

OCCULT HEPATITIS B VIRUS PREVALENCE IN DIALYSIS COHORT OF UKRAINE. THE INFORMATIVENESS OF DETERMINING ANTIBODIES TO HEPATITIS B VIRUS CAPSID ANTIGEN

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INTRODUCTION AND AIMS:

Despite of activities for interception the transfer of HBV, the patients with end-stage renal feature (ESRF) on hemodialysis (HD) have high probability of hepatitis B virus infection. Our studies revealed the markers of old or active HBV-infection in 55.8% out of examined dialysis population of Ukraine and this indicated on threatened epidemic situation. Among reasons of HBV-infection spreading in HD department is existence of occult (latent) hepatitis B virus infection which was not diagnosed in time. Occult HBV-infection is characterized by presence of DNA-HBV without hepatitis B surface antigen (HBsAg).

The aim of this study was a determining of latent HBV-infection prevalence in dialysis population and examining the role of anti-HBc test in the diagnostics of occult HBV-infection.

METHODS:

In some administrative areas of Ukraine 1080 ESRF patients on HD were investigated on presence of HBV-infection serological markers by ELISA (enzyme-linked immunosorbent assay). Subsequently 100 random samples of serum with HBV-infection markers were examined on DNA-HBV by real-time PCR (polymerase chain reaction) analysis.

RESULTS:

In 602 (55.8%) out of 1080 investigated patients on HD the markers of old or active HBV-infection were detected – Fig.1. In examined population HBsAg was detected in 166 (15.4%), and anti-HBc in 570 (52.8%) patients. In most cases (436 patients or 40.4% out of examined population) antibodies to bovine antigens was isolated. Anti-HBc in combination with HBsAg was identified in 134 (23.5%), in combination with anti-HBe in 404 (70.9%), with IgM anti-HBc in 269 (47.2%), and with HBeAg in 7 (1.2%) patients.

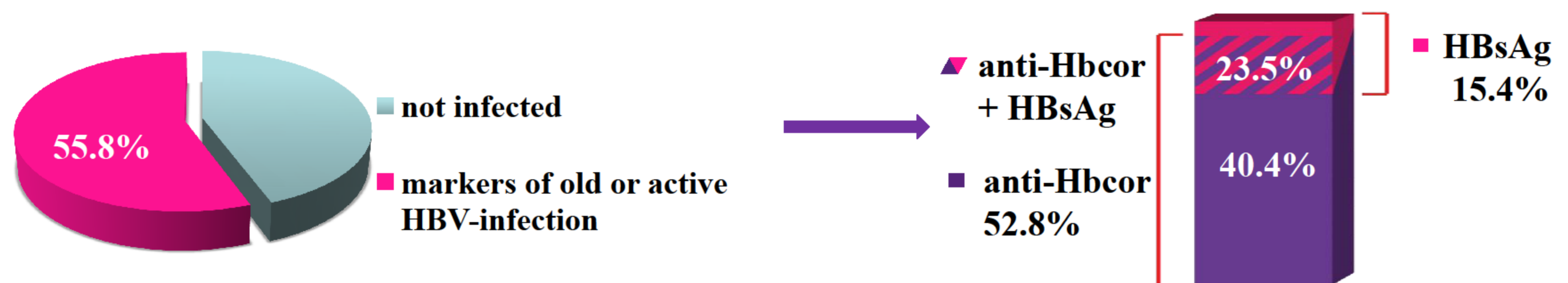


Fig.1 Seroprevalence of HBV-infection markers in dialysis cohort of Ukraine

PCR analysis of 100 blood serum samples with HBV-infection serological markers identified the HBV DNA in 49 patients. Specific HBV DNA was revealed in combination with HBsAg in 33 samples (among 54 HBsAg-positive serums), including 35 patients with anti-HBe (out of 55 anti-HBe-positive serums) and 25 patients with IgM anti-HBc (out of 39 IgM anti-HBc-positive serums). HBV DNA was detected in 45 anti-HBc-positive samples (out of 84 anti-HBc-positive serums) – Fig.2. HBV DNA was identified in serum of 16 patients with isolated anti-HBc (with negative HBsAg tests). As result the detection rate of occult HBV-infection revealed by HBV viremia was 16% of examined population – Fig.3. Latent HBV-infection rate was 19% of anti-HBc-positive patients with ESRF on HD. The anti-HBc analysis may be useful for detecting the patients which needs more rigorous examination on HBV-DNA. ALT activity is not correlated with the HBV-DNA and HBsAg presence.



Fig.2 HBV-DNA detection rate in serum of anti-HBcor positive patients

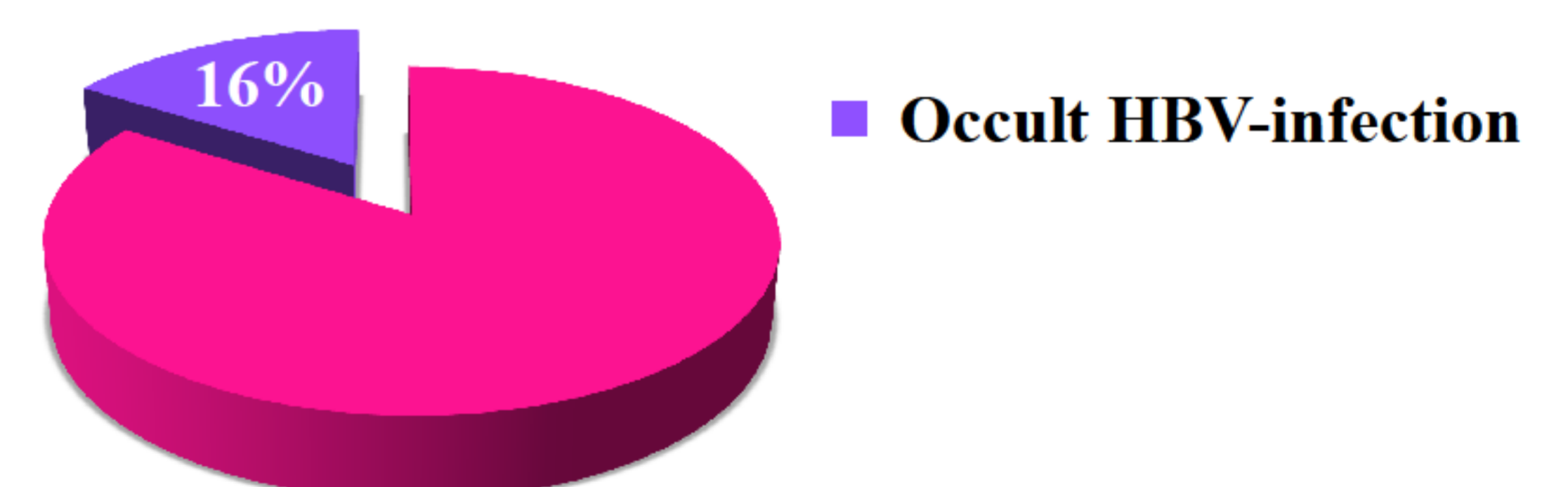


Fig.3 Detection rate of occult hepatitis B

CONCLUSIONS:

Occult HBV-infection has high prevalence among Ukrainian patients on HD and absence of HBsAg in blood is not ensuring the reliable exclusion of HBV-infection. The PCR analysis of HBV DNA in dialysis population, especially with isolated anti-HBc, permits to detect of latent HBV-infection and to decrease of the HBV-infection risk in HD departments.

Hepatitis B

