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SEROLOGICAL AND MOLECULAR DIAGNOSIS OF HBV INFECTION AND ITS CLINICAL IMPLICATIONS AMONG PATIENTS OF ASSIUT GOVERNORATE, EGYPT

By

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ABSTRACT

Background: Hepatitis B virus (HBV) infection is an important health problem and the major cause of chronic hepatitis, cirrhosis and hepatocellular carcinoma (HCC) in Egypt, and especially in Upper Egypt.

Objectives: The aim of this study was to estimate the prevalence of hepatitis B virus among Assiut Governorate patients.

Patients and method: Our study focused on screened of all patients by ELISA tests for blood-borne viral infections. Seropositive patients were inquired about the exposure to possible risk associations for acquiring these infections. Biochemical, HBV markers by ELIZA, DNA-PCR, were done to classify patients to groups (Low viremia, High viremia, and occult).

Results: We examined 1085 patients for HBsAg at Assiut Governorate, Egypt. Out of the 1085 population tested for HBs-Ag, 623 (57.5%) were males, whereas 462 (42.5%) were females. A total of 165 out 1085 were seropositive for HBsAg (15.2%). The highest seropositive of HBsAg were recorded in 106 males (17.1%) compared to 59 females (12.8%). HBsAg seropositive decreased with grassing age, The highest seroprevalence of HBsAg recorded in age ranged between 21-30 years 62 (37.5%). All patients were divided into four groups according to HBV-DNA. Seroprevalence of HBsAg increased with group 2 (Low titer of HBV-DNA < 2000 IU/ml - 46.1%), where highest prevalence of HBsAg was recorded in males (37.6%) compared to females (8.5%). The lowest seroprevalence of HBsAg were recoded with group 3 (high titer of HBV-DNA > 2000 IU/ml -14.5%). HBV was common in rural versus urban community areas (78.2% versus 21.8 % respectively). We did not find abnormal levels of biochemical indicators of liver and kidney functions in HBV infected patients.

Conclusion: Screening of HBV infection to monitor liver disease progression in HBV carriers by using molecular, biochemical and serological markers, stated that effective treatment can be initiated early before the development of advanced liver diseases.

INTRODUCTION

Hepatitis B Virus (HBV) infection is a lifelong dynamic disease that changes over time. Risk of end-stage liver disease and cancer increases with ongoing inflammation and HBV viremia in adults *(Peters, 2019).*

HBV consists of a spherical lipid envelope that contains a nucleocapsid formed by the core protein (HBcAg) *(Dandri and Petersen, 2016). Jayasuriya et al. (2015)* confirmed that The HBV genome is a partially double stranded circular DNA molecule, 3200 base pairs long. Sequencing and phylogenetic studies of the genome indicate the existence of eight distinct genotypes (A-H) and numerous sub-types of HBV *(Guirgis et al., 2010).*

HBV is the causative agent of one of the world's major infectious diseases with about 350 million people being chronic carriers of the virus. In Egypt, nearly 2 -3 million Egyptians are chronic carriers of HBV *(Shalaby et al., 2010).* HBeAg-negative variant accounts for more than 80 % of CHB in Egypt *(El-Zayadi et al. 2009).* The immune-tolerant phase of chronic HBV is a challenging problem, with an increasing awareness of its occurrence, especially in endemic areas *(Mekky, 2014).*

HBV prevalence is decreasing in Egyptian young generations, which may attribute to universal HBV vaccination. The average prevalence of HBV in Egyptian adults is 8% while the average prevalence in children is 1.6% *(Elrashidy et al., 2014).* HBV reactivation does occur in persons who have anti-HBc with and without anti-HBs and no detectable HBsAg in serum *(Bisceglie et al., 2015).*

HBV positivity is associated with a history of multiple sex partners, male homosexual activity, and illicit drug use in western countries *(Ozer et al., 2011).* Correspondingly, in addition to the predominance of sexual transmission in adults, *Hahne et al. (2008)* reported that having parented born in a highly endemic country is a significant risk factor in the acquisition of HBV among children in the Netherlands. Although the frequency of other proposed risk factors, such as dental visits, barber visits, blood transfusions, and surgery, was higher in the patient group *(Ozer et al., 2011).*

Hepatitis B surface antigen (HBsAg) is the hallmark of HBV infection and is the first serological marker to appear in acute hepatitis B, and persistence of HBsAg for more than 6 months suggests chronic HBV infection. Hepatitis B e antigen (HBeAg) usually indicates active HBV replication and risk of transmission of infection *(Kao, 2008). Morikawa et al. (2016)* reported that Hepatitis B virus was initially identified as the novel “Australia antigen” in the serum of some healthy individuals in 1965.

