HBV safety subgroup

Brief report

Main areas of new research

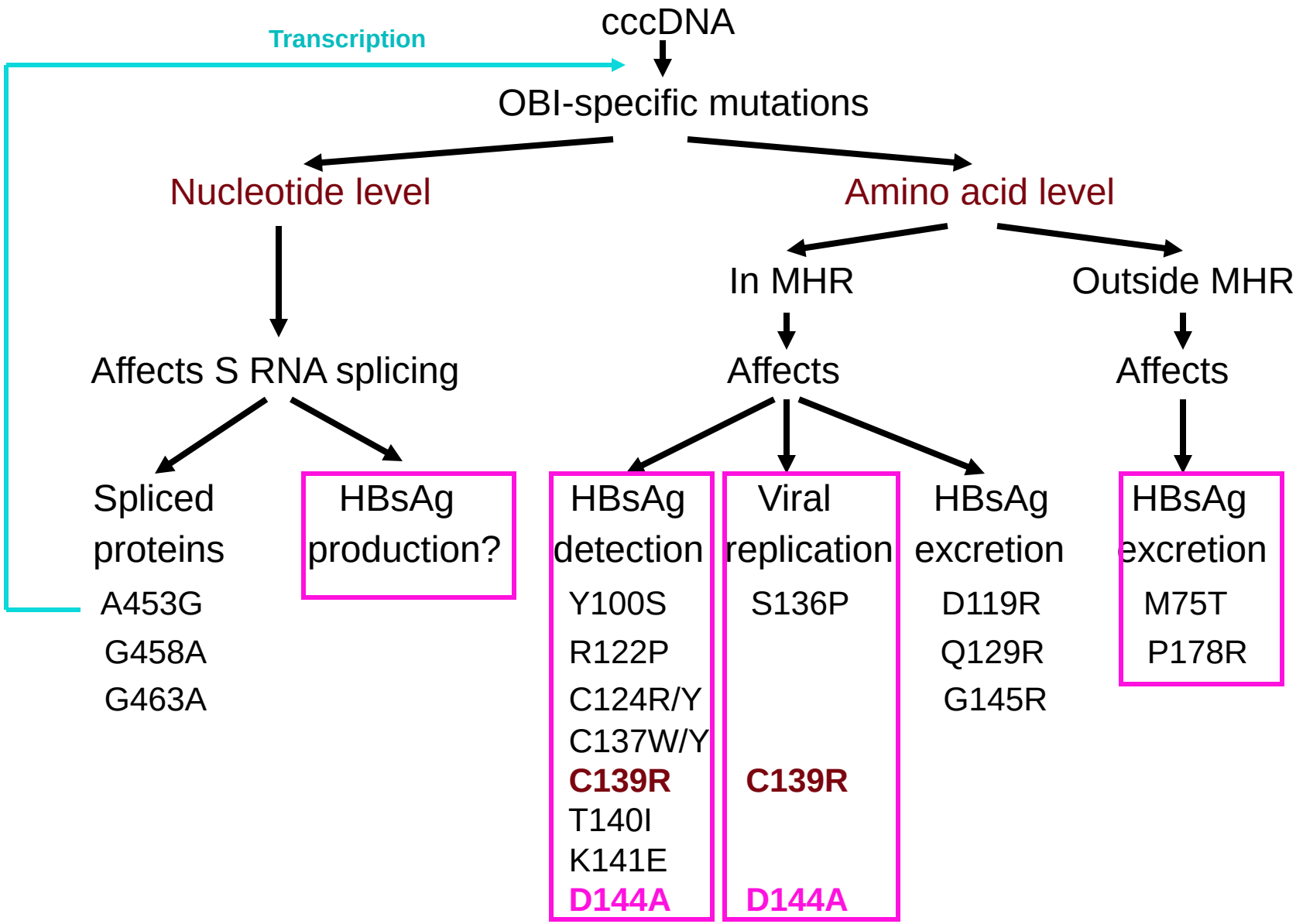
- Mechanisms of OBI
- OBI and cellular immunity
- Infectivity of OBI

Mechanisms of OBI

- The main advance is the change of concept that the defect in production, excretion and detection of S protein/HBsAg is a major cause of OBIs
- The mutations leading to changes in RNA folding interfered with S mRNA splicing that plays a role in HBsAg production
- The amino acid substitutions accumulated in the S protein MHR and extra MHR domains interfere with:
    - Viral replication
    - S protein production and export
    - HBsAg detection

Potential mechanisms of OBI

(El Chaar, Hepatology, 2010; Svicher, Antiviral Research, 2012; Martin, J Vir Hep, 2012; Huang, J Hepatol, 2012)



OBI cellular immunity

- An article was published by S Sauleda's group:

  Bes M, et al. T cell responses and viral variability in blood donation candidates with occult hepatitis B infection. J Hepatol 2012;56:765-74.

  Results suggest that most OBIs whether or not with detectable anti-HBs are recovered infections.

- A similar study is ongoing in collaboration with Drs P Manzini and P Ghiazza from Turin, Italy; Dr I Gonzalez-Fraile, Valladolid, Spain; Dr JM Garcia, Oviedo, Spain and Dr CK Lin, Hong Kong

  This study includes B-cell, particularly memory B-cells in addition to T-cell studies.

Infectivity of OBIs

- A European collaborative study including groups from Croatia, Denmark, Germany, Poland and Spain assembled 104 patients receiving products from 24 donors (19 look back, 5 trace back)
- Overall infectivity is estimated at 28%
- Infectivity is dependent on:
  - Presence of anti-HBs in product or patient (vaccinated) P=0.013
  - Volume of plasma in product (P<0.001 RCC vs FFP)
  - Minimum Infectious Dose 1050 copies
  - But not on immune status of recipients (NS)
- Manuscript submitted for publication

Japanese Red Cross Study on OBI transmission according to anti-HBc level

- Lookback by Satake, Tadokoro et al. presented later in this session

NAT yield samples received for confirmation and sequencing in 2011-12

Australia	3	(G Seed, Perth)
Korea	2	(C Eol, Seoul)
Denmark	6	(L Harritshoj, Copenhagen)
Finland	3	(S Wessberg, Helsinki)
Brazil	28	(P Araujo, Sao Paolo)
Poland	18	(P Grabarczyk, Warsaw)
Total	60	

Training on HBV methods for HBV safety group collaborators

- Dr Ye Xiangjin, Shenzhen Blood Centre, China
- Dr Wang Wenjing, Southern Medical College, Guangzhou, China
- Dr Li Tingting, Southern Medical College, Guangzhou, China
- Dr Patricia Araujo, ABCS, Sao Paulo, Brazil