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Research Article

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### Distribution of Anti - Hepatitis C Virus antibody in a tertiary care center Vjollca Durro<sup>1\*</sup>, Dokaj A<sup>1</sup>, Shijaku E<sup>1</sup> and Saliasi S<sup>2</sup>

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#### Summary

**Background:** Hepatitis C virus remains the leading cause of chronic liver disease and hepatocellular carcinoma. Little evidence exists in Albania according to HCV prevalence and its distribution in different groups.

**Objective:** Aim of this study was to determine the prevalence of hepatitis C virus (HCV) infection in patients diagnosed in the laboratory of a tertiary care center.

**Methods:** In the study were included a total of 1793 patients who were tested for anti - HCV antibodies with chemiluminescence (CLIA) method.

**Results:** 233 out of 1793 patients were positive for anti - HCV antibodies resulting in a prevalence of 12.44%. Prevalence of anti - HCV antibodies was higher in hemodialysis patients, 35.74%. More positive anti - HCV antibodies was present in males than in females' group.

**Conclusion:** The anti-HCV prevalence among patients is higher and highlight the importance of re-defining risk groups and monitoring of patients and health care worker as part of nosocomial infection programs.

**Keywords:** Hepatitis C virus, anti - HCV antibody, RNA viral load, prevalence

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#### Introduction

The hepatitis C virus is a hepatotropic virus with RNA, and has been known since 1989 as the cause of hepatitis neither A nor B. The Center for Infectious Disease Control and Prevention (CDC) recommends that a person be considered positive for HCV infection after

performing a RIBA or NAT confirmatory test after a positive screening test. But, despite these recommendation most laboratories no confirmatory tests are performed, for various reasons such as the complexity of the techniques, the length of time the output of the analysis result and the high cost. In laboratories where the confirmatory test is not performed, the S / CO ratio should be evaluated in the

prediction of true positive anti-HCV values [1-5].

Viral Hepatitis infection (B and C virus) continuing remain a global public health problem because HVB and HCV are major causes of the first, acute and chronic liver disease globally (e.g. cirrhosis and hepatocellular carcinoma) and second, the high prices of treatment of HBV & HCV infection increasing financial burden on global health systems in a different of ways [6]. High cost of HCV treatment remains a major barrier to have access in treatment program in many country. Only, 40% of population have access to treatment program, diagnosis and drug therapy. Worldwide, chronic hepatitis C virus in patients has a prevalence between 5% and 60% depending on the geographical region [6-10]. The prevalence of hepatitis C in Europe is seen to be lower compared to other countries in the world. In Europe, the prevalence of hepatitis C is under 2.5%, but this may change in different places [11,12].

High Risk group for HCV infection are transfusion patients with blood or its product as patients with hemoglobinopathies, hemophilic patients, hemodialysis patients, drug user, healthcare staff, babies born to hepatitis C infected mothers. The risk to infection various on 4.5%-30% in hemodialysis patients 53% to 83% in drug user. Differences in prevalence HCV between country and region is depended from transmission routes and differences in public health policies [13-17]. Hospitalized patients are not the ideal population for epidemiological studies, however they contribute in the epidemiological mapping of a serious public health problem like viral hepatitis infection in country. Hospitalized patients and especially high risk groups among them, represent a potential source for hepatitis infection of medical and non-medical staff as well as for their relatives at home. Aim of this study was to determine the prevalence of hepatitis C virus (HCV) infection in patients

diagnosed in the laboratory of a tertiary care center. The study is retrospective cohort type.

### Material and Method

#### Study population

The study population includes patients tested for anti-HCV antibodies in the Microbiology Laboratory at the University Hospital Center "Mother Teresa". Testing for anti-HCV in these patients was performed on the basis of clinical observations or as a preoperative evaluation patient who will undergo surgery.

The patients include in the study are categorized into groups as follow: Outpatient, hospitalized patient, risk group patients as: hemophilic patients, haemoglobinopathies dialysis and prison patients. Outpatients group include chronic patients (as chronic hematologic diseases, hepatitis, oncologic patients, renal diseases etc.) who are diagnosed in hospitals and treated and monitoring on outpatient basis. According to age group patients are categorized in two group adult and pediatric patients. Pediatric patients included patient from pediatric hospital unit, hemophilic patients and Haemoglobinopathies patients.

