Limited value of repeated measurements of quantitative HBsAg for clinical management of chronic HBV infection – stability over time and impact on reactivation risk

Catharina Alexandersson[1,2], Mats Haglund[1,2], Ingvar Ryden[2], Thomas Schön[1-3]

[1]Department of Infectious Diseases, Kalmar County Hospital, Kalmar, Sweden, [2]Department of Biomedical and Clinical Sciences, Linköping University, Linköping, Sweden,[3]Department of Infectious Diseases in Östergötland, Linköping University, Linköping, Sweden.

Conclusion

- qHBsAg is very stable over time which limits the clinical benefit of repeated measurements.
- Poor correlation between qHBsAg and HBV DNA at HBV DNA<10 000 IU/ml,
- Limited impact of repeated qHBsAg measurements on reactivation compared to HBV DNA measurements only.

Introduction

- Quantitative hepatitis B surface antigen (qHBsAg) is used for staging, prognosis and treatment follow up in patients with chronic hepatitis B (1).
- qHBsAg is well established to identify HBeAg-negative individuals in the inactive phase of infection by using a baseline qHBsAg <1000 IU/ml in combination with HBV-DNA <2000 IU/ml (2,3).
- We aimed to investigate the relevance of longitudinal qHBsAg testing and the impact of qHBsAg>1000 IU/ml on reactivation risk in HBeAg-negative patients.

Methods

- Retrospective cohort study of qHBsAg and HBV-DNA in all adult patients with untreated chronic hepatitis B in Kalmar County, Sweden during 2014-2018 (n=263).
- Reactivation was defined according to EASL guidelines and analyzed in patients with HBeAg-negative infection (n=174) in relation to qHBsAg and HBV-DNA levels separately and in combination, during 4-8 years.

References

1. European Association for the Study of the Liver. EASL Clinical Practice Guidelines on the management of hepatitis B virus infection. J Hepatol. 2025;83(2):502-583.
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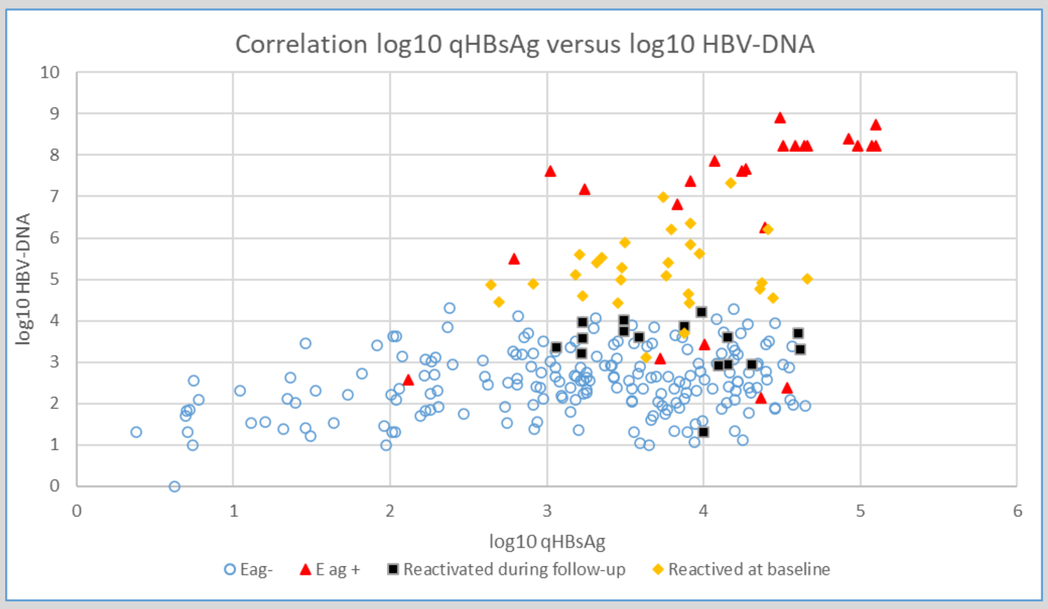
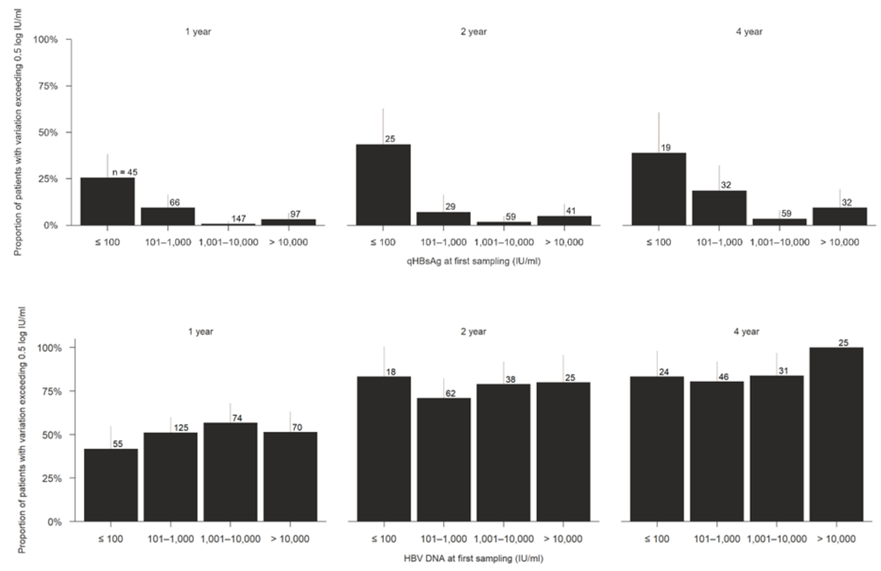
3. Liu J, Yang HI, Lee MH, Jen CL, Batrla-Utermann R, Lu SN, et al. Serum levels of hepatitis B surface antigen and DNA can predict inactive carriers with low risk of disease progression. Hepatology. 2016;64(2):381-9.

Results



- **Correlation** between HBV DNA versus qHBsAg was moderate (r=0.48-0.78), and very poor in patients with HBV DNA<10 000 IU/ml (r<0.1).



- **Stability** analysis during a 4-year follow up showed that the proportion of patients with a variation exceeding 0.5 log IU/ml, was consistently below 20% for qHBsAg whereas it was at least 50% for HBV DNA. (Levels <100 IU/ml excluded).

qHBsAg (IU/ml)	Mean reactivation probability	95% PI
100	0.06	[0.03–0.12]
1000	0.07	[0.04–0.12]
10000	0.10	[0.06–0.16]
45000	0.36	[0.11–0.73]

HBV DNA (IU/ml)	Mean reactivation probability	95% PI
100	0.04	[0.02–0.09]
1000	0.06	[0.03–0.11]
2000	0.09	[0.05–0.15]
10000	0.71	[0.34–0.92]
20000	0.99	[0.82–1]

- **Reactivation risk** was modestly higher in patients with qHBsAg of 1000 and 10 000 IU/ml (logistic regression model).
- In a combined model, patients with HBV-DNA levels at 2000 IU/ml and a high level of qHBsAg (10 000 IU/ml) had a limited increase in reactivation risk compared to lower qHBsAg levels (9% versus 6%).

Catharina Alexandersson
MD, pHD-student
Department of Infectious Diseases
Kalmar County Hospital

catharina.alexandersson@regionkalmar.se

LINKÖPING UNIVERSITY

Region Kalmar län