A population based study on the seroprevalence of viral hepatitis in Hong Kong

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Summary of the Impact

• Viral hepatitis is very common in Hong Kong
• Epidemiological studies of viral hepatitis in Hong Kong is lacking
• This study was setup to:
  – Determine changes in epidemiology of hepatitis A and hepatitis E
  – Determine the effectiveness in universal hepatitis B vaccination programme (started since 1988)
  – Assess the potential burden of occult hepatitis B
  – Future healthcare planning
Underpinning Research

• Viral hepatitis is a statutory notifiable disease in Hong Kong
• Department of Health published report on viral hepatitis in Hong Kong periodically
• Accurate assessment of the data is difficult due to:
  – Reporting bias – only acute, symptomatic cases admitted to hospitals were reported
  – Selection bias – data collected when screening for particular group (e.g. police workforce, healthcare workers etc)
Underpinning Research

- Comprehensive epidemiological study in Hong Kong is lacking
- This study can help to fill in the missing viral hepatitis data
- No general population data on a special group of patients termed “occult hepatitis B (OHB) carrier”
  - Able to transmit HBV infection through blood donation
  - Risk of HBV reactivation during chemotherapy / immunosuppressive therapy
Underpinning Research

• Our study began in Feb 2015
• Collaborated with Hong Kong Liver Foundation (NGO aims to promote service, education and research for liver diseases for Hong Kong peoples) and School of Public Health
• We visited different district each month to engage local residents, give out health seminar and to raise public awareness of viral hepatitis
Demographics

- Recruited 10,256 subjects over 19 months
- Mean age: Male 50.4±16; Female 52.3±14
Prevalence of HAV and HEV

Prevalence of HAV 65.1% (71% in 2001)
Prevalence of HEV 26.5% (18.8% in 2001)
Results – Hepatitis A and E

Positive anti-HAV and anti-HEV against family income

Percentage of positive anti-HAV or anti-HEV

Family income (HK$)

<table>
<thead>
<tr>
<th>Income Range</th>
<th>Anti-HAV+ve</th>
<th>Anti-HEV+ve</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;10,000</td>
<td>90%</td>
<td>30%</td>
</tr>
<tr>
<td>10,000 - 20,000</td>
<td>70%</td>
<td>40%</td>
</tr>
<tr>
<td>20,000 - 30,000</td>
<td>60%</td>
<td>50%</td>
</tr>
<tr>
<td>&gt;30,000</td>
<td>50%</td>
<td>20%</td>
</tr>
</tbody>
</table>
Results – Hepatitis B

• Overall HBV prevalence 7.8% (8.8% in 2001)
• In universal vaccination group (<28 years old) 3.4% vs 8.3% (without universal vaccination)

<table>
<thead>
<tr>
<th>Age group (y)</th>
<th>Positive HBeAg [N(%)]</th>
<th>Negative HBeAg [N(%)]</th>
<th>Mean HBV DNA (IU/mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;26</td>
<td>7 (36.8%)</td>
<td>12 (63.2%)</td>
<td>1.0x10^8</td>
</tr>
<tr>
<td>26-35</td>
<td>16 (21.3%)</td>
<td>56 (74.7%)</td>
<td>2.1x10^7</td>
</tr>
<tr>
<td>36-45</td>
<td>24 (14.9%)</td>
<td>136 (84.5%)</td>
<td>5.2x10^6</td>
</tr>
<tr>
<td>46-55</td>
<td>17 (9.6%)</td>
<td>157 (88.2%)</td>
<td>4.1x10^5</td>
</tr>
<tr>
<td>56-65</td>
<td>9 (3.7%)</td>
<td>233 (96.3%)</td>
<td>1.0x10^4</td>
</tr>
<tr>
<td>&gt;65</td>
<td>5 (4.0%)</td>
<td>119 (94.4%)</td>
<td>6.5x10^5</td>
</tr>
<tr>
<td>Overall</td>
<td>78 (9.7)</td>
<td>713 (89.0%)</td>
<td>2.1x10^7</td>
</tr>
</tbody>
</table>
Results – Hepatitis B

- Overall anti-HBc prevalence 37.3%
- Rates increased with age
- Implications in checking anti-HBc before chemotherapy or immunosuppressive therapy if HBsAg was negative

<table>
<thead>
<tr>
<th>Age group</th>
<th>Positive anti-HBc [N(%)]</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;26 years</td>
<td>38 (5.4%)</td>
</tr>
<tr>
<td>26-35 years</td>
<td>130 (13.8%)</td>
</tr>
<tr>
<td>36-45 years</td>
<td>431 (32.7%)</td>
</tr>
<tr>
<td>46-55 years</td>
<td>703 (34.1%)</td>
</tr>
<tr>
<td>56-65 years</td>
<td>1252 (44.7%)</td>
</tr>
<tr>
<td>66-75 years</td>
<td>794 (57.8%)</td>
</tr>
<tr>
<td>&gt;75 years</td>
<td>171 (74.0%)</td>
</tr>
<tr>
<td>Overall</td>
<td>3519 (37.3%)</td>
</tr>
</tbody>
</table>
Results – Hepatitis C

- Overall prevalence for hepatitis C 0.5%
- 60.4% had detectable HCV RNA
- Commonest genotype 1 (44.8% of which 84.6% were of 1b), genotype 6 (34.4%), genotype 2 (13.8%) and genotype 3 (6.9%)
Engagement

• The study was the first large scale study on viral hepatitis A to E in Hong Kong
• Public awareness of viral hepatitis was raised through the health seminar talks
• Demonstrated significant portion of HBV carriers were unknown to themselves
• Referred HBV or HCV carriers to doctors for follow up
• Coverage in newspaper and in TV
Impacts Achieved

• Demonstrated a significant change in hepatitis A and E prevalence over the years
• Support the effectiveness of universal hepatitis B vaccination program
• Support the importance of raising public awareness of chronic hepatitis B and screening
• First study to assess prevalence of occult hepatitis B carrier in the population
  – Need to liaise with Red Cross for implementing anti-HBc in screening before donation
Follow up on impact

- Randomly selected 400 subjects with HBV identified by this survey
  - 60% subjects have made the follow-up in HA hospitals as of March 2018
Acknowledgement

• Thanks to Hong Kong Liver Foundation for looking for venues and other logistics coordination during the event
• All the volunteers from different health sectors in giving out health talks and helping in collecting blood samples