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A POPULATION-BASED RESEARCH TO INDICATE HBV AND HCV SEROPREVALENCE AMONG HEALTHY ADULTS

[1]Waqqas Shaheen Sheikh, [2]Dr Saad Tariq Khan, [3]Dr. Raheel Malik
[1]DHQ Hospital Sheikhupura
[2]Medical Officer, Govt. Said Mitha Teaching Hospital (KEMU)
[3]Medical Officer at RHC Kala D.G. Khan

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Abstract:
Background: *HBV and HCV commonly contribute to the global burden of chronic liver disease. Pakistan is also no exception to this global spread of chronic liver disease due to both HBV and HCV.*
Objective: *The objective of this research study was to indicate the HBV and HCV seroprevalence among young.*
Materials and Methods: *This population-based research was carried out at Services Hospital, Lahore on a total of 15550 individuals from February 2019 to January 2020. We used a rapid method to evaluate the sera of healthy adults for HBsAg and Anti-HCV. ELISA technique confirmed positive cases.*
Results: *A total of 15550 samples were evaluated for sera evaluation. The evaluation outcomes presented 5.4 adults positive for HBsAg (3.24%); whereas, 574 adults were anti-HCV positive (3.69%). A total of 49 adults presented both HBV and HCV antigen (0.31%).*
Conclusion: *Healthy young population was our major focus who presented lower seroprevalence of HBV surface antigen than HCV. The trend of HBV is low in population but combined both HBV and HCV are equally affecting the young population which requires tangible measures for its spread control and prevention.*
Keywords: *Hepatitis B, Hepatitis C, HBV, HCV, Seroprevalence, HBsAg, Surface Antigen, Rapid Method and ELISA Technique.*

Corresponding author:
Waqqas Shaheen Sheikh,
DHQ Hospital Sheikhupura

QR code

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INTRODUCTION:

HBV is a global issue affecting a total of 30% of its population [1]. Middle Eastern population is reported 1.8% positive for HBV surface antigen [2]. Among blood donors of Pakistan, the HBV prevalence ranges from 2.28% to 5.86% [3, 4]. A cross-sectional research reported HBV antigen among 3% to 3.53% population [5 – 7]. HCV is graded endemic among a few parts of the world as its prevalence is around 3% [8]. The onset of cirrhosis due to chronic HCV is common which may also take years to form [9]. The different proportion has been reported among different areas of the world about anti-HCV prevalence under the age of 29 years to a maximum of 70 years with HCV prevalence from 0.4% to 12.0% [10]. Spanish, German and Italian studies respectively reported 1.6%, 0.63% and 3.2% [11 – 13]. Generally, blood donors in Pakistan are positive for HCV seroprevalence. This prevalence is different from north to the south especially among volunteer blood donors [3, 4, 14, 15]. Overall anti-HCV among healthy young ranges from 2.2% to 3.3% [5 – 7].

Most of the cases remain asymptomatic until the time they are evaluated for HCV for any official reason such as recruitment or employment. Other instances also include blood donation and physical examination. Majority of the individuals also have normal ALT levels which may also develop significant hepatic histological complications [16]. Individuals with normal levels of ALT gradually progress towards liver fibrosis [17]. It is important to prioritize HBV and HCV prevention by understanding involved epidemiological disease patterns to attain logical results. Therefore, the objective of our research study was to indicate the HBV and HCV seroprevalence among young.

MATERIALS AND METHODS:

This research was carried out at Services Hospital, Lahore on a total of 15550 individuals from February 2019 to January 2020. We used a rapid method to evaluate the sera of healthy adults for HBsAg and Anti-HCV. ELISA technique confirmed positive cases. Pathology department screened all the samples for Anti-HCV and HBsAg. We documented details of every individual for age, major/minor surgical history, marital status, jaundice history, dental procedures and blood transfusion history. Disposable syringes were used to collect blood samples. After separation of serum, it was transferred to plastic tubes and labelled as well. Every individual was asymptomatic. The selection of individuals was made in the age limit of 16 years to 20 years. All the individuals had completed their matriculation. HBsAg and anti-HCV antibody testing were carried out through a one-step quick immunoassay method. All positive samples were further confirmed through ELISA 3rd generation testing. Every individual has willingly given samples. We did not include all those individuals who presented jaundice history, hepatitis vaccinated cases and blood donors.

RESULTS:

A total of 15550 samples were evaluated for sera evaluation. The evaluation outcomes presented 5.4 adults positive for HBsAg (3.24%); whereas, 574 adults were anti-HCV positive (3.69%). A total of 49 adults presented both HBV and HCV antigen (0.31%). Rapid method confirmed 62/556 individuals (10.9%) HBsAg positive which were not confirmed by ELISA. The rapid method also confirmed 76/650 individuals (13.4%) anti -HCV positive but not confirmed by ELISA. Rapid test positive predictive value for HBsAg was 89.1% and anti-HCV 86.6%. Detailed outcomes are also presented in the tabular and graphical form.

