Peru: Liver cancer like no other

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Credit: IRD / S. Bertani

Liver cancer is the sixth most common cancer worldwide and the third most deadly. It mainly affects men over the age of 40, most often with cirrhosis or hepatitis B or C. But in Peru, it also uncharacteristically affects young people, even children, who do not have the identified

related risk factors. An anomaly that IRD researchers and their partners recently revealed in PLoS One . The Franco-Peruvian team highlights a disturbing fact: these patients, with an average age of 25, come from the same geographical area in the Andes.

Very young patients

To make up for the lack of knowledge on liver cancer in Latin America, the researchers performed a statistical analysis of clinical cases of the disease in Peru, the country reputed to have the highest incidence on the continent. They sifted through the demographic characteristics, risk factors and causes for more than 1,500 patients from throughout the country, admitted between 1997 and 2010 at the Instituto Nacional de Enfermedades Neoplásicas (Inen) in Lima. Their results were unexpected: 50% of the people affected do not at all match the profile of those at risk. They are young people with an average age of 25, some even children, who for the most part do not have the hepatitis B or C virus nor do they suffer from cirrhosis. In addition, a third of those affected are women, contrary to findings elsewhere in the world, where the sex ratio is much more uneven. An additional Peruvian peculiarity is that a large majority of patients had giant tumours larger than 10 cm in diameter.

A source in the Andes

Another disturbing finding: these young patients come from the Andean part of the country. The research workers defined a focal spot in the Apurimac region to the south-east, i.e. the main source of this phenomenon where the population affected has the lowest average age. Such a specific geographical area would indicate a cause related to the environment of the people affected. The initial analyses appear to eliminate any food-related source, linked to the local population's

consumption of agricultural products containing mycotoxins, substances produced by fungi, known to be one of the risk factors for liver cancer. The theory of poisoning due to soil and water contamination by pollutants from human activities in the Andean region has yet to be explored. Finally, scientists are also considering the possibility of an infectious agent that is unidentified to date.

A disease that is progressing worldwide

The number of cases of liver cancer has doubled worldwide over the last two decades, due to the increase of hepatitis viruses, particularly in West Africa and South-East Asia where they are highly endemic. The disease, also known as hepatocarcinoma or hepatocellular carcinoma (HCC), now causes almost 700,000 deaths per year, according to the WHO.

This pathology responds poorly to chemotherapy treatment. Consequently, liver tumours either have to be surgically removed, or treated by chemical embolisation, i.e. by an injection directly into the tumour. Major operations such as these remain unavailable to the vast majority of patients, nearly 85% of whom live in developing countries.

More information: Bertani, S. et al. An atypical age-specific pattern of hepatocellular carcinoma in Peru: a threat for Andean populations, *PloS One*, 2013.

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