

Identification of Hepatitis B (HBV) and C (HCV) Virus Infection among Doctors and Nurses in Tertiary Hospitals in Mongolia

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The studies of M. Colombo (1989) and W. Lange (1992) showed that 30~40% of people became chronic after suffering from hepatitis B virus (HBV) and C virus (HCV) infection, and about 50% of the chronic cases transformed into primary liver cancer. There have been few studies done in Mongolia on hepatitis infection among health professionals, particularly in nurses. In a study done by Chimedsuren (8), the study showed that 19.4% of people with identified surface hepatitis B antigen (HBsAg) and antibodies to hepatitis C virus and 8% of people with the identified nucleotide of RNA for the hepatitis C virus (polymerase chain reaction) had an acute form of hepatitis C. Studies on the hepatitis virus genome damaging effect on liver cells showed that genotype 8 (A, B, C, D, E, F, G, TTV) had the most damaging effect on liver cells (Hahn and Faeka, 2007). Several studies have shown a relationship between hepatitis B virus infection and a lack of compliance regarding safety regulations and rules by medical personnel. Results of a study from the Maternal and Child Health Research Center showed that tests done to detect hepatitis B virus antigen and antibodies to C virus did not reveal anything. Both antigen and antibodies in 69% cases did not show, and separately, B virus and antibodies to hepatitis C virus were identified in 13% and 9%, respectively. Results of the tests taken from health personnel in Shastin Central Hospital showed that in 76% of the cases, the B virus antigen with C virus antibodies was not identified. In 8% of the cases, the B virus antigen was present on its own. The combination of B the virus antigen and C virus antibodies were present in 8% of nurses and doctors, respectively. 82% of the cases had negative results for the detection of a combination of B virus antigen and C virus antibodies taken from health personnel from the State Central Clinical Hospital whereas the B virus antigen and C virus antibodies by themselves were present in 7% and 14% of the cases, respectively. Combined cases of the B virus antigen and C virus antibodies were identified in 4% of the personnel. Results of the tests taken from the health personnel in the Hospital of the Ministry of Justice and Internal Affairs showed that in 79% of the cases, the B virus antigen with C virus antibodies were not identified. Separately, the B virus and antibodies to hepatitis C virus were identified in 8% and 13% of the cases, respectively.

Key Words: Doctor, Nurse, B (HBV), C (HCV), Hepatitis virus causative

INTRODUCTION

M. Colombo (1989), W. Lange (1992) studies showed that 30~40% of people became chronic after suffering from hepatitis B virus (HBV) and C virus (HCV) and about 50% of chronic cases transformed into primary liver cancer. There are few studies in our country were con-

ducted on hepatitis among health professionals, particular nursing personnel. In study carried out by Chimedsuren (8) showed that 19.4% of people with identified surface hepatitis B antigen (HBsAg) and antibodies to hepatitis C virus and 8% of people with identified nucleotide of RNA of hepatitis C virus (polymerase chain reaction) had acute form of hepatitis C. Studies on hepatitis virus genome

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damaging effect on liver cells showed that genotype 8 (A, B, C, D, E, F, G, TTV) was the most common (Hahn and Faeka, 2007). Performed study and solved problem about considering determining and proving risk of doctors and medical workers affecting to hepatitis infection, if they become infected while performing medical aid, the state coordinating payment of health and treatment of doctors and nurses or decides it by additional health insurance and bringing work and labor condition close to European countries level is not sufficient. It shows that it is necessary to do this study in detail.

1. GOAL

To identify antigens and antibodies of hepatitis B virus (HBV) and C virus (anti-HCV) among doctors and nurses

2. OBJECTIVES

- To identify surface antigen (HBsAg) of hepatitis B virus (HBV) among doctors and nurses
- To determine antibody to hepatitis C virus (HCV) among doctors and nurses
- To compare exposure rate to the infection by the type of hospital and profession

METHODS

The study was a cross-sectional study carried out among selected health professionals, doctors and nurses, to determine surface antigen of hepatitis B virus and antibodies to hepatitis C virus. For identification of these antibodies and antigen, and validation of results Serodia tests from Fujinebo Company (Japan) and Beringnost (Germany) were used respectively.

Blood samples from 100 nurses and nine doctors were collected from the State Central Clinical Hospital, Shastin's State Hospital, Hospital of Ministry of Justice and Internal Affairs, and the Maternal and Child Health Research Centre in order to identify surface antigen of hepatitis B virus and C virus antibodies. Questionnaires were used to determine knowledge, attitude and practice of personnel on hepatitis infection.

Ethical approval was obtained from the Ethical Committee of the Health Sciences University of Mongolia

before the study. Statistical analysis was performed using SPSS 11.5 version.

