Case Studies – Hepatitis B and C

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RBWH

Case 1 Mrs DC

- 33 year old lady who immigrated from mainland China 2 years ago with her husband
- Attended your practice for a check up of her hepatitis B and saw another doctor a few weeks ago
- Has come today to discuss the results of her investigations

LFTS – All normal,
ALT 21
FBC – All normal,
platelets 221

HepBsAg pos
HepBsAb neg
HepBcAb pos
HepBeAg neg
HepBeAb pos

HepC Ab neg

HBV DNA 763
IU/ml

Case 1 Mrs DC

- What is the likely way she has acquired Hepatitis B?

a) Sexual transmission as an adult

b) From medical procedures such as vaccinations when she was a child

c) From her mother at birth

d) It is not possible to be sure

Case 1 Mrs DC

- *Family history:*
  - *Mother, maternal uncles and maternal grandmother all known to have chronic hepatitis B*
  - *All living in China*
  - *None of them known to have cirrhosis or hepatocellular cancer*

Case 1 Mrs DC

- What should she tell her husband?

a) He should be vaccinated for Hepatitis B

b) Since her viral load is low, the infection risk is minimal and nothing needs to be done

c) He should be tested for Hepatitis BsAg and vaccinated if it is negative

d) He should be tested Hepatitis BsAg, HepBsAb and HepBcAb and vaccinated if all are negative

Case 1 Mrs DC

- What other investigations would it be useful to order?

Liver Ultrasound: “Liver is of normal size and even echotexture. There is no focal parenchymal abnormality”

Case 1 Mrs DC

- Should she be started on antiviral treatment? Is it likely that that this will be started when she is seen in a specialist clinic ?
  a) Yes
  b) No

LFTS – All normal,
ALT 21
FBC – All normal,
platelets 221

HepBsAg pos
HepBsAb neg
HepBcAb pos
HepBeAg neg
HepBeAb pos

HepC Ab neg

HBV DNA 763
IU/ml

Case 1 Mrs DC

- **At present a curative treatment does not exist**
- Spontaneous conversion to sAg neg/sAb pos occurs at rate of 1% per year

- *Goal of treatment is improve survival and quality of life by preventing disease progression which would lead to cirrhosis and thus to liver failure and a high risk of hepatocellular cancer*

- **Indication to start antiviral therapy would be HBVDNA > 2000 IU/ml *and* elevated ALT**
- Once commenced antiviral therapy would continue indefinitely

Case 1 Mrs DC

- Plan for annual follow up with blood tests of LFTs and viral load

Case 1 Mrs DC

- *HCC surveillance guidelines for patients with HepBsAg pos:*
  6 monthly ultrasound ± AFP
  - Men over 40
  - Women over 50
  - Cirrhosis at any age
  - Family history of HCC at any age
  - Africans over 21

Case 2 Mr AF

- 56 year old man found to have abnormal LFTs on check up
- Immigrated from Italy as a young man. Married with 2 daughters
- No significant PMH

LFTs: ALT 82, AST 76, otherwise normal
FBC: normal apart from platelets 93

HepBsAg pos
HepBsAb neg
HepBcAb pos
HepBeAg neg
HepBeAb pos

Hep C Ab neg

HepD Ab neg

HBVDNA
10,600 IU/ml

Case 2 Mr AF

- What is the likely way he has acquired Hepatitis B?

a) Sexual transmission as an adult

b) From medical procedures such as vaccinations when he was a child

c) From his mother at birth

d) It is not possible to be sure

Case 2 Mr AF

- What other investigations would it be useful to order?

Liver ultrasound: coarse echotexture; no space occupying lesions, normal spleen

Does this exclude cirrhosis?

Case 2 Mr AF

- He was referred to Liver Clinic and a liver biopsy was performed
- This showed chronic Hepatitis B with mild histological activity and established cirrhosis
- Nowadays a fibroscan may have given enough information to avoid the need for biopsy

Case 2 Mr AF

- How should he be treated?

a) Entecavir 0.5mg daily to be continued indefinitely

b) Tenofovir 300mg daily to be continued indefinitely

c) Continue observation planning to start treatment if viral load is rising or LFTs are worsening

Case 2 Mr AF

- Entecavir was commenced and viral load fell to <15 IU/ml and LFTs returned to normal
- Surveillance for HCC was commenced with 6 monthly ultrasound and alphafetoprotein
- First surveillance ultrasound showed a 2cm space occupying lesion. Alphafetoprotein was normal
- Primovist MRI showed characteristics of hepatocellular carcinoma
- Discussed at MDT and agreed suitable for surgery
- 2.4cm well differentiated HCC resected
- He remains well on entecavir and surveillance 10 years later

Case 3 Ms AT

- 15 year old girl attends you for a check up of her Hepatitis B
- She was born in the Phillipines and her mother was known to have Hepatitis B
- She immigrated at the age of 5 and had blood tests then
- Further blood tests are organised

	2006	2015
SAP	84	77
AST	21	65
ALT	18	110
GGT	6	20
HepBsAg	pos	pos
HepBeAg	pos	pos
HBVDNA	>170 x 10^6 IU/ml	>170 x 10^6 IU/ml

