Study of occupational risk factors of hepatitis B and C infection in medical workers (HCWs)

**Background**
Healthcare workers are one of the risk groups for infection with blood-born hepatitis B and C (HBV and HCV). Infection risk is extremely high in the healthcare staff performing invasive medical procedures and exposed to potentially contaminated biological material.

**Methods**
In 2010 the Lithuanian Centre for Communicable Diseases and AIDS in cooperation with Departments of Cardiothoracic Surgery and Intensive Therapy and Reanimation of the Vilnius University Santariskes Clinics conducted research of occupational risk factors of HBV and HCV. HCWs of these Departments were voluntarily tested on biological markers of HIV, hepatitis B and C: HIV antibodies, anti-HCV, HBsAg, anti-HBc, anti-HBs.

169 medical workers enrolled into this research were also questioned by applying anonymous questionnaire including 18 questions (socio-demographic data, occupational involvement in performing invasive procedures, history of HIV, HBV, HCV, VHB testing; vaccination, etc.). Data were analysed using SPSS programme, version 13.0.

**Results**
Study cohort consisted of totally 169 HCWs (25 male, 144 female) of the Departments of Cardiothoracic Surgery and Intensive Therapy and Reanimation of the Vilnius University Santariskes Clinics. Age moda – 46, mediana – 42 years. Study involved 75.1% of nurses and their assistants, 24.9% - reanimatologists, cardiologists, and cardiothoracic surgeons. Median work experience – 17 years.

75.1% (n=127) have indicated previous injuries with blood or other body fluids contaminated instruments while performing invasive procedure, 19.5% had no injuries, and others did not know. During entire work experience more than 10 times were injured 24.2% of respondents, from 3 up to 10 times – one third.

Have you ever been tested for HCV? - 26.6% (45) reported yes, 59.2% (100) - no, 14.2% (24) haven’t know. Majority (89%, n=140) knew result of their HCV testing, 5 did not. 41.4% (70) respondents reported being ever tested on HBsAg, 47.3% (80) were not tested, 11.2% (19) did not know.

56.2% (95) had previous test on HBV, 36.7% (62) did not, 7.15% (12) did not know. 7.7% (13) reported vaccination on HBV and were aware of their anti-HBs level, 49.1% (83) did not know.

29% (49) reported ever being tested on HIV, 67.5% (114) were not tested, 3.6% (6) did not know. All respondents tested on HIV were aware of the testing result.

**Revealed biological markers:**
3.6% (6) anti-HCV(+), 95.3% (161) anti-HCV(-), 1.2% (2) anti-HCV(+/-); 130(76.9%) anti-HBc(-), 37 (21.9%) anti-HBc(+), 2 (1.2%) anti-HBc (+/-); no case of HIV1/2 Ab (+) and HBsAg(+).

Sufficient (protective) immunity (in case of anti-HBs titre >10mTV/ml) was identified in 82 (48.52%) persons, others (n=87) did not have protective immunity. N=29 had anti-HBc(+) and anti-HBs markers.

35 out of 95 respondents insisted having previous HBV vaccination, though, anti-HBs markers in their blood were not found.

**Conclusions**
- Majority of HCWs were exposed to occupational risk factors:
  - two thirds had history of injury with blood or other body fluids contaminated instruments while performing invasive procedures;
  - during their work experience almost 23% were injured more than 10 times,
  - from 3 up to 10 times – one third.
- More than a half of respondents were never tested on HCV, 47.3% and 67.5% were never tested on HbsAg and HIV respectively.
- 56.2% reported being vaccinated of HBV, 36.7% were not vaccinated, and 7.15% did not know.
- A very few (n=13) HBV vaccinated HCWs were aware of their anti-HBs level/titre.
- However, in approximately half (48.5%) of respondents protective HBV immunity was confirmed (post-infection or post-vaccination).
- Majority anti-HCV and anti-HBc were negative. No cases of HBsAg(+) and HIV1/2 Ab (+) were found. 3.6% anti-HCV(+), 21.9% anti-HBc(+).
- Biological markers proved that majority of respondents were not infected with HBV or HCV but occupational risk factors due to frequency of injuries remained.
- Awareness of respondents on protective HBV post-vaccination immunity was insufficient.

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