Age and sex-specific risks for hepatocellular carcinoma in African-born persons with chronic hepatitis B without cirrhosis

Habiba Kamal 1,2, Michael Ingre 2,3, Per Stål 2,4, Gabriel Westman 5, Daniel Bruce 6, Heiner Wedemeyer 7, Ann-Sofi Duberg 8* and Soo Aleman 1,2*

1. Department of Infectious Diseases, Karolinska University Hospital, Stockholm, Sweden. 2. Department of Medicine Huddinge, Karolinska Institute, Stockholm, Sweden. 3. Centre for Bioinformatics and Biostatistics, Karolinska Institute, Stockholm, Sweden. 4. Department of Upper GI Diseases, Karolinska University Hospital, Stockholm, Sweden. 5. Department of Medical Sciences, Section of Infectious diseases, Uppsala University, Uppsala, Sweden. 6. SDS Life Science, Stockholm, Sweden. 7. Department of Gastroenterology and Hepatology, University of Hannover, Germany. 8. Department of Infectious Diseases, Örebro University Hospital, Örebro, Sweden *** equal contribution**

Conclusions:

African-born men with CHB without cirrhosis reached an IR of 0.2%/year between 50-60 years, while at younger ages if present HCV or HDV co-infection. Our findings need further confirmation, and new cost-effectiveness analyses specific for young populations are needed, to provide personalized and cost-effective HCC surveillance.

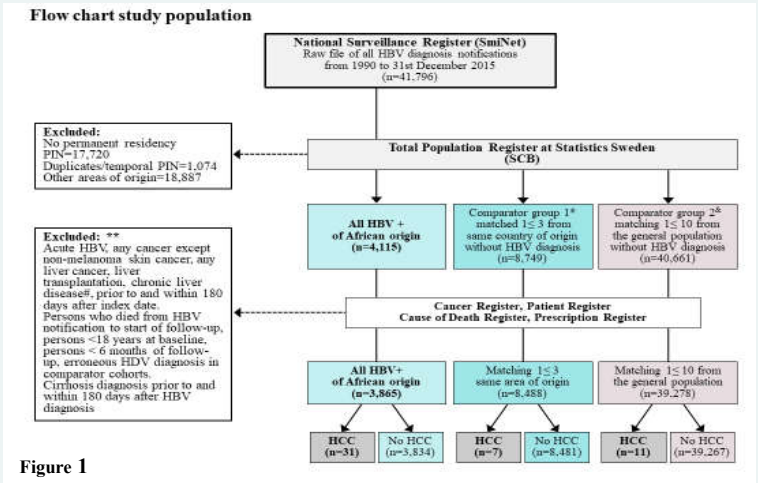

Figure 1

Introduction:

The international recommendations of HCC surveillance for African-born persons with chronic hepatitis B (CHB) without cirrhosis are divergent, due to scarce data on incidence rate (IR) for HCC. Studies showed that men with CHB of African descent develop HCC at a young age and are diagnosed at an advanced stage with poor survival.

Aim:

To characterize the sex-specific IR and IR ratio (IRR) in relation to age, comorbidities and birth region in this population.

Methods:

We assembled a nationwide cohort with prospectively collected data of Swedish residents of African origin with diagnosed CHB without cirrhosis at baseline from 1990- 2015. (Figure 1)

Data from nationwide registers were used to calculate the risk of HCC using a generalized linear model with a log-link function and Poisson distribution.

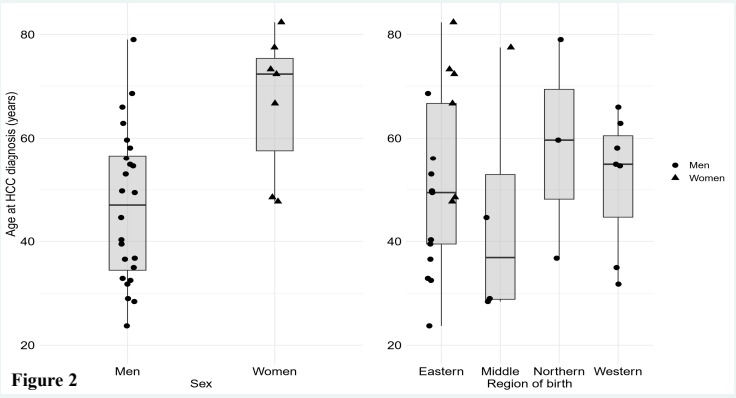

Figure 2

Box plot showing age at HCC diagnosis in African-born persons with chronic hepatitis B (CHB) and without cirrhosis, by sex and region of birth. Men=dots, women=triangles

Baseline characteristics of African-born persons with chronic hepatitis B (CHB) and without liver cirrhosis, living in Sweden. The characteristics for all and grouped by sex are shown.