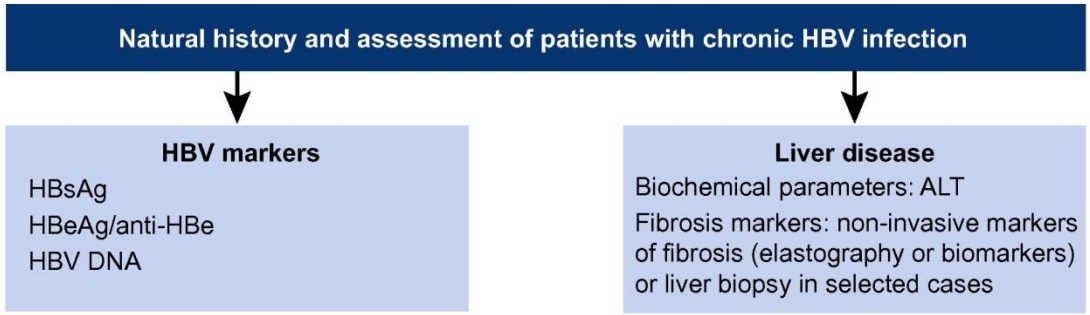
Case 3 Ms AT

- What is likely to be the best management?

a) Start entecavir or tenofovir because there is a high risk of infecting others

b) Start entecavir or tenofovir because her viral load is so high and her liver is being damaged

c) Observe blood tests closely over the next few months in the hope she will seroconvert to HepBeAg negative and the HBVDNA will fall



	HBeAg positive		HBeAg negative	
	Chronic infection	Chronic hepatitis	Chronic infection	Chronic hepatitis
HBsAg	High	High/intermediate	Low	Intermediate
HBeAg	Positive	Positive	Negative	Negative
HBV DNA	>10^7 IU/ml	10^4-10^7 IU/ml	<2,000 IU/ml°°	>2,000 IU/ml
ALT	Normal	Elevated	Normal	Elevated*
Liver disease	None/minimal	Moderate/severe	None	Moderate/severe
Old terminology	Immune tolerant	Immune reactive HBeAg positive	Inactive carrier	HBeAg negative chronic hepatitis

°° HBV DNA levels can be between 2,000 and 20,000 IU/ml in some patients without signs of chronic hepatitis

* Persistently or intermittently

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PLEASE DO AN ULTRASOUND WITH HEPATITIS B REFERRALS

Because of the risk of hepatocellular carcinoma

Hepatitis C

Case 4 Mr PC

- 36 year old man who has presented for a check up and LFTs are abnormal: ALT 52 AST 41
- Appears well with normal BMI and physical examination
- Drinks only small amounts of alcohol
- Works in construction, lives with de facto partner

- He should be tested for Hepatitis C early in the work up of his abnormal LFTs but what are the factors which would alert you to it being likely to be positive?

Case 4 Mr PC

- Factors strongly associated with Hepatitis C:
  - History of ever having injected drugs
  - History of having been in custody
  - “Backyard” tattoos
  - Blood transfusion before 1990
  - Migrants from high prevalence areas (Egypt, Pakistan, Mediterranean, Eastern Europe)

Case 4 Mr PC

- Hepatitis C Ab is positive and you arrange another appointment to discuss the results
- What are the next steps?

Case 4 Mr PC

- Hepatitis C Ab is positive and you arrange another appointment to discuss the results
- What are the next steps?

- Was he aware of the diagnosis? If not is he aware of being tested for Hep C before and can the result be found? Has he any risk factors and when did these occur? *This may give an idea of how long he has had Hep C*
- Organise more blood tests for Hep C PCR and genotype and also HepBsAg/HepBsAb/HepBcAb *This will determine if he has chronic Hep C with caveat of fluctuating viral load in first 2 years of infection*

Case 4 Mr PC

- Hep C PCR is positive and genotype is 1a
- Hep B serology is all negative
- History of injecting drugs intermittently from age 20 but none for last 3 years. Was aware of risk of Hep C and was tested from time to time – Hep C Ab was negative age 28, now aged 36

- ALT 52, AST 41, Pl 221 giving an APRI score of 0.598 (score of >1 has sensitivity of 76% and specificity of 72% for cirrhosis)
- Does he need further assessment for fibrosis?
  - Fibroscan
  - Ultrasound with Shear Wave Elastography

Case 4 Mr PC

- **Treatment**
  - Sofosbuvir/velpatasvir: 1 tablet daily for 12 weeks *or*
  - Glecaprevir/pibrentasvir: 3 tablets daily for 8 weeks
- Little to choose between them unless renal failure or particular drug/drug interactions
- Check all medications and complementary medicines on University of Liverpool drug interaction checker website

- To determine if has achieved sustained virological response do Hep C PCR and LFTs 12 weeks *after* last tablet
- Discuss risk of re-infection and that Hep C Ab will remain positive

Which Hep C patients should be referred?

- Previously unsuccessfully treated
- Cirrhosis
  - Long duration of infection (>20years)
  - Alcohol or metabolic syndrome
  - Low platelets
  - High APRI or SWE
  - Nodular liver on ultrasound
- LFTs abnormal despite SVR

All people living with Hepatitis C should be considered for treatment unless their life expectancy is <12 months for non-liver related comorbidities

Treatment is easy!

Acute Hepatitis B

- The usual course of infection in immunocompetent adults exposed to the virus for the first time
- Many develop clinical hepatitis and virtually all have high ALT

- 95% resolve the infection within 6 months
  - HepBsAg neg
  - HepBsAb pos
  - HepbcAb pos
  - HepBeAg neg
  - HepBeAb pos

- May re-activate if exposed to profound immunosuppression such as chemotherapy

Immunised against Hep B

- HepBsAg neg
- HepBsAb pos
- **HepBcAb neg**
- HepBeAg neg
- **HepBeAb neg**

- Most Australians under the age of 30

QUESTIONS?