RESULTS

There were 100 nurses and nine doctors from the State Central Clinical Hospital, Shastin's State Hospital, Hospital of Ministry of Justice and Internal Affairs, and the Maternal and Child Research Centre who participated in the study. More than half of participants (59%) said that they were exposed to the infection during performing medical procedures. In particular, most reported obtaining the infection through a cut or wound in the right hand.

The risk of exposure to HIV infection while performing some procedures was 0.136, 0.121, 0.125, and 0.138 in the Maternal and Child Research Centre, Shastin Central Hospital, and Hospital of Justice and Internal affairs respectively.

B virus antigen and C virus antibodies were not revealed in 43% of people. B virus antigen was identified alone in 9%, C virus antibodies were revealed alone in 45%. B virus antigen and C virus antibodies were revealed in 3% of nurses. Nurses with identified B virus antigen and C virus antibodies were 66%.

Results from the survey on the rates of infection of hepatitis B and C virus are as following;

From the Maternal and Child Health Research Center: 23 nurses, doctors and other medical employees; HBV-

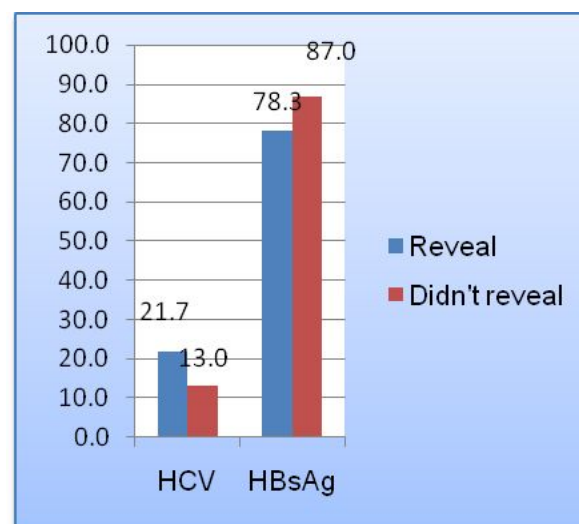


Figure 1. Proportion of nurses and doctors of maternal and child health research center/hospitals of the city with HCV and HBsAg.

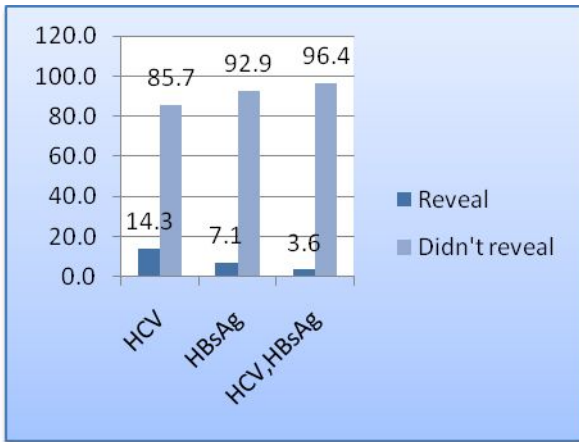


Figure 2. Proportion of nurses and doctors of state central clinical hospitals of the city with HCV and HBsAg.

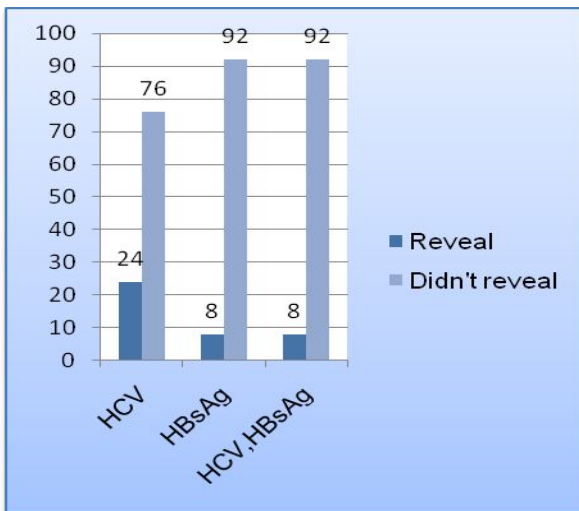


Figure 3. Proportion of nurses and doctors of Shastin's state hospitals of the city with HCV and HBsAg.

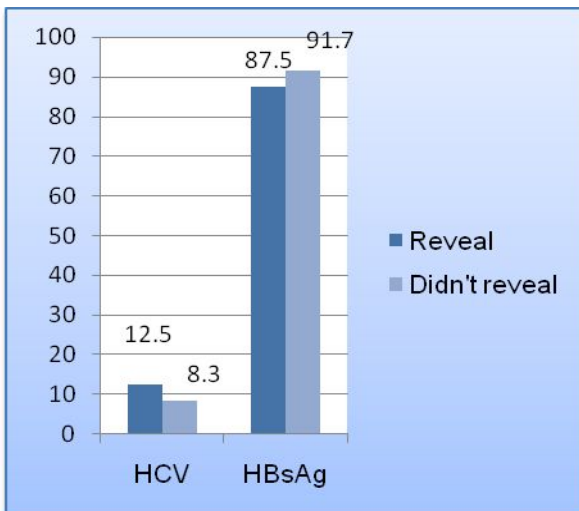


Figure 4. Proportion of nurses and doctors of Justice and Internal affairs hospitals of the city with HCV and HBsAg.

