Coalition Against Hepatitis for People of African Origin (CHIPO): Effectively Addressing High Rates of Liver Cancer in African Communities

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Agenda

• Epidemiology
• Incidence
• Guidelines
• Risk Factors
• Challenges
• Treatment
• Unmet Needs
• Future Directions
Hepatocellular Carcinoma (HCC)

- 3rd leading cause of death from cancer worldwide
- 5th most common cancer in men; 7th in women worldwide
- Incidence and death rates are rising, while many other cancer mortality rates are decreasing
- Worldwide: primarily due to hepatitis B (HBV) and hepatitis C (HCV) viruses
  - HCC in US is due to HCV and non-alcoholic steatohepatitis (NASH).
- Global HCC: ~600,000 deaths annually
- >80% of HCC cases occur in people who live in or are from sub-Saharan Africa, SE Asia, and eastern Mediterranean.
- Recent therapeutic advances and continually updated expert guidelines have improved prognosis of HCC from death sentence to a cancer that can be detected and treated at an early stage for good outcomes.

Incidence of Hepatocellular Carcinoma

- 2\(^{nd}\) highest in the world at 8.8% which is only surpassed in Asia
- North Africa has the highest rate primarily due to the Hepatitis C rates in Egypt
- Sub-Saharan Africa also has high rates but highest in Western Africa followed by Eastern, Middle, and then Southern
Incidence of Hepatocellular Carcinoma

• 6 African countries are amongst the highest rates of HCC in the world
• Egypt is ranked #2 in the world with 28,000 cases a year
• Guinea (7), The Gambia (9), and Ghana (10) are also in the top 10
• Sub-Saharan Africa in 2020 had 38,000 cases of HCC
  - HCC is the 2\textsuperscript{nd} leading cause of death in males and 4\textsuperscript{th} in women
  - HCC occurs in a younger age group with a median survival of 3-4 months
### TABLE 1. PATIENTS AT THE HIGHEST RISK FOR HCC

<table>
<thead>
<tr>
<th>Population Group</th>
<th>Threshold Incidence for Efficacy of Surveillance (&gt;0.25 LYG; % per year)</th>
<th>Incidence of HCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surveillance benefit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian male hepatitis B carriers over age 40</td>
<td>0.2</td>
<td>0.4%-0.6% per year</td>
</tr>
<tr>
<td>Asian female hepatitis B carriers over age 50</td>
<td>0.2</td>
<td>0.3%-0.6% per year</td>
</tr>
<tr>
<td>Hepatitis B carrier with family history of HCC</td>
<td>0.2</td>
<td>Incidence higher than without family history</td>
</tr>
<tr>
<td>African and/or North American blacks with hepatitis B</td>
<td>0.2</td>
<td>HCC occurs at a younger age</td>
</tr>
<tr>
<td>Hepatitis B carriers with cirrhosis</td>
<td>0.2-1.5</td>
<td>3%-8% per year</td>
</tr>
<tr>
<td>Hepatitis C cirrhosis</td>
<td>1.5</td>
<td>3%-5% per year</td>
</tr>
<tr>
<td>Stage 4 PBC</td>
<td>1.5</td>
<td>3%-5% per year</td>
</tr>
<tr>
<td>Genetic hemochromatosis and cirrhosis</td>
<td>1.5</td>
<td>Unknown, but probably &gt;1.5% per year</td>
</tr>
<tr>
<td>Alpha-1 antitrypsin deficiency and cirrhosis</td>
<td>1.5</td>
<td>Unknown, but probably &gt;1.5% per year</td>
</tr>
<tr>
<td>Other cirrhosis</td>
<td>1.5</td>
<td>Unknown</td>
</tr>
<tr>
<td>Surveillance benefit uncertain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis B carriers younger than 40 (males) or 50 (females)</td>
<td>0.2</td>
<td>&lt;0.2% per year</td>
</tr>
<tr>
<td>Hepatitis C and stage 3 fibrosis</td>
<td>1.5</td>
<td>&lt;1.5% per year</td>
</tr>
<tr>
<td>NAFLD without cirrhosis</td>
<td>1.5</td>
<td>&lt;1.5% per year</td>
</tr>
</tbody>
</table>

Abbreviation: LYG, life-years gained.
## Major Guidelines Recognize Importance of Routine Surveillance in High-Risk Populations

<table>
<thead>
<tr>
<th>Society/Institution</th>
<th>Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>AASLD(^1)</td>
<td>US +/- AFP every 6 months</td>
</tr>
<tr>
<td>EASL(^2)</td>
<td>US every 6 months</td>
</tr>
<tr>
<td>APASL(^3)</td>
<td>AFP + US every 6 months</td>
</tr>
<tr>
<td>NCCN(^4)</td>
<td>AFP + US every 6–12 months</td>
</tr>
<tr>
<td>VA(^5)</td>
<td>AFP + US every 6–12 months</td>
</tr>
</tbody>
</table>
| JSH-HCC\(^6\)       | **High-Risk:** US every 6 months + AFP/DCP/AFP-L3 every 6 months  
                      | **Extremely High-Risk:** US every 3–4 months + AFP/DCP/AFP-L3 every 3–4 months + CT/MRI (optional) every 6–12 months |

US = ultrasound; AFP = alpha-fetoprotein; AFP-L3 = *Lens culinaris* agglutinin-reactive fraction of AFP; CT = computerized tomography; DCP = des-γ-carboxyprothrombin; MRI = magnetic resonance imaging.

