

SEROPREVALENCE OF HEPATITIS E VIRUS IN SWISS BLOOD DONORS ORIGINATING FROM THE CANTON OF ZÜRICH

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Background

Originally, Hepatitis E Virus (HEV) infection seemed to be mainly localized in Southeast Asia and Mexico with a lot of widespread epidemics, associated with contaminated drinking water. Meanwhile publications have appeared, proofing sporadic autochthonous cases of HEV infection in Europe. Moreover, in studies of blood donors, HEV PCR positivity rates of 0.012% to 0.08% in three European countries were demonstrated. In Switzerland few data exist. The seroprevalence rate in blood donors increased from 3.2% in 1994 to 5.4% in 2011 in the western part of Switzerland, e.g. canton of Vaud, Lausanne. No epidemiological data of HEV from other parts of Switzerland are available. For this reason, a study in blood donors from the canton of Zurich was conducted.

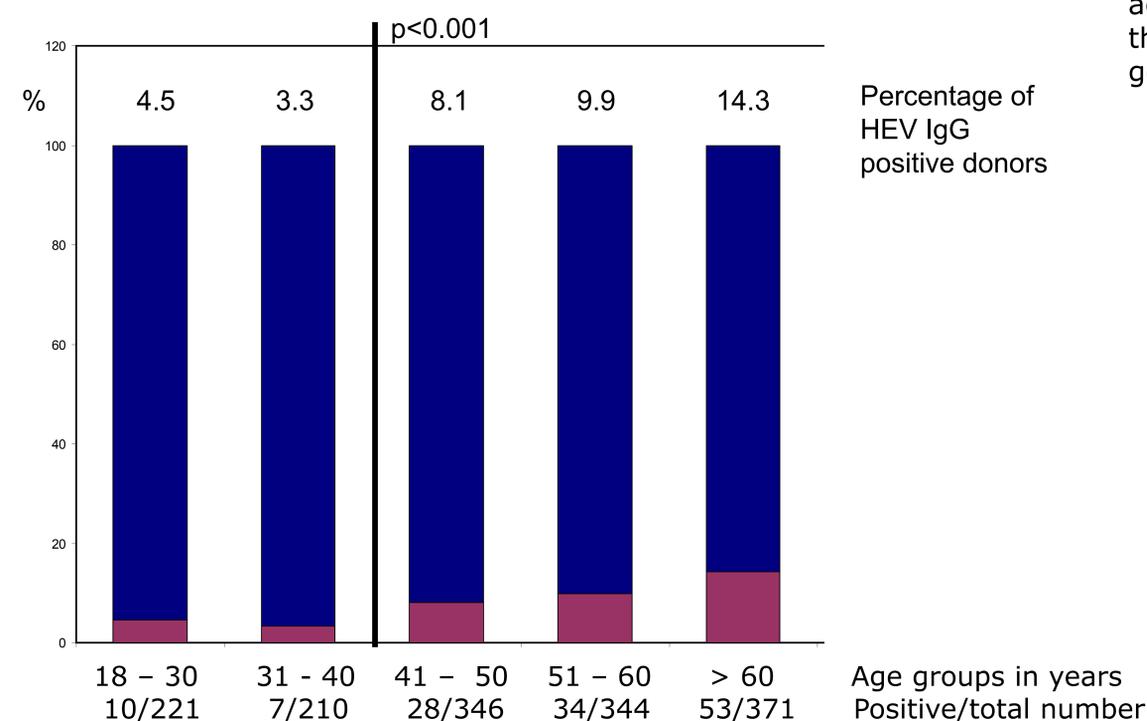
Materials and Methods

Whole blood was collected in K₂-EDTA tubes (6 ml, BD Vacutainer, BD AG, Allschwil, Schweiz) from 1484 consecutive blood donors. Sampling needed written informed consent according to the ethical committee of Zurich, KEK-ZH 2012-0117 and took place between 04.09.2012 to 05.10.2012 in blood centers throughout the canton of Zurich. After centrifugation at 1800 g, plasma aliquots were frozen at -30 °C up to six weeks. With an automatic pipetting device (Genesis, Tecan AG, Männedorf, Switzerland) thawed plasma was diluted 1:100 in sample buffer and pipetted in microplates. The diluted plasma was analyzed for HEV by commercial ELISA consisting of an indirect immunoassay (recomwell HEV IgG, Mikrogen Diagnostics, Neuried, Germany). The test was performed on a BEP III-system, provided by Siemens Healthcare Diagnostics, Marburg, Germany. Parameters of testing were adapted to the BEP III system obeying a protocol of the manufacturer. Criteria of test interpretation were applied as described in the package insert. Reactive samples were retested twice. Data analysis was conducted after manual data entry in Excel and data import in SPSS Statistics 17.0 (IBM, Zurich, Switzerland).

Results

ELISA testing of blood donors from the canton of Zurich revealed a seroprevalence for Anti-HEV-IgG of 8.9%. Increasing age of donors correlated with a significant higher HEV seroprevalence (see Figure 1). This holds true for the single age group 31-40 y in comparison with the single age group 41-50 y ($p=0.03$) and also for the combined two youngest age groups in comparison with the combined three oldest age groups ($p<0.001$). No significant gender difference was found (data not shown).

Figure 1: HEV age seroprevalence



Conclusion

As a first conclusion, HEV seroprevalence of 8.9% in blood donors of the canton Zurich is rather high. It doubles the rate in the western part of Switzerland, but it is not as high as in France or in Great Britain. As a second conclusion, risk of infection through HEV could be increasing with decreasing age, due to a lower antibody prevalence in younger age groups. This could be relevant for recipients of blood transfusion at risk, assuming a similar distribution of HEV immunity in blood donors and in the general population. To further elucidate potential threats of HEV transmission by Swiss blood donors, HEV PCR studies should be initiated.