11.5% and HCV-15.4% of nurses, and HCV, HBsAg-14.3% of others.

From the State Central Clinical Hospital: 28 nurses, doctors, and other medical employees; HBV-7.1%, HCV-7.1% of nurses, HCV-50% of doctors, and HCV, HBsAg-16.7% of others

From the Shastin's State Hospital: 25 nurses, doctors, and other medical employees; HBV-4.0% of nurses, HCV-25%, HBV-25% of doctors, HCV, HBsAg-40% of others

From the Hospital of Ministry of Justice and Internal

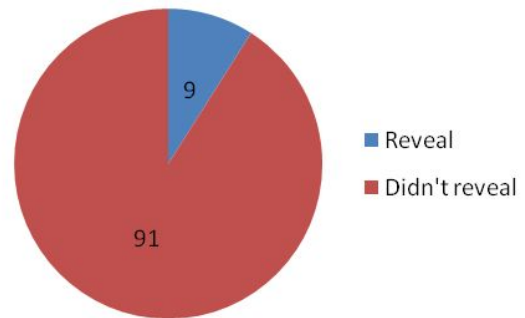


Figure 5. Proportion of nurses and doctors of 4 hospitals of the city with HBsAg.

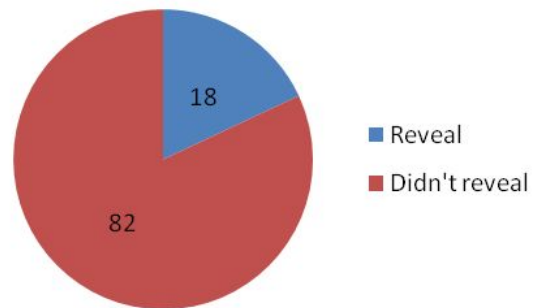


Figure 6. Proportion of nurses and doctors of 4 hospitals of the city with HCV.

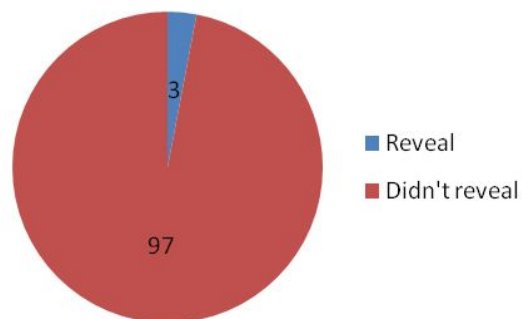


Figure 7. Proportion of nurses and doctors of 4 hospitals of the city with HCV and HBsAg.

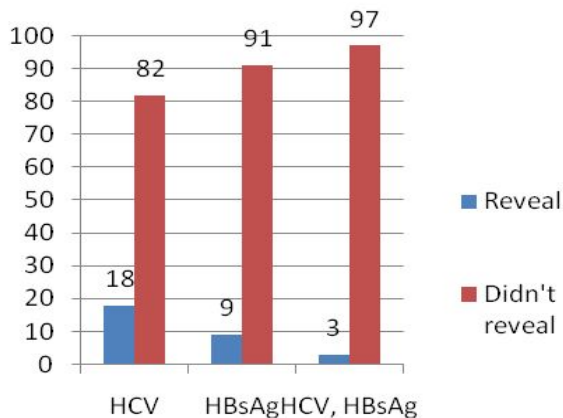


Figure 8. Proportion of nurses and doctors of 4 hospitals of the city with HCV and HBsAg.

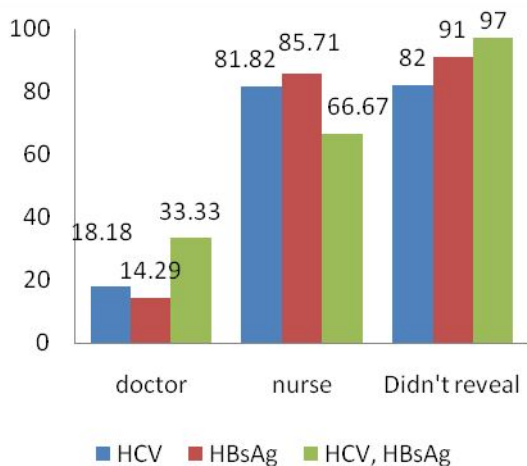


Figure 9. Proportion of nurses and doctors of 4 hospitals of the city with HCV and HBsAg, by profession.

