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Hepatitis B

Hepatitis B (HBV): A double-stranded DNA virus belonging to the family of hepadnaviruses, which include duck hepatitis virus, woodchuck hepatitis virus, and ground squirrel hepatitis virus. It has 8 genotypes, varying geographically. There are more than 300 million HBV carriers worldwide, and 500,000 die annually from HBV-related liver disease.

**Who to test:**

* Signs/symptoms of acute hepatitis.
* Chronically elevated ALT/AST.
* Countries with HBV prevalence ≥2% (Africa, East Asia including China, Korea, Indonesia, and the Philippines, the Middle East except Israel, south and Western Pacific islands, the interior Amazon River basin, and certain parts of the Caribbean (Haiti and the Dominican Republic)
* Pregnant women
* Immunosuppressive therapy (rituximab, chemo with corticosteroids, infliximab).
* Also: Persons born in US but parents from countries with HBV prevalence ≥8%, those with HIV or HCV, MSM, inmates at correctional facilities, close contacts of patients with HBV, hemodialysis pts.

Routes of transmission: Perinatal transmission and occasionally horizontal transmission early in life most common in high prevalence areas (southeast Asia, China), and sexual contact and percutaneous transmission most common in the United States, Canada, and western Europe.

**Our chronic hepatitis panel** tests for HBsAg and HBcAb:

* If HBcAb positive but HBsAg neg → you may presume a prior cleared infection, no further work up necessary (confirmed by HBsAb).
* If HBcAb and HBsAg neg, can test for HBsAb and immunize if negative.
* If HBcAb and HBsAg both positive:
  + Order HBeAg and viral load. Treat if:
    - HBeAg neg with viral load >2k and elevated LFTs, OR
    - HBeAg pos with viral load >20k +/- elevated LFTs.
  + If HBeAg neg, check LFTs and viral load q3-6 mos as they may fluctuate rapidly.
* Criteria for chronic hepatitis: HBsAg pos >6 mos.
* Occult HBV infection: HBsAg neg but detectable HBV DNA by PCR (due to low levels of HBV DNA).

If found to have chronic HBV, should evaluate for:

* Evaluate for risk factors: HCV/HIV, etoh, fam hx, liver disease.
* Labs: CBC, LFTs, PTT, HBV replication (per above), HAV IgG Ab. Anti-HCV, anti-HDV, iron, TIBC.
* HCC screening.
* Liver bx if indicated, especially if pt does not meet tx criteria but has HBV DNA 2,000-20,000 and normal or mildly elevated ALT/AST. May need treatment if histologically active liver disease.

Phases of chronic HBV:

* Early replicative phase with active liver disease 🡪 later phase with low replication and remission of liver disease (HBeAg neg and anti-HBe pos).

Sequelae: Development of cirrhosis, hepatic decompensation, HCC, extrahepatic manifestations. Worse prognosis with longer replicative phase (longer duration of necroinflammation).

**Treatment at CCRMC**:

* **Entecavir** – low rate of drug resistance, potent antiviral (reverse transcriptase inhibitor). Needs to be taken on an empty stomach 2 hrs before/after meal. Pregnancy class C. Better for renal insufficiency.
* **Tenofovir** – same low rate of resistance, daily medication, renally dosed, age > 12 (decreases bone mineral density). Pregnancy class B.
* End point of treatment – HBeAg seroconversion (may take 4-5 yrs to indefinitely) if HBeAg pos. If HBeAg neg, unclear endpoint – likely until confirmed loss of HBsAg. Lifelong treatment for cirrhosis.
* Postexposure prophylaxis: for all who are nonvaccinated with exposure to blood/secretions. 1st dose of vaccine as early as possible, optimally within 12 hrs. If source is HBsAg pos, should also receive HBIG. 2 additional vaccine doses per usual schedule.

**Additional counseling for chronic hepatitis B:**

* HCC monitoring: 2010 AASLD guidelines: ultrasound q 6 mos in populations with annual HCC incidence rate >0.2%, which includes Asian men > 40 yrs, Asian women > 50 yrs, Africans and North American blacks, fam hx of HCC, those with HBV and cirrhosis. Do not order AFP alone or alternating with U/S (lacks adequate sensitivity/specificity).
* Heavy alcohol use associated with worsening liver disease and increased risk of HCC. Unclear safe amount of alcohol, but should abstain if they have liver injury.
* Vaccinate close contacts.
* Pregnancy: Treatment per algorithm. Vaccine and HBIG for infants following delivery if mother is HBsAg pos.

**Hepatitis B Glossary**

* HBeAg clearance – loss of HBeAg in a person who was previously HBeAg positive.
* HBeAg seroconversion - Loss of HBeAg and detection of anti-HBe.
* Inactive HBsAg carrier - Persistent HBV infection of the liver without significant, ongoing necroinflammatory disease - Requires 3+ ALT levels and 2-3 HBV DNA levels over 12 mos of observation.
* Reactivation - Reappearance of active necroinflammatory disease of the liver in a person known to have the inactive HBsAg carrier state or resolved hepatitis B.

**References:**

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* Lok, A.S.F. and McMahon, B.J., 2009 Practice Guideline Update – Chronic Hepatitis B <http://www.aasld.org/practiceguidelines/Documents/Bookmarked%20Practice%20Guidelines/Chronic_Hep_B_Update_2009%208_24_2009.pdf>.
* Bruix, J. and Sherman, M., 2010 Practice Guideline Update – Management of Hepatocellular Carcinoma.

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* “Clinical manifestations and natural history of Hepatitis B virus infection”, “Diagnosis of Hepatitis B infection”, “Overview of the management of hepatitis B and case examples”, “Prevention of hepatocellular carcinoma and recommendations for surveillance in adults with chronic liver disease”, UpToDate, printed 11/17/14.