Study recommends reconsidering hepatitis A vaccination protocol to prevent a vaccine-resistant virus

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Researchers of the University of Barcelona (UB) have used massive sequencing techniques with samples from patients to determine the evolution of the hepatitis A virus. The results, published in the journal

EBioMedicine, show the presence of variants of the virus that could escape the effects of the vaccine. The study, led by the Research Group on Enteric Viruses of the UB, in collaboration with Vall d"Hebron Research Institute (VHIR) and the Public Health Agency of Barcelona (ASPB), has implications for vaccination policies.

Hepatitis A virus antigenic variants

Hepatitis A is a liver inflammation caused by a virus. Its symptomatology is minimal and can disappear after the first few weeks, but in some cases, the disease can last for months. Among the most affected groups are men who have sex with other men (MSM).

This study analysed samples from MSM patients, both vaccinated and non-vaccinated, who contracted the virus during an outbreak of hepatitis A in Barcelona (2016-2018). The objective was to study the evolution of the virus and check whether there are emerging variants that can escape the effects of the vaccine. "We identified antigenic variants in vaccinated and non-vaccinated patients, but only the former increase in number, which suggests the positive selection," says Rosa Maria Pintó.

The appearance of hepatitis A virus antigenic variants could become a threat to public health and the use of available vaccines. "If we select a variant that escapes the vaccine, it could stop being effective. The study shows that, in cases such as the one that occurred due the lack of vaccines, this can happen," says the researcher.

Reviewing vaccination practice

In some countries, controlling recent outbreaks of hepatitis A has been inhibited by the low coverage of vaccination and lack of vaccines, which made health administrations apply restrictions in the doses.

During the outbreak, these restrictions particularly affected people in the MSM group. "If a few doses of vaccination are given, or if the common doses were given long ago, or the vaccine is given to patients who caught the virus weeks ago, those variants of the virus that avoid the effects of the vaccine can be selected. This is especially relevant in the MSM group, since the virus dose through risky sexual practises is very high, and circulating antibodies are not enough to neutralize the inoculum or the first produced viruses," says Rosa Maria Pintó.

Researchers therefore recommend giving two doses of the vaccine, and in some situations, suggest giving additional booster doses. Apart from specifying the vaccination protocol, the expert states they should "work in order to have easier-to-get vaccines so there are no vaccine shortages and doses do not have to be reduced."

More information: Aurora Sabrià et al. Evidence for positive selection of hepatitis A virus antigenic variants in vaccinated men-having-sex-with men patients: Implications for immunization policies, *EBioMedicine* (2018). DOI: 10.1016/j.ebiom.2018.11.023

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