

Questions and answers on the transmission of the hepatitis E virus through wild boars and domestic pigs and foods derived from them

FAQ to the BfR of 9 February 2016

Recent investigations conducted by the Federal Institute for Risk Assessment (BfR) and other research institutions show that between 40% and 50% of domestic pigs from herds in Germany and between 2% and 68% of wild boars shot in Germany either showed indications of previous infection with the hepatitis E virus (HEV) or still carried it. The peculiarity here is that pigs and wild boars do not show any clinical symptoms after infection with the hepatitis E virus, i.e. they do not develop hepatitis. For humans, however, infection with HEV poses the risk of inflammation of the liver (hepatitis E). The BfR has prepared some questions and answers on the possibilities of human infection through contact with domestic pigs and wild boars and the consumption of foods derived from them.

What is hepatitis E?

Hepatitis E is an acute inflammation of the liver caused by infection with the hepatitis E virus (HEV). The disease symptoms often begin with fever after a long incubation period of 2 to 6 weeks before specific symptoms, such as abdominal pain and jaundice, occur. In most cases, the patients recover within days or weeks. Severe disease courses can occur in pregnant women and people with pre-existing liver injuries. Immunosuppressed transplant patients can also contract chronic infections which can lead to liver cirrhosis. However, tests on the general population in Germany also show, that the vast majority of HEV infections go unnoticed and pass over without any clinical symptoms.

How frequently does hepatitis E occur in Germany?

There has been a sharp increase in the number of reported cases of hepatitis E cases in Germany in recent years. A total of 670 cases were registered in 2014, as opposed to 1,246 in 2015. The exact causes of the increase in the number of reported cases are not currently known.

Does infection with the hepatitis E virus always result in liver inflammation?

One large-scale study (4,422 samples) shows that 16.8% of the general population in Germany carry HEV-specific antibodies, which means that the participants had been infected with HEV at some time in their lives. The number of reported cases of hepatitis E is very low on the other hand, which suggests that only isolated infections lead to hepatitis.

Where did the diseased people get infected with HEV?

It was assumed in the past that HEV infections were mainly acquired during travelling to certain countries in Asia, Africa and Central America where drinking water and food can be contaminated with the virus due to insufficient hygiene. In recent years, however, it was shown that the majority of hepatitis E cases reported in Germany have been acquired in Germany. Several possibilities are considered as the source of the infection: transfer of the virus through direct contact with HEV-infected animals or food produced from infected animals, through foods contaminated with the excreta of HEV-infected animals and indirect transfer through contamination in the environment. Blood transfusions may also be a source of HEV infection, as well as direct transfer of the virus through contact with diseased persons .

Which animal species can be infected with HEV?

Tests conducted by the Federal Institute for Risk Assessment (BfR) and other research institutions show that between 40% and 50% of domestic pigs in German herds have antibodies against HEV, which means they were infected with HEV at some time in their lives. Between

2% and 68% of the wild boars shot in Germany have antibodies against the virus. There are reports that HEV was also detected in roe and red deer in isolated instances. Animals infected with HEV do not show any clinical symptoms.

Is it possible to get infected from domestic pigs or wild boars?

Investigations show that certain occupational groups, such as hunters, forestry workers, slaughterers, meat inspectors and veterinarians have antibodies against HEV in their blood more frequently than the average population. This means that these persons have been infected with HEV at some time during their working lives. The results suggest that HEV can be transferred from domestic pigs and wild boars to humans.

Can food produced from domestic pigs and wild boars be a source of infection?

RNA of the virus has been detected in liver and muscle meat samples taken from domestic pigs and wild boars. Therefore, the BfR is assuming that HEV can be transferred through raw meat and raw offal of pigs and wild boars. If those foods are sufficiently heated through boiling, frying or roasting, the virus is inactivated (destroyed) and it is unlikely that consumers will be infected by this way.

Certain locally produced sausages types containing raw pig liver have resulted in cases of hepatitis E in France in the past. Products of this kind should be cooked thoroughly prior to consumption. The liver sausages that are usually available in Germany are subjected to a heating step during the production process, which inactivates the virus according to the current estimation of the BfR.

Whether HEV can be transferred through other uncooked foods, such as raw sausage, if the raw materials originate from infected animals, has not yet been completely clarified.

How can certain occupational groups reduce the risk of infection with HEV from pigs and wild boars?

Abattoir personnel can reduce the risk of infection by wearing the prescribed protective clothing. Hunters should wear protective gloves during evisceration of game and subsequent carving up of meat. A recently published study shows that this considerably reduces the risk of an HEV infection.

How can consumers protect themselves against an HEV infection?

Consumers can significantly reduce the risk of an HEV infection by heating food evenly and thoroughly through boiling, frying or roasting. Merely bringing it to the boil or heating it briefly in a microwave oven are not sufficient, as HEV is relatively thermostable. Deep freezing the food does not kill off the virus either.

Consumers who want to minimise the risk of an HEV infection should avoid eating raw meat products, such as raw minced pork and barely cured raw sausage (e.g. fresh Mettwurst sausage). This recommendation applies in particular to especially vulnerable groups (e.g. persons with a weakened immune system, pre-existing liver injury and pregnant women). Other recommendations are contained in the BfR leaflets "Protection Against Viral Food Infections"¹ <http://www.bfr.bund.de/cm/350/verbrauchertipps-schutz-vor-viralen-lebensmittelinfektionen.pdf> and "Safe Food - Especially Vulnerable Groups in Community Institutions" <http://www.bfr.bund.de/cm/364/safe-food-especially-vulnerable-groups-in-community-institutions.pdf> .

¹ Available in German only