The data for the study were taken from the registers of the Laboratory of Microbiology a total of 1793 patients tested for Anti-HCV during the period January- December 2019. Patients belong to the pediatric and adult ages. Samples were tested for the presence of Anti-HCV antibodies with fully automatic immunoassay based on chemiluminescence (CLIA) method, using commercial kits/tests (from SNIBE, Maglumi TM 800) with 100% sensitivity and 95.5% specificity.

#### Sample Collection

Referring to the manufacturer's instructions the samples used for antibody testing were serums or plazma which were stored at +4 °C until the laboratory testing. We took samples of 3-5 mL

of peripheral venous blood using separating gel tubes or EDTA and centrifuged. Hemolyzed samples were not tested, but a new sample was required. If samples are not used immediately, they were stored at -20 ° C. Samples resulted positive with small value were repeated again with same kit and method

**Interpretation**

Result are based on S/CO ratio  
 S/CO < 0.9 negative,  
 S/CO 0.9-1.1 undeterminate/gray zone  
 S/CO > 1 positive

**Results**

A total of 1739 patients are included in the study. Out of the 1739 patients tested, 392 (21.86 %) were outpatients, 1369 (77.85%) were hospitalized patients and 32 (1.78%) were prison hospital patients. According to gender 64.7% of patients were male and 35.3% female. While according to gender 84.77% of patients were adults and 15.22% were pediatric patients (table no.1).

<b>Table 1: Characteristic of patients.</b>			
Variabla			Number of patients (%)
Gender	Male		1160 (64.7%)
	Female		633 (35.3%)
Age group	Pediatric patients		273(15.22%)
	Adult patients		1520(84.77%)
Category	Outpatients		392 (21.86 %)
	Prision hopsital patients		32 (1.78%)
	Hospitalized patients		1369 (77.85%)
Hospital unit		General/internal medicine	382(27.9)
		Gastrohepatoloy	112 (6.24%)
		Infection diseases	359(20.02%)
		Surgery service	67(4.89 %)
		Hemofilic patients	23 (1.28)
		Haemoglobinopathies	142 (7.91%)
		Dialysis	176 (9.81%)
		Pediatric	108 (6.02%)

The data of our study show that the anti-HCV prevalence in our patients in tertiary hospital was 12.44%. Anti- HCV prevalence according to gender was 13.10% in male and 11.22% in female. However, this difference in prevalence between males and females is not statistically significant (p value = 0.247 and X2 = 1.399). While according to age the anti\_HCV prevalence was 14.65% in pedriatic patients and 12.03% in adult patients (table No.2). This result is statistically insignificant (p-value = 0.228 and X2 = 1.4505). This can be related to the great diversity of the samples studied involving different risk factors. Pediatric patients included patient from pediatric hopital unit, Hemofilic patients and Haemoglobinopathies patients.

**Table 2:** The prevalence of anti-HCV in patients.

Variabla		Number of patients (%)	Anti HCV pozitiv No (%)
Gender	Male	1160	152(13.10%)
	Female	633	71(11.22%)
Age group	Pediatic patients	273	40 (14.65%)
	Adult patients	1520	183 (12.03%)
Category	Outpatients	392	52(13.30%)
	Prision hopsital patients	32	9(28.13%)
	Hospitalized patients	1369	162(9%)
Hospital unit	General/internal medicine	382	35(9.1%)
	Gastrohepatoloy	112	7(6.25%)
	Infection diseases	359	17(4.74%)
	Surgery service	67	0
	Hemofilic patients	23	10(43.48%)
	Haemoglobinopathies	142	23(16.20%)
	Dialysis	176	63(35.80%)
	Pediatic	108	7(6.48%)
Total tested		1793	223(12,44%)