Also characterized by the presence of HBV DNA in blood or tissues with undetectable HBsAg, with or without antibodies to hepatitis B core (anti-HBc) or hepatitis B surface (anti-HBs), outside the pre-seroconversion window period. Most Occult HBV infection (OBI) is asymptomatic and would only be detected by systematic screening of large populations *(Allain et al., 2009).*

The molecular basis of OBI usually attributed to the long-term persistence viral covalently-closed-circular DNA in the nuclei of the hepatocytes *(Levrero et*

al., 2009). Various findings concerning the clinical significance of quantitative changes in hepatitis B surface antigen (HBsAg) during the acute and chronic phase of HBV infection have been reported. In addition to being a biomarker of HBV-replication activity, it has been reported that HBsAg could contribute to the immunopathogenesis of HBV persistent infection *(Buti et al., 2012 and Kondo et al., 2013)*.

Our study aimed to determination the seroprevalence of HBV among Egyptian populations at Assiut Governorate and lights high the residual risk factors of transmitting HBV infection. On the other hand we determined different patient groups for approval success HBV marker diagnosis.

PATIENTS AND METHODS

Collection of blood samples: Blood samples 5 ml were collected from cubital veins and dispensed into clean plastic tube. The blood samples were centrifuged at 4000 rpm for 10 minutes, and the serum obtained was stored at −80°C for further testing.

Study area and data collection: This study has been conducted from January 2017 to May 2018. A total of 1085 venous blood samples were collected and has been carried out in Assiut Governorate, Egypt. The population was males and females over 20 years old. They were randomly selected. Consent forms were prepared and approval of all subjects included in the study was obtained before blood was taken. In addition to the blood samples, all individual were interviewed and a questionnaire was filled to obtain information on age, place of living, education and other health care history.

Serum Markers for HCV and HBV infection: All serum samples were tested for HBsAg, anti-HBs, HBeAg, anti-HBe and anti-HBc using the third generation enzyme-linked immunosorbent assay (ELISA) testing (Prechek Bio Inc., Taiwan).

All samples were tested for anti-hepatitis B virus by ELISA (Bioneovan Co., Ltd., Beijing, China). Results were read using EL x 800 universal micro-plate reader, (Biotek Instruments Inc.). All positive samples were retested using the same method (Double ELISA).

Biochemical analysis: Liver function tests (Alanine Amino Transferase (ALT), Aspartate Amino Transferase (AST), Alkaline phosphatase, Bilirubin, Total protein and Albumin) were studied using manufacturer's recommendation (QuimicaClinicaAplication, S.A Co., Ltd., Espana, Spain). Kidney function tests (urea and creatinine) were tested using manufacturer's recommendation (ChemaDiagnostica Co., Ltd., Monsano, Italy).

Molecular assay for HBV DNA detection:

Extraction of HBV DNA from serum samples: HBV DNA had been extracted by using (Favorgen kit) according to the manufacturer’s instructions. In 1.5 mL centrifuge tubes, 200µL plasma samples were mixed by pulse - vortexing for 15s with 200 µL lysis Buffer AL and appropriate amounts of internal controls. After incubation at 56oC for 10 min, plasma was briefly centrifuge to remove drops from the inside of the lid. 200 µL of

ethanol (96-100%) was added to the tube for precipitation. the samples were vortexed and centrifuged. Subsequently, the working solution was loaded into in two steps and was separated by centrifugation at 8000 rpm for 1min. Then placed in a clean 2 ml collection tube. 500 µL washing buffer (washing buffer I) added to the column carefully without wetting the rim. The column cap was closed and centrifuged at 6000 x g (8000 rpm) for 1 min, the spin column placed in a clean 2 ml collection tube, and collection tube containing the filtrate discarded (repeated once with washing buffer II). Centrifugation was at full speed for 1 min. The QIAamp Mini spin column was placed in a clean 1.5 ml micro centrifuge tube. 200 µL Elusion Buffer added to the spin column. All components were Incubated at room temperature (15-25 oC) for 1 min, and then centrifuged at 8000 rpm for 1 min.