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HBV vaccination and antiviral treatment are effective primary prevention strategies for HCC
HCC surveillance reduces mortality in patients with chronic hepatitis B

<table>
<thead>
<tr>
<th>Variable</th>
<th>Screen Group (n=9373)</th>
<th>Control Group (n=9443)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCC cases</td>
<td>86</td>
<td>67</td>
</tr>
<tr>
<td>% Stage I</td>
<td>60.5%</td>
<td>0%</td>
</tr>
<tr>
<td>% Curative treatment</td>
<td>46.5%</td>
<td>7.5%</td>
</tr>
<tr>
<td># HCC death</td>
<td>32</td>
<td>54</td>
</tr>
<tr>
<td>Mortality (per 100,000)</td>
<td>83.2</td>
<td>131.5</td>
</tr>
<tr>
<td>Rate Ratio</td>
<td>0.63 (0.4-0.9)</td>
<td></td>
</tr>
</tbody>
</table>
Risk Factors for HCC in Sub-Saharan Africa

- 272 studies revealed HBV in 66%, HCV in 27%, and 15% had HBV/HDV
- Aflatoxin B1 and dietary iron overload (beer) are environmental factors
- Other Risk Factors
  - Alcohol
  - Fatty liver is increasing
  - HIV increases the risk
  - Tobacco
Urgent Challenges in HCC

- Eliminate Viral Hepatitis by 2030 as per WHO
- Raise awareness
- Improve Infection Control in blood banks and dialysis centers
- Screening for Hepatitis B and C as well as HCC
- Treatment of Hepatitis B and C as well as HCC
Urgent Challenges in HCC

• Shift the task to nurses and non-specialists
• Find hard-to-reach populations
• Work with Primary Care
• Only Egypt and Rwanda are on track to eliminate Viral Hepatitis by 2020
Treatment of Hepatocellular Carcinoma and Unmet Needs

- Lack of Guidelines in Africa
- Most patients outside of Egypt are in Sub-Saharan Africa
- 95% present with advanced/terminal disease
- A very small percentage of patients are treated with an intent to cure
Treatment of Hepatocellular Carcinoma

- Ablation has a 60% survival at 5 years with a recurrence rate of 3-22%
- Resection has a 50-70% survival at 5 years with a recurrence rate over 60%
- Liver Transplant has a 70% survival at 5 years with a recurrence rate of 6-15%
- TACE/TARE have 30-40% survival at 5 years with a recurrence rate over 50%
Treatment of Hepatocellular Carcinoma

- Liver transplant is available in only 28% of North and South Africa with 3% in East and West Africa
- Central Africa has a very low rate of Resection
- Local treatment is available in 94% of North and South (72% have TACE) Africa but only 62% in Central Africa
- 16% have no access to treatment
Treatment of Hepatocellular Carcinoma

- Egypt established a live donor liver transplant program and now has 34 centers
- South Africa has 2 transplant centers
- Cote d’Ivoire has a live donor program with Egypt’s help
- Sudan recently started a live donor liver transplant program as well
Systemic Treatment of HCC

- First line therapy is Atezolizumab and Bevacizumab and second line is Sorafenib
- However, the majority of patients are given Sorafenib (66%)
- Only 11% have access to checkpoint inhibitors
- Only 42% have access to second line therapy
- Major gaps exist in access and availability of treatment in many parts of Africa, especially Central/Eastern/Western Africa
- 3% are treated in Africa vs 76% in Egypt with only a survival of 2.5 months vs 10.9 months
Future Directions in HCC

• Strengthen national data systems and cancer registries
• Screen with biomarkers
• Eliminate Viral Hepatitis by 2030
• Improve Hepatitis B vaccination at birth
• Develop Centers of Excellence for treatment
• Develop Knowledge-sharing Virtual programs like Project ECHO
How to Improve the Hepatic Health of the World

- Find and treat all HBV/HCV patients
- Find and treat all NAFLD patients
- Find and screen all cirrhotics and HBSAg + patients for Hepatoma
- Identify Hepatomas at an earlier stage with better screening modalities
- Eliminate the organ shortage
- Accurate assessment of surgical risk with VOCAL-PENN calculation
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