HDV in Greenland

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Disclosures

None relevant to this talk
Population in Greenland 56,000 – Indigenous population 46,000 (80 %)
Greenland inland ice
Hepatitis B in Greenland

1973: 2900 cases screened, 7.1 % HBsAg positive

1985: 11.5 % HBsAg positive in a screening in Sisimiut especially in the group of 15-19 years old

1987: 6170 cases screened, 7.8 % HBsAg positive

1998: 2709 cases screened, 6.4 % HBsAg positive

Chief Medical Office Greenland 2007
P. Skinhøj Am J Epidemiol 1974
M. Børresen Phd afhandling 2010
Benign course of long-standing hepatitis B virus infection among Greenland Inuit?

Greenland is a high endemic area of hepatitis B infection (HBsAg > 7%)

Most transmission of hepatitis B virus (HBV) in Greenland takes place before the age of 20 years

Liver cirrhosis and liver cancer (HCC) are less frequent than expected

Until September 2010 HBV vaccination was not part of the national infant immunization programme in Greenland
Past or present HBV infection among 50 – 70 years old

% of population with hepatitis B

- Sisimiut: 11%
- Itilleq: 30%
- Nuuk: 3%
- Tasiilaq: 28%
- Settlements: 30%
Distribution of HBV-genotypes in Greenland

Number of patients 156

- A: 17%
- B: 38%
- C: 1%
- D: 44%
Distribution of HBV genotypes in Eastgreenland

- B: 90%
- D: 8%
- B and D: 2%

Krarup H, Andersen S et al. SJG 2008
Hepatitis D virus
Features

Own separate genus, *Deltavirus*

The smallest known animal virus

Single-stranded, circular, negative RNA genome

1700 nucleotides, which encodes a single structural protein, HDAg

Encapsidated by HBsAg

Uses the host RNA polymerase for replication
Hepatitis D virus
Clinical features

- Fulminant hepatitis more frequent in HBV-HDV infected patients than in HBV infected patients alone
- Presence of HBV-DNA and HDV-RNA is associated with a lower HBV remission rate
- Transmission is either simultaneous co-infection with HBV or super-infection of a HBsAg carrier
- Super-infection with HDV has a higher risk of chronicity than HDV co-infection
Chronic hepatitis D in Greenland
31 of 115 inhabitants were HBsAg positive
21 persons were anti-Delta (IgG) positive
14 persons were HDV-RNA positive
5 children had seroconverted to anti-Delta positive within one year

The highest levels of ALT were found in HDV-RNA positive persons, indicating active HDV infection

Børresen et al, JVH 2010; 17: 162 - 70
Since 2010 in all 92 HBsAg positive patients have been tested for HDV-RNA.

34 (M/F; 19/15) are HDV-RNA positive

In this period 3 patients seroconverted and became HDV-RNA positive

- One 28 year-old patient cleared the infection
- Two patients a 13 and a 41 years old became chronically infected

No systematic testing for HDVAb has been done
Hepatitis D virus
Clinical and virologic features

AST/ALT (mean, high, low) 104 (42-271) / 214 (64-549)

HDV positive patients have HBV genotype D and HDV clade 1 (genotype 1)

Liver biopsi have been performed in 24 of 34 HDV infected individuals
Distribution of viral load

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<th>Percentage</th>
<th>Log &quot;Viral load&quot; copies/mL</th>
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- **HBV-DNA**
- **HDV-RNA**

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Liver biopsy results from 24 patients

Percentage

Metavir score

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Fibrosis
Inflammation
In conclusion

In Greenland approximately 4000 persons have chronic HBV infection and are as such at risk of getting HDV.

In contrast to HBV mono infected patients, patients with dual infection HBV / HDV have significant fibrotic changes.