Real-time polymerase chain reaction for quantification of HBV: HBV DNA quantification by real-time polymerase chain reaction (RT-PCR) was performed using automated system. PCR setup was automated via QIA agility (QIAGEN, Germany). HBV DNA real-time assays were performed in combination of Artus HBV RG PCR Kit (Artus™GmbH, Hamburg Germany) and the real-time PCR instrument, Rotor-Gene Q (QIAGEN, Germany). Thermal profile was set according to manufacturer's guideline. Detection limit of HBV DNA in the current study assay is 3.8 IU/mL assessed by the World Health Organization (WHO) international standard (97/750) *(Kleinman et al., 2003).* At least two negative controls, one non template control, and four standards (provided by the manufacturer) were added per run. Strict precautions were taken to avoid possible contamination. Only data that revealed no false positive results in the negative controls and that were reproducible were used.

Data analysis Statistical analysis of the obtained data was done by using statistical package for the social sciences for windows (SPSS, version 16.0) according to *Borenstein et al. (1997).* Data were presented as mean. Data were compared with control using one way ANOVA. Statistically significant differences were determined at $P \leq 0.05$ (Significant). Means compared with Duncan. Anova.

RESULTS

Seroprevalence of HBsAg related to gender (Table 1): Total of 1085 serum samples was randomly collected from population at Assiut Governorate, Egypt. Out of the 1085 population tested for HBs-Ag, 623 (57.5%) were males whereas 462 (42.5%) are females. A total of 165 out 1085 were seropositive for HBs-Ag (15.2%). The highest seropositive of HBsAg were recorded in male 106 (17.1%) compared as female 59 (12.8%). The difference between gender types were found to be low-statistically significant ($P = 0.054$).

Table (1): Seroprevalence of HBsAg related to gender

Gender HBsAg	Total participant	HBsAg		Significant
		Positive	Negative	P value
Male	623 (57.5%)	106 (17.1%)	517 (82.9%)	0.054
Female	462 (42.5%)	59 (12.8%)	403 (87.2%)	
Total	1085	165 (15.2%)	920 (84.8%)	

Seroprevalence of HBsAg in different age groups (Table 2): HBsAg seropositive were decreased with age increased, the highest seroprevalence of HBsAg were recorded in age range between 21-30 years as 62 (37.5%), followed by age groups 31-40, 41-50 and 51-60 years (32.2 %, 25%, 17% respectively), while population with age group higher than 60 years were recorded the lowest seroprevalance of HBsAg 8 (8%) The difference between age groups were found to be non-statistically significant (P = 0.69).

Table (2): Seroprevalence of HBsAg in different age groups

Age range HBsAg	Total patients	HBsAg		Significant
		Male	Female	P value
21-30 years	62 (37.5%)	41 (24.9%)	21 (12.8%)	0.698 NS
31-40 years	53 (32.2%)	35 (21.3%)	18 (10.9%)	
41-50 years	25 (15.2%)	13 (7.9%)	12 (7.3%)	
51-60 years	17 (10.3%)	11 (6.7%)	6 (3.7%)	
> 60 years	8 (4.8%)	6 (3.7%)	2 (1.3%)	
Total	165 (100%)	106 (64.3%)	59 (35.7%)	
NS.: non-statistically significant				

Relationship between Gender and DNA-viremia among different patients groups (Table 3): In our study all patients were divided into 4 groups according to DNA viremia. Seroprevalance of HBsAg was increased in group 2 (Low titer of HBV-DNA < 2000 IU/ml) (46.1%), Where highest prevalence of HBsAg was recorded in male (37.6%) compared as female (8.5%). The lowest seroprevalance of HBsAg were recoded with group 3 (high titer of HBV-DNA > 2000 IU/ml) (14.5%). While, patients in group 1&4 (negative without treatment and negative post treatment respectively were recorded 32% and 33% respectively). The difference was found to be statistically significant (P = 0.02).