## Discussion

Monitoring the distribution of viral hepatitis markers in hospitalized patients is important to prevention and maintain in control nosocomial infection as well as these data may be helpful for health authority on evaluation of existing intervention program and planning of a new effective prevention and control program [17-19]. Surveillance based on notification data is challenging, with data reflecting testing practices rather than true occurrence of disease, WHO [6]. The global prevalence of anti-HCV was estimated at 2.0% (1.7-2.3%) in adults and 1.6% (1.3-2.1%) for all ages. In the European continent the total prevalence is reported at 1.8%. In Central Europe where include Albania (Albania, Bulgaria, Bosnia and Herzegovina, Czech Republic, Croatia, Hungary, Macedonia, Montenegro, Poland, Romania, Serbia, Slovakia and Slovenia) a prevalence of HCV was reported 1.3% [19-21]. Despite the existence of guidelines for the infection control program, albania is one of the countries with intermidate HCV prevalence. In Albania the prevalence of HCV varies from 0.7-1.3%. So, anti HCV prevalence in healthy population as blood donors prevalence is 0.7-11%, in general

population anti-HCV prevalence was 1.3% [22,23].

Our study represents the prospective data analysis on HCV prevalence in patients admitted to tertiary hospital who are treated in hospital or as out patient's base. The main finding of our study was that the anti - HCV seroprevalence in patients was 12,43%. It is higher than the estimated prevalence in the general Albania population [23]. Comparing with other study the HCV prevalence in our patients is higher than prevalence in university hospital in Switzerland when prevalence was 2.7%, in Germany 3.7% [24,25].

Refer the data of WHO the prevalence of anti HCV in male is higher than female with a male-to-female ratio of 2.1:1. while according to age group the prevalence was higher in adult patient [26]. Our data in this study show that anti -HCV prevalence was higher in male, 13.1% than female while according to age group the anti-HCV prevalence was higher in paediatric patients, 14.65% than adult patients (TableNo.2). Anti HCV prevalence in patients according to gender is in line with the prevalence in general Albania population and data refered by WHO in other country [23,26].

In the study we have analysed anti- HCV prevalence according to patient category. The result show that the prevalence of anti-HCV was higher in prison hospital patients 28, 13% following by outpatient 13.3%. In our patients the prevalence was higher than hospitalized patients because of they are chronic patients who are diagnosed in hospitals and treated and monitoring on outpatient basis. The prevalence of anti HCV according to hospital units varies from 4.74% in infectious diseases to 43.48% in haemophilic patients, while in surgery units haven't anti-HCV positive patients. As a risk group we have defined those unit hospital where the probability of being infected with HCV is higher. In our study this group includes patients coming from the Dialysis unit, Thalassemia Centre, Haemophilia Centre, Prison. Our data in this study show that anti-HCV prevalence in dialysis patients was higher than results in previously study in hemodialysis patients, 23.3% [27] while in thalassemic the prevalence is lower than previously, 28% [28].

Another finding in this study is the higher prevalence in pediatric patients compering with other study. The prevalence of HCV infection is relatively low in children. Asymptomatic HCV is detectable in 2.02% of Egyptian children. However, seroprevalence rates of 10–20% have been reported among children who received repeated transfusion as thalassemia, hemophilia or other diseases [1,29-31]. Epidemiological data from different study show higher prevalence of anti- HCV in patients with high risk as haemodialysis, thalassemia, haemophilic patients and prison. Our finding in this study are the same with result in other country. So, in Egypt the anti-HCV prevalence in hemodialysis patients is 34.5%, in Iran the anti-HCV prevalence among thalassemia patients is 8%, in Pakistan the prevalence of HCV in  $\beta$ -thalassemia patients is 36.21%, in India the prevalence of HCV in  $\beta$ -thalassemia patients is 36.21%, while in prison in our study the prevalence was higher than in other country. The anti HCV prevalence was 7% in UK prison,

15.7% in Portugal prison, 16% in Spain. [32-36].

In conclusion, our data provide evidence of a high HCV seroprevalence among patients. In this condition highlight the importance of re-defining risk groups and monitoring of patients and health care worker as part of nosocomial infection programs.

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