Mortality decline for hepatocellular carcinoma in a Hepatitis B virus endemic area: Albanian paradox?

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The recent and pretty valuable article by Bertuccio et al. (1) informs about the hepatocellular carcinoma (HCC) trends worldwide. HCC is a type of cancer which has exhibited an unfavourable mortality trend in recent years. Hepatitis B virus vaccination and hepatitis C virus treatment have led to a decrease of HCC in younger individuals and in some parts of the world. Despite these gains, many areas and regions in the world, including the United States and Europe, have shown an overall increase of HCC mortality. By means of this editorial note, we aim at providing another possible explanation of the findings on mortality trend from HCC in Europe.

Twenty years ago, The Lancet published the *"Albanian paradox, another example of protective effect of Mediterranean lifestyle?"* (2). We still consider that Albania exhibits a paradox among European countries regarding different ill-health conditions.

Hepatitis B remains a major health priority in the Western Balkans, particularly in Albania, a post-communist country characterized by a rapid political and socio-economic transition including lifestyle/behavioural changes (3). Moreover, Albania remains the highest hepatitis B virus endemic European country, despite the evident reduction of HBsAg in the general non-vaccinated population from 18% to 9% after the implementation of the hepatitis B vaccination program (4).

We analysed the trend of HCC mortality among different age groups in Albania, a Mediterranean European country. We retrieved official death certification data for liver cancer (ICD-9 code: 155.0) from 2006 till 2010 based on the official information from the Institute of Statistics. We calculated age-standardized mortality rates per 100,000 persons by sex in separate age groups and overall using the world standard population as reference. Annual percent change (APC) was computed for each identified trends by fitting a regression line to the natural logarithm of the rats using calendar year as a regressor variable.

Overall, HCC mortality (per 100,000 persons) was 5.4, 5.3, 5.8, 4.9 and 4.2 for the years 2006, 2007, 2008, 2009 and 2010, respectively. During these five years, HCC has declined (APC= -8.3%), even though it is not significant (p-value for trend =

0.23). There was a similar decline in men and women (APC= -7.6% and APC= -8.1%, respectively). HCC mortality decreased in all age groups with different APC. There was decreasing significant trend in the youngest age group (APC= 18.8% at age 20-49 years, p-value for trend<0.05), whereas a decreasing non-significant trend was observed in the middle-aged individuals and in the oldest age-group (APC= -4.6% at age 50-69 years, p-value for trend=0.4 and APC= -7.5% at age 70-79 years, p-value for trend=0.5).

In Albania, a hyperendemic area of hepatitis B virus infection in Europe, HCC mortality was comparable with other European countries with low prevalence of hepatitis B virus. This paradox of low mortality rate in a hyperendemic country may be most plausibly explained by employment of a Mediterranean diet—namely, a low consumption of total energy, meat, and milk products, but a high consumption of fruit, vegetables, and carbohydrates. Previous studies have shown that a closer adherence to Mediterranean diet appears to be protective against HCC (5,6). As a matter of fact, our findings from Albania also point to potential benefits of adhering to a Mediterranean dietary pattern among individuals infected with hepatitis B virus.

In conclusion, our results pertinent to Albania, a Mediterranean country but, nevertheless, a hepatitis B endemic area, suggest that interplaying forces of risk and protective factors may explain the different mortality patterns from HCC worldwide.

Conflicts of interest: None declared.

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