Affair: 24 nurses, doctors, and other medical employees; HBV-8.3%, HCV-12.5% of nurses, HCV- 25%, HBV-25% of doctors, HBV-66.7% of others.

Result under studying contagious risk of HIV by antigen reaction shows as following by percent:

Maternal and Child Health Research Center-0.138, Shastin's State Hospital-0.121, State Central Clinical Hospital-0.125, Hospital of Ministry of Justice and internal Affair-0.138, mean=0.13476, Std.Dev=010642, there were no cases of HIV infection after examinations. HIV was examined by using equipments as VironostiKo- HIV ½, bio Hereieux of France.

DISCUSSION

Several researchers have noted that health workers are

exposed to hepatitis infections during medical procedures. Because they do not follow the safety regulations in place. Risk of getting infection for medical personnel was 95% performing therapeutic and nursing procedures and only 5% during immunization.

There is an urgent need to provide knowledge to medical personnel regarding standards during these procedures concerning hepatitis infections, their monitoring and improve technology used during procedures. Within the spectrum of diagnostic procedures in hepatology, the procurement of a liver specimen plays an important role. The method has been diversified to encompass not only different needle types for cutting and aspiration but also different routes proceeding transvenously or transcutaneously.

Over the subsequent 50 years the technique of obtaining liver biopsy samples has been modified. The type of needle has changed and today doctors may use diagnostic imaging techniques such as ultrasound, computed tomography, angiography and laparoscopy. Histological analyses are capable of establishing the etiology of a chronic or acute liver disease, are determined the inflammatory activity (Grading), degree of fibrosis/cirrhosis (Staging), are relevant for the prognosis of the patient and for indication for cost-intensive as well as potentially side are effect-prone therapies. In general, the accepted mortality rate from liver biopsy is between 0.1%, and 0.01%.

Among the most feared complications of liver biopsies are hemorrhage, seeding of cancer cells, infections, and injury to the viscera. The increasing number of liver transplant patients within the hepatological spectrum requires regular, safe, and high quality biopsies and their appropriate (Dabaadorj, 2009).

There are many results from studies which show that affecting to this influenza more in connection with confliction of infection and protection technology when the doctors and medical workers rendering medical aid. When we analyzed test of revealing hepatitis B virus antigen and C virus antitel taken from Maternal and Child Health Research Center in 69% antigen and antitel didn't reveal, in 13.4% virus B occurred alone, in 8.69% antitel occurred alone, combined case of test which reveals hepatitis B virus antigen and C virus antitel didn't reveal.

In 76 test revealing B virus antigen and C virus antitel (taken from central hospital) didn't reveal, in 8% antigen

occurred alone, nurses on whom test of revealing B virus antigen and C virus antitel revealed in the form of combining was 8% and assistant doctor 8% in the test of revealing B virus antigen and C virus antitel taken from State Central Clinical Hospital 82.1% was registered negative; B virus antigen positive was 7.14% C virus antitel revealed alone was 14.2% combined case of test revealing B virus antigen and C virus antitel revealed 3.57%, 79.1% didn't reveal in the test of revealing B virus antigen and C virus antitel. Case of B alone was 8.3%, C virus antitel alone was 12.5% combined case of test of revealing B virus antigen and C virus antitel didn't reveal. 28% of nurses and doctors of those 4 hospitals have revealed B (HBV), C (HCV), HBsAg, HCV viruses.

354 health care workers were selected from August 2009 to February 2010 working in primary, secondary, and tertiary level hospitals in Ulaanbaatar city. Among them 16.9% were physicians, 33.3% nurses, 49.7% housekeepers. 304 (85.9%) HCWs answered that they had been exposed to injuries involving needles in the work place and 94 (26.6%) of them have received primary health support. Anti-HCV was detectable in 72 (20.8%) HCWs. (Otgonbayar, B 2010)

CONCLUSIONS

More than half of the medical personnel studied (59%) were identified with hepatitis B virus antigen and hepatitis C virus antibodies. Knowledge, attitude and practice on risks of getting infection were not sufficient.

In Judging from the survey to detect Hepatitis B and C at the Clinical Hospitals of Ulaanbaatar (Maternal and Child Health Research Center; Shastin's State Hospital; State Central Clinical Hospital; Hospital of Ministry of Justice and internal Affairs), workers don't follow safety regulations to protect themselves from infection and there is risk when medical workers help to patients.

Survey shows a positive detection on hepatitis B and C, thus it shows that there are safety regulations in place to protect from infection.

Nurses are at a greater risk from infection and they are subject to accidents involving the syringe.

The level of knowledge seen in medical professional

on how to prevent infection and general attitude is poor.

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