Table – I: Serological Markers

Serological Maker	Seropositive	Percentage
HBsAg	504.00	3.20
Anti-HCV	574.00	3.70
HBsAg + Anti-HCV	49.00	0.30

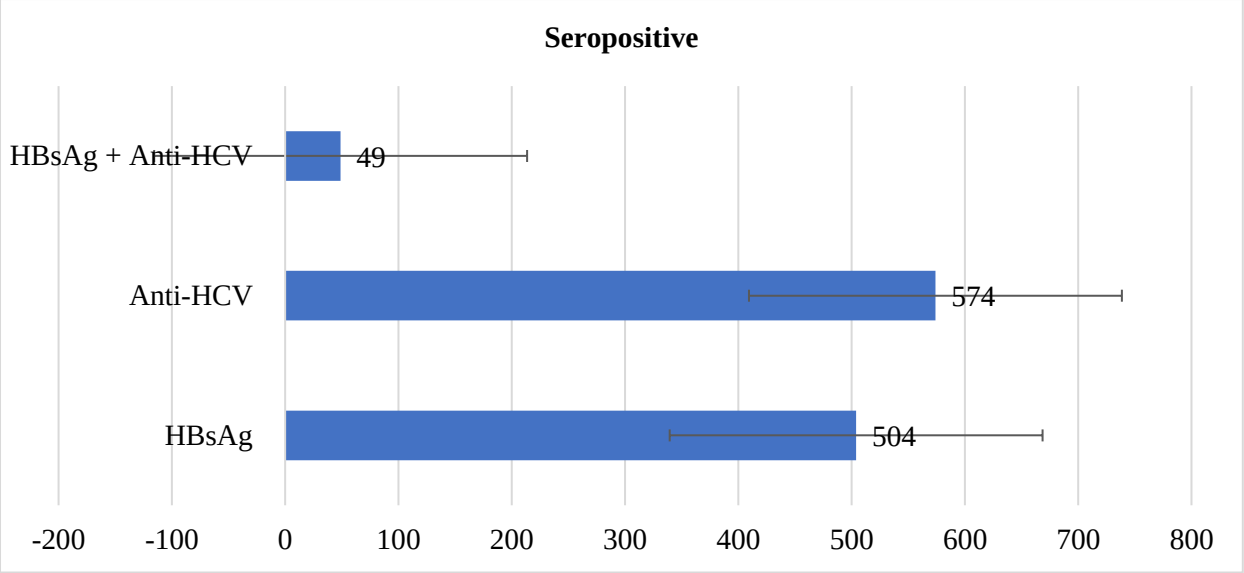


Table – II: Serological Markers

Serological Marker	Positive by Rapid Method	Confirmed by ELISA	Positive Predictive Value of Rapid Method %
HBsAg	566.00	504.00	89.10
Anti-HCV	650.00	574.00	86.60

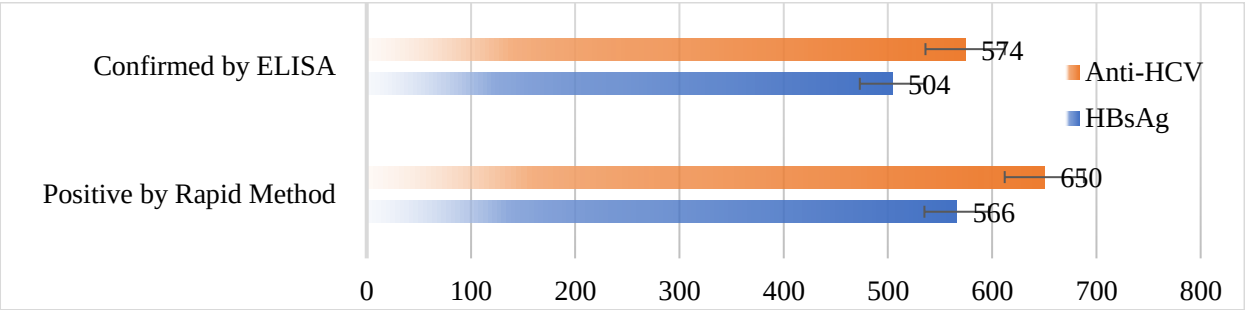
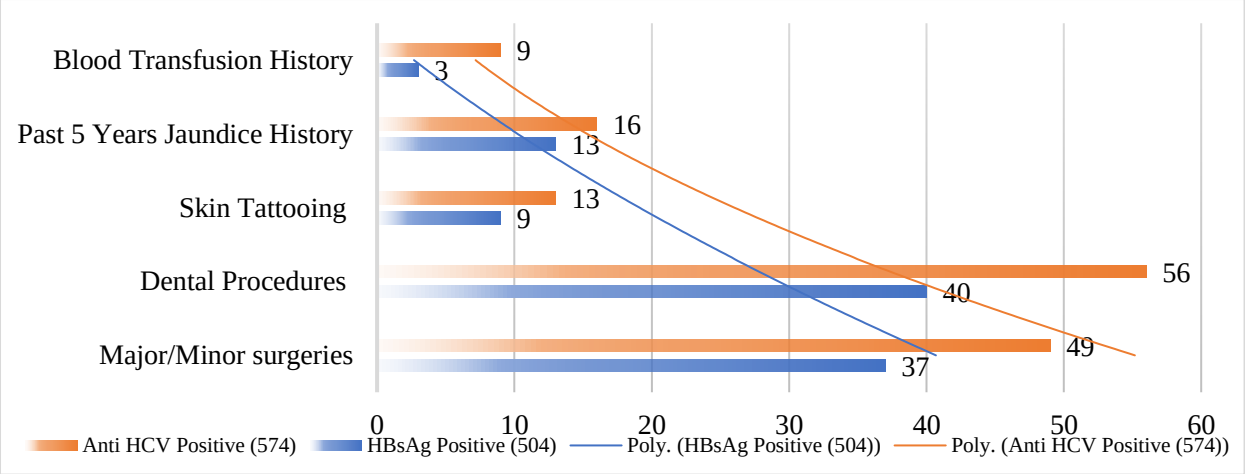