Table (3): Relationship between gender and DNA-viremia among different patients groups

Parameters / **Groups**	**HBV-DNA-PCR viremic level**	**Total number**	**Sex**		**Significant**
			Male	Female	P value
1	Negative (without treatment)	32 (19.4%)	26 (15.8%)	6 (3.7%)	0.896
2	Low level < 2000 IU/ml	76 (46.1%)	62 (37.6%)	14 (8.5%)	
3	High level > 2000 IU/ml	24 (14.5%)	21 (12.8%)	3 (1.9%)	
4	Negative (on treatment)	33 (20.0%)	28 (16.9%)	5 (3.0%)	
Total		165	137 (83.0%)	28 (17.0%)	

Risk factors associated with different DNA-marker groups (Table 4): Many healthcare exposures are associated with HBV, including residence, HCV infection, surgical history, dental treatment, blood donation, blood transfusion and Hemodialysis. The strongest of these associations is for community residing in rural versus urban areas 78.2% versus 21.8 % respectively with statistically significant (P = 0.04). There is no relation between HCV infection, history, dental treatment, blood donation, blood transfusion, Hemodialysis and HBs-Ag infection with statistically significant (P = 0.01).

Table (4): Risk factors associated with different DNA-marker groups

Parameters \ Patients		Total	Group 1	Group 2	Group 3	Group 4	Significant
		165	32 (19.4%)	76 (46.0%)	24 (14.6%)	33 (20.0%)	***P* value**
Residence	Urban	36 (21.8%)	8 (4.9%)	17 (10.4%)	5 (3.0%)	6 (3.7%)	0.948
	Rural	129 (78.2%)	24 (14.6%)	59 (35.8%)	19 (11.6%)	27 (16.4%)	
HCV-Ab		24 (14.5%)	9 (5.5%)	11 (6.7%)	4 (2.4%)	0.0	≥0.05
Surgery		55 (33.4%)	14 (8.5%)	21 (12.8%)	8 (4.9%)	12 (7.3%)	
Dental Treatment		79 (47.9%)	17 (10.4%)	35 (21.3%)	14 (8.5%)	13 (7.3%)	
Blood Donation		18 (10.9%)	2 (1.3%)	10 (6.0%)	2 (1.3%)	4 (2.5%)	
Blood Transfusion		10 (6.0%)	1 (0.6%)	4 (2.5%)	3 (1.9%)	2 (1.3%)	
Hemodialysis		2 (1.3%)	0.0	2 (1.3%)	0.0	0.0	

Seroprevalance of other HBV markers associated with different patients groups (Table 5): In first group, 21 patients out 32 were seropositive for (HBsAg, HBeAb and HBcAb), while negative for (HBsAb and HBeAg), 4 patients were seropositive for only HBcAb and negative for other HBV markers. Two patients with seropositive for (HBeAb and HBcAb) and negative for others. Five patients were seropositive for only HBeAg. In group 2, 3 and 4, all patients (76, 24 and 33 respectively) were seropositive for (HBsAg, HBeAb and HBcAb) and negative of (HBsAb and HBeAg).

Table (5): Seroprevalance of different HBV markers associated with different Patient groups

Groups	Patients	HBsAg	HBsAb	HBeAg	HBeAb	HBcAb
Group 1	21 of 32	+Ve	-Ve	-Ve	+Ve	+Ve
	4 of 32	-Ve	-Ve	-Ve	-Ve	+Ve
	2 of 32	-Ve	-Ve	-Ve	+Ve	+Ve
	5 of 32	-Ve	-Ve	+Ve	-Ve	-Ve
Group 2	76	+Ve	-Ve	-Ve	+Ve	+Ve
Group 3	24	+Ve	-Ve	-Ve	+Ve	+Ve
Group 4	33	+Ve	-Ve	-Ve	+Ve	+Ve
+Ve = Positive -Ve = Negative						

Liver and kidney function analysis related to different patients groups with and without treatment (Table 6): Routine biochemical tests of liver and kidney function analysis among the studied patient groups showed that, there are statistical significant differences between all of the studied groups as regard the mean value of ALT, AST, alkaline phosphatase, albumin, except total protein and bilirubin have no-statistical significant differences. The mean values of kidney functions Urea and Creatinin were higher in Group 3 when compared with other groups.

