中文題目：未稀釋定量B型肝炎表面抗原測試可找出低活動性的感染者

英文題目：Undiluted quantitative HBsAg test can identify patients of chronic hepatitis B infection with low disease activity

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Background: Taiwan is an endemic area of hepatitis B (HB). Since universal HB vaccination program launched in 1984, the prevalence of hepatitis B surface antigen (HBsAg) declined to 0.8% of lower in the young generation born after the vaccination program. However, the cohort born before 1984 still have high prevalence of HBsAg. These HBsAg carriers still have high risk to develop liver cirrhosis and hepatocellular carcinoma (HCC). Community-based screenings to detect subject positive for HBsAg are always conducted. The screening tool mostly is qualitative HBsAg (qHBsAg) test. In this study, we try to evaluate the usefulness of qHBsAg in community-based screening.

Methods:

A community-based HBsAg screening has been conducted in 5 coastal townships located in norther Yunlin and southern Changhua in 2018. The screening tool was qHBsAg (Abbott) test with a low detection limit of 0.05 IU/ml and upper detection limit of 250 Iu/ml. HBV DNA was also checked for patients positive for qHBsAg in the first 1000 screening subjects. Prevalence was presented by percentage. Correlation between qHBsAg and HBV DNA was tested by linear correlation and regression after log transformation. ROC curve was used to identify best cutoff. Positive and negative predictive values (PPV and NPV) were calculated for different cut off.

Results:

A total of 184 cases were positive for qHBsAg with a prevalence of 18.4%. Among them, 126 cases had enough stored serum to check HBV DNA. After log-log transformation, there was significantly linear correlation between qHBsAg and HBV DNA ($n=126$, $r=0.632$, $P<0.001$). Only 47 (37.3%) cases were with HBV DNA levels of 2000 IU/ml or higher, and all their qHBsAg levels were higher than 8 IU/ml. The NPV of qHBsAg <8 IU/ml to predict HBV DNA <2000 IU/ml was 100%. Using ROC curve, the best cutoff for qHBsAg to predict HBV DNA<2000 IU/ml should be 170 IU/ml with a NPV of 83.3%. Prediction of HBV DNA > 20000 IU/mL by qHBsAg using ROC curve, the best cutoff is 860 IU/mL with a NPV 91.7%.

Conclusions:
In the study subjects with HBsAg prevalence of 18.4% is equal to general population in Taiwan. Levels of HBV DNA and qHBsAg were significantly correlated but the r=0.632 was not high enough for prediction. Only less than 40% have significant level of HBV DNA in this community and qHBsAg <8 had 100% NPV. Using qHBsAg as a screening tools, patients with HBV DNA >2000 IU can be well detected. However, liver cirrhosis and HCC should be rule out before setting subjects with low qHBsAg cases as low risk groups.