Identifying risk factors for HCV transmission in the country of Georgia: A case-control study

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Background: Hepatitis C virus (HCV) infection is one of the leading causes of chronic liver disease. The most prominent risk factors associated with HCV exposure in the country of Georgia are injection drug use (IDU) and blood transfusion. In 2015, Georgia launched the world's first national HCV elimination program. A 2021 serosurvey demonstrated a decrease in prevalence from 5.4% to 1.8% in chronic HCV infection among the adult population since 2015. The HCV elimination program treated over 76,000 patients with 98.9% cure rate during that time. The HCV elimination program includes improvements in infection control practices in health care and beauty settings, and harm reduction services for people who inject drugs, among others. Understanding the primary sources of ongoing HCV transmission is crucial to focus prevention efforts and target interventions to different population groups. This study aimed to evaluate current risk factors for HCV transmission in the country of Georgia.

Material and methods: A case-control study was conducted among adults aged ≥18 years. Cases (patients who seroconverted with screening dates at least 12 days apart) and controls (persons with ≥2 negative anti-HCV test results dated 90 to 364 days apart) were randomly selected from the national HCV screening database. Both cases and controls provided consent and were then asked to participate in a telephone interview inquiring about socio-demographic, clinical, and behavioral information, and about risk factors for HCV infection during the last 2-6 months. Descriptive statistics, odds ratios (OR), and 95% confidence intervals (95%CI) were calculated.

Results: A total of 206 cases and 229 controls participated in the survey; response rates were 68.9% (n=206/299) and 52.5% (n=229/436), respectively. Compared to control subjects, case-subjects were more likely to be male (57.8% vs. 35.8%; OR=2.45, 95%CI:1.66-3.60) and over age 40 years (69.4% vs. 52.4%; OR=2.06, 95%CI:1.39-3.06). More case-subjects performed invasive medical procedures as part of their occupation (e.g., assisting surgeries, administering

intravenous/intramuscular injections or invasive dental procedures) compared to control subjects (9.2% n=19/206 vs 4.4% n=10/229, OR=2.22, 95%CI:1.01-4.90). Receipt of a blood transfusion was reported by 6.3% (n=13/206) of case-subjects and 1.3% (n=3/229) of control subjects (OR=5.07, 95%CI:1.42-18.07), and 9.2% (n=19/206) of case-subjects and 0.4% (n=1/229) of control subjects reported injection drug use (IDU) (OR=23.17, 95%CI:3.07-174.66). Case-subjects were more likely to have history of surgery or an invasive medical procedure, such as dental surgery, endoscopy, gynecological, or other (45.6% [n=94/206] vs. 26.2% [n=60/229]; OR=2.36, 95%CI:1.58-3.53). Case-subjects were also more likely to have spent ≥24 hours in the hospital compared to control subjects (28.6% [n=59/206] vs. 11.8% [n=27/229]; OR=3.00, 95%CI:1.81-4.96), and 3.4% (n=7/206) of case-subjects were incarcerated or detained compared to none among control subjects.

Conclusion: Our findings suggest primary risk factors for HCV transmission currently in Georgia are IDU, hospitalization, blood transfusion and incarceration. These identified risk factors of HCV transmission provide opportunities to target known transmission sources and further improve HCV infection prevention in the country of Georgia.