Table (6): Biochemical analysis related to Patients with Negative HBV-DNA-PCR with and without treatment

Biochemical Tests \ Groups		Group 1	Group 2	Group 3	Group 4	Significant *P* value
Liver Function Tests	ALT (0-40mg/dl)	29.5D	42.3C	55.5A	47.2B	0.032*
	AST (0 -40mg/dl)	31D	38C	48.6B	50.9A	0.02*
	ALP (95 -280mg/dl)	219.7B	225B	249A	253.4A	0.00*
	Albumin (3.5-5.0mg/dl)	4.4B	4.5B	5.0A	4.5B	0.05*
	T.protien (6.6-8.3mg/dl)	6.7B	7.0A	7.2A	7.1A	0.06 NS
	Bilirubin total (0-1.0mg/dl)	0.90B	0.92B	1.0A	0.97A	0.05*
	Bilirubin direct(0.25mg/dl)	0.30B	0.30B	0.35A	0.33A	0.06NS
Kidney Function Tests	Urea (15-45 mg/dl)	32.5B	34.6B	36.1A	38.2A	0.04*
	Creatinin (0.7-1.5 mg/dl)	0.97B	1.0A	1.2A	1.2A	0.054*

Means followed by the same capital letter (in parentheses), within the same row do not significantly different at 0.05 level of probability.

Stages of liver fibrosis related to different Patient groups with and without treatment (Table 7): Fibrosis score were assessed in patients with detectable viral load by liver stiffness score measurements by Fibroscan® (EchoSens, Paris, France) in kilopascals (kPa) according to the manufacturer's instructions (score less than 7.4 kPa equal to F0-F2, 9.5 -12.4 kPa equal to F3, and 14.5 kPa or greater equal to F4 on METAVIR pathologic scoring system).

Liver scan shows that there is no relation between fibrosis stages and infection with HBV. On the other hand, there is relative increase in fibrosis stage in group 2 (Patients with negative HBV-DNA-PCR after treatment) higher than group 1 (Patients with negative HBV-DNA-PCR without treatment).

Table (7): Fibrosis stages related to Patients with Negative HBV-DNA-PCR with and without treatment

Groups / Fibrosis Stage	Group 1	Group 2	Group 3	Group 4	Significant
	32	76	24	33	F-test *P* value
F0	78.1A	40B	40B	34.3C	0.00*
F1	18.7C	37.5B	40A	39.4A	0.00*
F2	3.2C	14.5A	10B	Non	0.02*
F2-F3	Non	5B	7B	15.2A	0.04*
F3	Non	3	2	Non	-
F3-F4	Non	Non	1	3.0	-
F4	Non	Non	Non	3.0	-

F0= No fibrosis, F1= Portal fibrosis without septa, F2= Portal fibrosis with few septa, F3= Septal fibrosis without cirrhosis, F4= Cirrhosis.
*: Statistically significant
Means followed by the same capital letter (in parentheses), within the same row do not significantly different at 0.05 level of probability.

DISCUSSION

Hepatitis B virus (HBV) infection is a serious public health problem worldwide and is a major cause of chronic hepatitis, cirrhosis, and hepatocellular carcinoma (HCC).1 At least 2 billion people are infected with HBV and among them 350 - 400 million are chronic HBV carriers. An estimated 1 million people die each year from acute and chronic sequelae secondary to HBV infection. 2 Approximately 4.5 million new cases of HBV infection occur worldwide each year, and 25% of these cases progress to liver disease *(Luo et al., 2012).*

Elbedewy et al. (2016) reported that Anti-HBc is the first antibody produced after HBV infection, and it is the only detectable marker in the window period. Isolated anti-HBc refers to the presence of anti-HBc in serum without HBsAg or HBsAb. Isolated anti-HBc may be due to resolved HBV infection in which HBsAb had declined to an undetectable level, testing during the window period or chronic infection when HBsAg cannot be detected due to protein mutation makes it undetectable using certain diagnostic assays.

