detected with:
  – Liver disease
  – Kidney disease
  – Multi-organ symptoms
How hep C spreads and screening

• Transmission (how it spreads)
  – Blood transfusions
  – Sexual intercourse
  – Sharing needles

• Screening
  – Hepatitis C antibody
  – Hepatitis C RNA (viral load)
  – Should be performed in all patients receiving maintenance dialysis or kidney transplant
Prevalence of hepatitis C in patients with kidney disease

- Affect 5-10% of the US dialysis population, as high as 14% worldwide
- Affects 1.5-8% of the kidney transplant population
- The amount of dialysis patients with hep c is going down
  - Reductions in transfusion rates
  - Standard precautions for prevention of blood-borne infections
Symptoms of kidney disease associated with hepatitis C

• Blood in the urine
• Protein in the urine
• Abnormal kidney function
• Might not show symptoms
Types of kidney disease associated with hepatitis C infection

• Many types of glomerular disease are associated with hepatitis C infection
  – Cryoglobulinemia (skin rash, neuropathy)
  – Membranous nephropathy
  – Immune complex glomerulonephritis
  – Polyarteritis nodosa
Pathogenesis (how a disease develops)

• Hepatitis C virus triggers the immune system to become more active
  – Formation of deposits in the kidney
  – Can lead to active inflammation in the kidney and other organs
Reasons for treatment

• Prevent liver complications
• Decrease the immune system activity so that deposits don’t build up and damage the kidney
• Prevent complications of hep C after kidney transplant
Treatment options for hepatitis C in kidney disease patients who are not on dialysis
Treatment

• If eGFR is greater than 30 (mild to moderate renal impairment), recommend treating hepatitis C with medicines called direct antiviral agents (DAAs)
  – Treatment is similar to that of patients without kidney disease in the general population
  – Some dosing adjustments may be needed for certain medicines
Treatment

• If eGFR if less than 30, the decision to treat hep C may be individualized depending on:
  – Life expectancy
  – Likelihood of kidney transplant
  – Other medical conditions
  – Strain of hepatitis C that an individual is affected with (genotype 1 and 4 has very good regimens for treatment)
  – How serious liver damage is
Older Treatment Regimens

• Prior treatment regimens
  – Interferon ± ribavarin
  – Affected kidney transplant (increased risk of rejection)

• Not always effective; relapse common in patients with kidney disease

• Half of patients achieved sustained virologic response (cure), defined as hep C RNA clearance 6 months after finishing antiviral treatment
Older Treatment Regimens

• Associated with many side effects
  – Depression
  – Anemia
  – General feelings of sickness or discomfort

• May be only option in countries where newer hepatitis C treatment agents are not available
Newer treatment regimens for HCV

• Direct acting antiviral agents
  – Some aren’t processed by the kidney, so they can be used in advanced CKD or for patients on dialysis.
Newer treatment regimens

• High rates of cure (greater than 90%)
• For glomerulonephritis related to hep C:
  – Immunosuppression may still be needed to treat the inflammation from activated immune system
  – Recommended that patients undergo treatment for mild or moderate glomerular disease not requiring immunosuppression
Newer treatment regimens

• If there is a need for immunosuppressive medications, may delay treatment of hepatitis C by 1-4 months until after immunosuppression is initiated
  – Minimize side effects
  – Increase chance of patients tolerating immunosuppression and hepatitis C treatment regimen
Side effects of treatment

• Generally well tolerated
  – Small risk of worsening renal function
  – Anemia
Treatment options for hepatitis C in kidney disease patients who are receiving dialysis
Hepatitis C and dialysis patients

- Common in the dialysis population
- Hepatitis C will not prevent kidney transplantation
- Patients with hepatitis C do better with kidney transplant than with dialysis
  - Higher risk of complications in patients with kidney transplant if they are hep C positive compared to hep C negative
Treatment regimen in advanced CKD or dialysis patients

- EXPEDITION – 4 year study of a direct antiviral agent had more than 100 patients with eGFRs less than 30. About 80 patients on dialysis.
  - 98% cure with 12 weeks of treatment.
Treatment regimen in advanced CKD or dialysis patients

- C-SURFER study of another direct antiviral agent had more than 100 genotype 1 patients with eGFR less than 30. About 75 patients on dialysis.
  - 94% cure with 12 weeks of treatment.
Treatment options for hepatitis C in kidney transplant candidates
Hepatitis C in potential kidney transplant recipients

- Routine to screen for hepatitis C in potential kidney transplant recipient
- Should undergo liver biopsy before kidney transplantation to rule out cirrhosis (gold standard)
  - May change decision regarding kidney versus combined kidney-liver transplant
- Alternatively, undergo scan for fibrosis
Candidate for living donor transplant

- Treat hepatitis C in patients with living donors prior to kidney transplantation
Timing of treatment for candidates for deceased donors

• If kidney transplant candidate, should treat hepatitis C before transplant if there are acute indications, or if center does not accept hepatitis C positive deceased donors

• Alternatively if no acute symptoms (e.g. liver disease) for treatment, could wait until after kidney transplant and accept a hep C positive donor
  – may decrease waitlist time and risk of death
Timing of treatment for potential kidney transplant recipient

- Safety of delaying hepatitis C treatment depends on
  - expected time until transplantation
  - the degree of liver disease
  - presence of other organ involvement outside of liver

- Decision for treatment may also be dependent on genotype
Treatment in transplant candidates

- In the US, wait time can be less than one year for an hep C-positive organ but more than five years for an hep C-negative organ.
- Even if receipt of a hep C-infected donor organ results in two different hep C genotypes post-transplant, both infections can be easily treatable.
Treatment in the transplant candidate

- If there is...
  - advanced or rapidly progressive liver disease
  - severe symptoms or involvement of organs outside of the liver
  - anticipated prolonged wait on the deceased-donor waiting list

- Good reasons to treat before kidney transplantation
Treatment regimens

- Hep C genotype 1 or 4:
  - Multiple drug regimens are available
  - Antiviral therapy can be given before or after transplantation
Treatment regimens

• In patients who do not have hep C genotype 1 or 4 infection and have eGFR less than 30 may want to postpone antiviral therapy until after transplantation.
  – Due to less effective drug therapies targeting other genotypes in those with reduced kidney function
• The only other available interferon-free regimens for genotypes 2, 3, 5, and 6 are sofosbuvir based.
Complications of hepatitis C in the kidney transplant recipient

• Liver disease
• Hepatitis C-related kidney disease in the new transplant kidney
• New onset diabetes after transplant
  – Abnormal glucose metabolism related to hepatitis C infection
• Cancers after transplant
Treatment after transplant

• All patients with HCV infection should receive antiviral therapy after kidney transplant ideally while the eGFR is greater than 30
  – Should wait until immunosuppressive regimen is stable

• No dose adjustment for renal function is required in patients with eGFR greater than 30 for the direct-acting antiviral agents
Immunosuppressive treatment with concurrent hep C treatment

• Beware of cyclosporine and hepatitis medication interactions
• Some regimens have worse drug interactions than others
Long term health of hepatitis C infected kidney transplant recipients

• Some pooled studies showing a 70% higher risk of death among hepatitis C infected patients with kidney transplant

• Risk of kidney rejection was also higher for HCV-infected recipients by about 55%
Questions?
Next Month’s Webinar

Kidney Friendly Holidays

Thursday October 26, 2-3 p.m. (ET)

- Learn healthy holiday foods for people with kidney disease.
- Find ways to modify holiday menus to be kidney friendly.
- Learn ways that family and friends can help people with kidney disease eat well during the holidays.

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