Viral Induced Cancer: Hepatocellular Carcinoma (HCC)

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Hepatocellular Carcinoma: Increasing incidence

- In the US, 35,660 new cases in 2015 with 24,550 estimated deaths
- One of the deadliest cancers (17% 5-yr survival)

HCC: Hot off the presses

• While overall cancer death rate decreased from 2003-2013
• Liver cancer incidence rates have increased sharply (72%) and deaths increased at highest rate
• HCV and liver cancer associated death rates highest among those born between 1945-1965
• “Efforts to vaccinate populations that are vulnerable to hepatitis B virus (HBV) infection and to identify and treat those living with HCV or HBV infection…can be effective in reducing the incidence and mortality of liver cancer.”
HCC

• Primary liver cancer
• Major risk factors:
  – Underlying chronic liver disease or cirrhosis (80%)
  – Most of these are due to chronic viral hepatitis (78%)

Perz, J Hepatol 2006;45(4):529-538
Viral hepatitis

- Hepatitis C virus (HCV) and Hepatitis B virus (HBV)
- Silent killers
- Most people who have chronic infection are asymptomatic until disease is advanced
- Most Americans are unaware of their infection
- Lack of awareness of public and policy makers
Hepatitis B Virus (HBV)

- 2 billion people worldwide have been infected
- 240 million with chronic infection
- 780,000 die each year due to cancer or liver disease
- 1.2 million with chronic HBV in US
- 19,800 new infections in 2013

http://www.who.int/mediacentre/factsheets/fs204/en/
http://www.cdc.gov/hepatitis/resources/index.htm
HBV: Awareness

• High risk persons should be screened

<table>
<thead>
<tr>
<th>Category</th>
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<tbody>
<tr>
<td>People born in regions of ≥ 2% prevalence</td>
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<tr>
<td>Unvaccinated US born people whose parents are from a country where ≥ 8% prevalence</td>
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<td>HIV positive individuals</td>
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<td>Injection drug users</td>
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<td>Household contacts and sexual partners of persons with HBV</td>
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<td>MSM</td>
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<td>Pregnant women</td>
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<tr>
<td>Those receiving chemotherapy of immunosuppressives</td>
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<tr>
<td>Hemodialysis</td>
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HBV: Prevention

- Vaccine effective in 95%
- Universal infant immunization (imperfect)
- Screening of pregnant women
- Catch up vaccination and high risk adults

Acute infection → Chronic infection (variable) → Cirrhosis (up to 10% annual incidence) → Liver cancer (up to 8%/yr)
HBV: Treatment

• No cure available

• Highly effective oral therapies to control virus
  – Reduce transmission
  – Reduce progression of disease
  – Reduce deaths
  – Reduce incidence of liver cancer

Wong, Hepatology 2013;58(5):1537-47
Papatheodoridis, J Hepatol 2015;62(4)956-967
Hepatitis C Virus (HCV)

- 150 million people worldwide are infected
- 350,000 die per year
- 3.2 million in US with chronic infection
- 29,700 new infections in 2013

http://www.who.int/mediacentre/factsheets/fs164/en/
HCV: Awareness

• 75% of those infected are unaware

• Risk based screening

• Birth cohort screening
  – 1945-1965

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<tr>
<td>Adults born between 1945-1965</td>
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<tr>
<td>Past or current injection drug use</td>
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<tr>
<td>Blood transfusion or organ transplant prior to 1992</td>
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<tr>
<td>HIV infection</td>
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<tr>
<td>Persistently abnormal ALT</td>
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<tr>
<td>Children born to HCV infected mother</td>
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<tr>
<td>Persons who have been incarcerated</td>
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<tr>
<td>Intranasal drug use</td>
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<tr>
<td>Healthcare workers with exposure to HCV infected blood</td>
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<td>Hemodialysis</td>
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HCV: Prevention

- No vaccine
- Improved awareness and disease surveillance

Acute infection
Chronic infection (60-95%)
Cirrhosis (10-30%)
Liver cancer (3-5%/yr)

Treatment
HCV: Treatment

• HCV can be cured in the majority of patients
• Current therapies are oral with low incidence of serious side effects
• Cure results in mortality reduction
• Cure results in reduction in risk of liver cancer
• Reduced transmission

Backus, Clin Gastroenterol Hepatol 2011;9:509-516 e501
Summary

• HBV and HCV are leading causes of liver cancer
• HBV vaccination can prevent HBV infection and as a result prevent liver cancer from this cause
• HBV treatments reduce risk of cancer development
• No vaccination for HCV is available
• Treatments for HCV can result in cure of infection and can reduce risk of liver cancer
• Public awareness of viral hepatitis is key to reducing morbidity and mortality