Over the past decades, the risk of HBV transfusion-transmission has been steadily reduced through the development of increasingly more sensitive hepatitis B antigen (HBsAg) assays *(Candotti and Laperche, 2018).*

Previous studies cannot judge HBV infection based only on the presence or absence of HBsAg and HBsAb. It is possible that, donors with occult HBV infection, who lack detectable HBsAg, might have HBV infection that is only indicated by anti-HBc and HBV-DNA *(Elbedewy et al., 2016).* Donation by such individuals is a potential source of HBV transmission to the recipients *(Kleinman et al., 2003).* Our study has found total population prevalence estimates for HBV in different location at Assiut governorate (Upper Egypt), and has demonstrated marked variations by age group, gender, geographical location and other risk factors. A total of 1085 serum samples were randomly collected from population at Assiut governorate, Egypt. Out of the

1085 population tested for HBs-Ag, 623 (57.5%) are males whereas 462 (42.5%) are females. A total of 165 out 1085 were seropositive for HBs-Ag (15.2%). Higher findings were reported in Pakistan 24.7% HBV *(Ali et al., 2015)* and Egypt 19.6% *(Kafi-abad et al., 2009)*. The highest seropositive of HBsAg were recorded in male 106 (17.1%) compared as female 59 (12.8%). Similar results were reported in studies concerning HBV infection: in Ethiopia 4.9% in males and 3.3% in females *(Tessema et al., 2010)*, Pakistan 72% in males and 28% in female *(Ahmad et al., 2006)*.

Infection risk is found to increase with age decreased for HBV, the highest seroprevalence of HBsAg were recorded in age range between 21-30 years 62 (37.5%), while age higher than 60 years were recorded the lowest seroprevalance of HBsAg 8 (8%). This result was disagreement with *Ismail et al. (2011)*, who reported that, prevalence rates ranged by age group from 0.6% overall among those aged 15-24 to 1.9% among those aged 45-54.

Occult hepatitis B infection (OBI) is one of the most challenging topics in the field of viral hepatitis *(Liu et al., 2010)*. OBI is defined by the presence of HBV DNA in the liver (with detectable or undetectable HBV DNA in the serum) in patients with serological markers of previous infection (anti-HBc and/or anti-HBs positive) or in patients without serological markers (anti-HBc and/or anti-HBs negative) *(Gutiérrez-García et al., 2011)*. In our study all patients were divided into 4 groups according to DNA viremia . Seroprevalance of HBsAg was increased with group 2 (Low titer of HBV-DNA < 2000 IU) (46.1%), Where highest prevalence of HBsAg was recorded in male (37.6%) compared as female (8.5%). The lowest seroprevalance of HBsAg were recoded with group 3 (high titer of HBV-DNA >2000 IU) (14.5%). While, patient group 1&4 (negative without treatment and negative post treatment respectively were recorded 32% and 33% respectively).

Many healthcare exposures are associated with HBV, including residence, Residence, HCV infection, surgical history, dental treatment, blood donation, blood transfusion and Hemodialysis. The strongest of these associations is for community residing in rural versus urban areas 78.2% versus 21.8 % respectively. *Ismail et al. (2011)* reported that, HBV infection was more common in urban areas and in Upper Egypt, compared with a broadly rural and Lower Egyptian pattern. In our study, history of previous blood transfusion was not observed in a significant number of cases. Our study comes in agreement with *Narayanasamy et al. (2015)*.

However, other studies reported that blood transfusion was an important risk factor for acquiring HBV infection *(Shamsuddin and Marmuji, 2010)*. Medical and dental instrument and unsafe injection practice continues to be a problem and may account for a majority of HBV infections *(Ndako et al., 2011)*. In our study, previous history of dental extraction was not a significant risk. Similar observations were reported by other studies *(Mahboobi et al., 2013)*.

In our study we did not find abnormal levels of biochemical indicators of liver and kidney functions in HBV infected

patients, in accordance to the overall trend in the literature *(Morsica et al., 2009).*

CONCLUSION

Serology should be widely used in the diagnosis of HBV infection. However, significant advances have been made in the diagnosis and treatment of chronic HBV infection, and the HBV DNA amplification assays serve as valuable tools to monitor all these modalities. From this study we conclude that serological and PCR-based tests with liver scan can serve as an important supplementary tool in a number of clinical settings, especially in detecting low levels of viraemia in non-replicative HBV disease and also in patients with past HBV infection.

DISCLOSURE

The authors report no conflicts of interest in this work.