Table – III: Risk Factors

Risk Factor	HBsAg Positive (504)	Anti HCV Positive (574)
Major/Minor surgeries	37.00	49.00
Dental Procedures	40.00	56.00
Skin Tattooing	9.00	13.00
Past 5 Years Jaundice History	13.00	16.00
Blood Transfusion History	3.00	9.00



DISCUSSION:

Worldwide the HBsAg prevalence is different; in USA it is 0.1% to 0.5 % and in Far East tropical countries it is 5% to 20% [18]. In the 1990s the prevalence of HBsAg in Pakistani healthy blood donors was reported 0.99% to 5% by different authors [19 – 22]. Recent studies show its prevalence by up to 5.86% among healthy blood donors [4]. The young healthy population has shown a prevalence rate of 3% to 3.5% for HBsAg [5 – 7]. Our research reported prevalence is 3.24% which is very close to the recent studies. Back in 1991, at two instances the HBsAg prevalence was reported 9.97% and 15.9% among hospitalized patients [24]. There is a great need for healthcare measures, disease awareness and encourage the use of disposable syringes along with every other possible measure which can contribute to the reduction of its prevalence.

Different global regions also forecast different anti-HCV prevalence rate. HCV has been reported in the USA for the general population as 1.8% and volunteer blood donors as 0.5% [25]. Few countries like Egypt presented a higher prevalence rate of up to 20% [18]. In general, the European population has lower trends of anti-HCV prevalence of 1.6%, Germany 0.63% and Italy 3.2% [11 – 13]. Anti-HCV seroprevalence among blood donors has been reported in Pakistan around 5% [3, 4]. Our reported seroprevalence (3.69%) is slightly higher than previously reported a seroprevalence of similar population-based research studies [5 – 7]. The possible reason behind this difference may be an increased onset of HBV and HCV screening. Research outcomes on the seroprevalence of HBV and HCV are also tabulated.

Increased positive anti-HCV serology is also attributed to the past smallpox eradication campaigns. These were documented in Lahore and Gujranwala respectively 15.9% and 23.8% [25]. Another possibility behind this is the increased use of injections among young for other minor issues. Another local research also indicates that an average of ten injections annually increased the chances of HCV antibodies [26]. All those taking injections and exposed to barbers for face and armpit shave were more prone to positive serology [27]. Similarly, the use of increased medical treatment and injectable materials are also questioned for the spread of HCV. Unsafe use of vaccination such as polio also leads to HCV contraction [28]. Blood transfusion, minor diagnostic procedures and use of needles in day to day medical treatment also lead to HBV transmission [29]. We also analyzed the involved risk factors which contribute to the spread of HBV and HCV; these include procedures, dental treatment, minor surgical interventions, major surgical operations and skin tattooing. For HBV, blood transfusion is relatively safe but it significantly contributes to HCV. Blood bank practices need special consideration to arrest the epidemic spread of both HCV and HBV. Appropriate blood donor screening, healthcare workers awareness, educating patients and limiting the use of needles will surely bring desired outcomes along with sterilization of surgical instruments.

CONCLUSION:

The healthy young population was our major focus who presented lower seroprevalence of HBV surface antigen than HCV. The trend of HBV is low in population but combined both HBV and HCV are equally affecting the young population which requires tangible measures for its spread control and prevention.

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