Characteristics	All (n, %)	Men (n, %)	Women (n, %)	P-value
Total	3865	2266 (58.6)	1599 (41.4)	
Age at start of follow-up (years)				
All, mean (SD)	32.1 (11.2)	32.5 (11.2)	31.4 (11.2)	<0.001
Age groups				
18–29	1805 (46.7)	994 (43.9)	811 (50.7)	
30–39	1252(32.4)	715 (31.6)	537 (33.6)	
40–49	531 (13.7)	398 (17.6)	133 (8.3)	
>50	277 (7.2)	159 (7.0)	118 (7.4)	
HBV diagnosis date (years)				<0.001
1990–1999	861 (22.3)	469 (20.7)	392 (24.5)	
2000–2009	1554 (40.2)	895 (39.5)	659 (41.2)	
2010–2015	1450 (37.5)	902 (39.8)	548 (34.3)	
Education level (years in school)				<0.001
≤9	1395 (36.1)	778 (34.3)	617 (38.6)	
10–12	1246 (32.2)	756 (33.4)	490 (30.6)	
>13	858 (22.2)	567 (25.0)	291 (18.2)	
Missing	366 (9.5)	165 (7.3)	201 (12.6)	
African region of birth				0.90
Northern	261 (6.8)	152 (6.7)	109 (6.8)	
Eastern	2478 (64.1)	1455 (64.2)	1023 (64.0)	
Middle	240 (6.2)	152 (6.7)	94 (5.9)	
Western	874 (22.6)	505 (22.3)	369 (23.1)	
Southern	12 (0.3)	8 (0.4)	4 (0.3)	

Results:

Characteristics of persons with CHB are presented in the table.

Among 3,865 African-born CHB persons without cirrhosis at baseline, 31 (0.8%; 77.4% men) developed HCC during a median of 11.1 years of follow-up, with poor survival after HCC diagnosis. The mean age at HCC diagnosis was 46.8 (SD±14.7; range 23-79) in men (Figure 2).

HCC IR exceeded the recommended surveillance threshold 0.2%/year at age 54 and 59 years in men and women, respectively (Figure 3) and at age 20-40 years if present HCV or HDV co-infection (Figure 4)

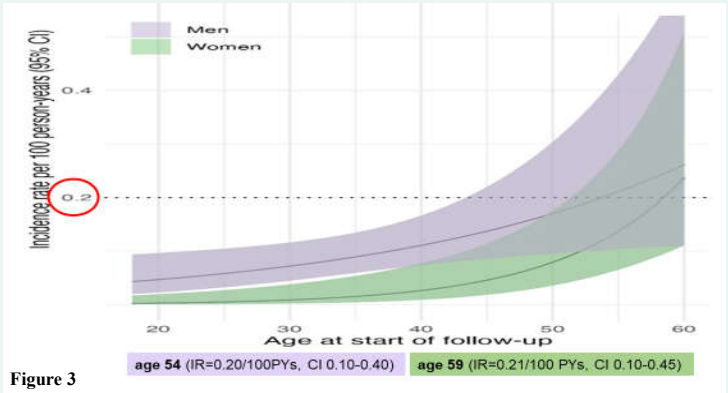

Figure 3

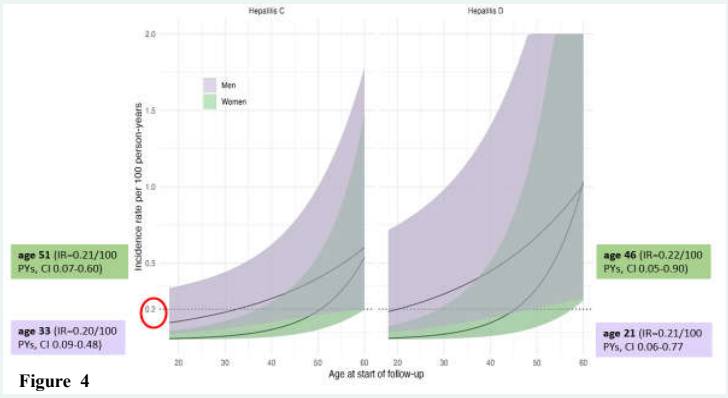

Figure 4

Karolinska Institutet
Department of Medicine, Huddinge, Stockholm, Sweden.
Soo Aleman Research Lab
E-mail: Habiba.khodir.kamal@ki.se
Telephone: 076-9476182