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التشخيص المصلي والجزيئي لعدوى فيروس إلتهاب الكبد الوبائي بي وأثاره بين مرضى محافظة أسيوط، مصر

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خلفيــة البحــث: تشــكل عــدوى فيــروس التهــاب الكبــد الوبــائي بــي (HBV) مشــكلة صــحية عالميــة ومســببًا رئيســا للإلتهــاب الكبــدي المــزمن الــذي يعــد أحــد أهــم مســببات تليف وسرطان الكبد في مصر، وبشكل خاص في جنوب مصر.

الهــدف مــن البحــث: تهــدف هــذه الدراســة إلــى تقــدير مــدى إنتشــار فيــروس إلتهــاب الكبــد الوبائي من النوع بي بين مرضى محافظة أسيوط بصعيد مصر.

المرضــي وطــرق البحــث: تمــت هــذه الدراســة علــي 1085 شــخص تــم اختيــارهم بشــكل عشــوائي مــن ســكان محافظــة أســيوط بجنــوب مصــر، وقــد قمنــا فــي هــذه الدراســة بعمــل مســح لفيــروس إلتهــاب الكبــد الوبــائي بــي فــي الــدم عــن طريــق إجــراء إختبــار الإليــزا، كمــا تــم دراســة مخاطرإنتشــار العــدوي الفيروســية .تــم إجــراء الاختبــارات البيوكيميائيــة والحمــل الفيروســي وتقســيمها إلــى مجموعــات بواســطة إختبــارات الإليــزا وتفاعــل البلمرة المتسلسل.

نتــائج البحــث: تــم إجــراء هــذه الدراســة فــي الفتــرة مــن ينــاير 2017 إلــى مــايو 2018، ومــن أهــم مــا أســفرت عنــه الدراســة أن مــن بــين المرضــى البــالغ عــددهم 1085 مــريض حيث كان عدد الذكور623 (57,5%) والإناث 462 (42,5%).

وقــد تــم تشــخيص 165 مــن أصــل 1085% بواقــع (15.2%) مصــاب بمــرض إلتهــاب الكبــد الوبــائي بــي، وســجلت أعلــى إصــابة فــي الــذكور 106 (17.1 ٪) مقارنــة مــع الإنــاث 59 (12.8 ٪). كمــا إنخفضــت نســبة الإصــابة مــع زيــادة العمــر ، وســجلت أعلــى نســبة إصــابة فــي الفئــة العمريــة بــين 21-30 ســنة 37.5 ٪). ولــوحظ أن فيــروس

التهاب الكبد الوبائي بي شائع بصورة ملحوظة في المناطق الريفية بنسبة 78.2٪ مقارنةً بالمناطق الحضرية والتي كانت بنسبة 21.8٪.

وقد تم تقسيم جميع المرضى إلى أربع مجموعات وفقا HBV-DNA. حيث سجلت زيادة الانتشار المصلي من HBsAg مع المجموعة 2 (معدل منخفض 2000> HBV-DNA وحدة دولية / مل 46.1٪)، وتم تسجيل أعلى معدل لانتشار HBsAg لهذه المجموعة في الذكور (37.6٪) مقارنة بالإناث (8.5٪). كما كان أقل إنتشار مصلي من HBsAg مع المجموعة 3 (معدل عال من 2000 <HBV-DNA وحدة دولية / مل) (14.5 ٪).

وفي هذه الدراسة لم نجد مستويات غير طبيعية من المؤشرات الكيميائية الحيوية لوظائف الكبد والكلى في المرضى المصابين بفيروس HBV. كما قمنا بقياس كفاءة الكبد والكلى في الأشخاص المصابين بفيروس إلتهاب الكبد الوبائي بي من خلال قياس المؤشرات الكيميائية الحيوية لوظائف الكبد والكلى وربط هذه المؤشرات بالإصابة الفيروسية.

الإستنتاج: من المهم بشكل خاص للأطباء فحص عدوى HBV لمراقبة تطور مرض التهاب الكبد الوبائي من النوع بي في حاملات HBV باستخدام العلامات الجزيئية والكيميائية الحيوية والمصلية، بحيث يمكن البدء في العلاج الفعال في وقت مبكر قبل تطور مرض التهاب الكبد الوبائي من النوع بي.