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Revealing of Hepatitis, A and E virus among Restaurant and Bakeries workers

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ABSTRACT
Hepatitis , (HAV and HEV) interracially transmitted causes inflammation of liver that can causes mild to severe illness ,the two viruses transmitted through ingestion of contamination food and drinking of contamination of water , also infection happen via direct contact with the person infected with virus .The viruses spread through stool (feces / urine) that contaminated with viruses . However , the food handlers (Restaurant and Bakeries workers) infection with hepatitis A and E were frequently identified and need immunoprophylais , also need implementation for control are aconsiderableburdenon the public health resources and the viruses (A,E) are source of hepatitis for unknown proportion for the person who source infection . this study aim to reveal of the present of viruses and synergistic concordant of the infection with both viruses (A,E) apparently the healyhy group (control group) blood were collection from 50 persons infection with (HAV and HEV) as patients group and 50 samples from 50 personse as control group (healthy donor , (10 sample were destroy . All samples were tested by ELISA test from detection of hepatitis type (A and E) the co-infection of two virus revealed in hepatitis virus patients and and control group with exposure rate 30 (60.0%) and 5 (10.0%) respectively .
Methods: This study dependent on samples that taken from (50) persons that divided for detection of two viruses (A and E) the first tube for revealing of HAV and the second tube for revealing of HEV for the present of IgM anibody for each tubes and compared with the (50) samples that taken from relative who come to hospital used as control group (healthy blood donors group).
Conclusions: We abstained result from serological reveal from serum of persons those for present of HAV and HEV

Keywords: Serum , (HAV and HEV , blood donor persons) serological detection .

INTRODUCTION

Hepatitis A (HAV) is a picornavirus classified, RNA virus, that is the only HAV 1 serotype (1). The infection accrue after ingestion of food, that reach to digestive tract and then replications ,reach to the liver (2) . Hepatitis A virus (HAV) is excreated in bile and the highly concentration are found in stool specimens. The incubation period is 28 days' range (15-50) days after exposure to onset of symptoms, peck the infection occurs during two week that period the precedes the onset of jaundice , the decline occurs during the week after the onset , also occurs in patients with or without jaundice (3)The virus begins with symptoms that include myalgia ,vomiting , anorexia ,nausea, malaise, fever, jaundice ,dark colored of urine and in some cases the color of stools lightly color (4)
Hepatitis E (HEV) is a calicivirus like other RNA virus causes inflammation of the liver , (HEV) has al least four different types for genotypes which include 1 ,2 ,3 , and 4 , only one and two genotype found in humans (5) . Hepatitis E virus inter the digestive system via contamination of water that drinking(6).The infections with virus usually and transmitted to other persons by contamination of hands with the infected persons (7,8).
Symptoms of person infected with HEV include mild fever , vomiting , nausea , reduced of appetite , pain in abdominal, itching of skin an rash also pain of joint , jaundice , dark urine , pale the stools , yellowish the skin and hepatomegaly .This symptoms appearances typically at last one to six weeks (9,10).

the two viruses transmitted through ingestion of contamination food and drinking of contamination of water and the co- infection lead to serious complication in children and adults (11)

MATERIALS AND METHODS

In this study (100) blood samples gathered (50 patients with hepatitis A or/ and E) also (50 cases blood donors)as control group , from AL – Imamein AL-Kadhimein Medical city started gathered in march to may in 2023 .

Samples preparation

The blood samples collection from patients of hepatitis and from healthy group via venipuncture(5 ML) from blood samples then after collection drawn in the sterile tubes to allowed to clot in (25C) in one hour then centerfuged at (3000RPM) FOR (10 min) and stored - 44C that use the serum for revealing of hepatitis .

RESULTS

In this study the case and control group included (50 cases with hepatitis A or/and E infection) and their mean of the age was ranged 31.53±12.30 S.D. years and the control group 50 blood donor persons the mean age was ranged 32.18+- 15.6 S. D . Thirteen (30%) out off 50 patients whom infection with hepatitis A, and **18 (36.0%)** out off 45 patients infection with hepatitis E , regarding twenty sex distribution male and regarding sex distribution male were 26 25(80.6%) and female 9 (19.4%) from female in patients infected with hepatitis while in healthy group male represent 47(94) and 3 (6%) females only .

Hepatitis A virus (HAV) detection in **30** from **50 (60.0%)** from cases by ELISA test , and detection **5** from **50 (10.0%)**from blood donors (HAV positive) chi – square test show that statistic significant associated between the (HAV) and category of studied population X2=5.745, P <0 .005) . Table (1) assessing odds that calculate to estimates the relative risk for the test from any significant that associated between the presences absence versus of hepatitis A patients is OR= 3.896 times that like to be (HAV) antigen that positive as healthy group donors CI = 1.15-8.807.

Table 1: Occurrence of hepatitis A virus (HAV) from patients and control group .

HAV	**Category**		**Total (%)**	**Statistic**
	Patients (n=50)	**lortnoC (50=n**		
Positive	30 (60.0%)	5 (40.0%)	35 (35 %)	X2=5.745 P=0.14
Negative	20 (40.0%)	45 (90.0%)	65 (65%)	
Total	50 (100.0%)	50 (100.0%)	100 (100%)	
OR,3.896;95% CI , 1.15-8.807) (				

Hepatitis E infection in group of paients were higher than in healthy donors group. (HEV) was detected in **18 (36.0%)** of 45 hepatitis group , in control group detection of hepatitis E virus was **7 (14.0%)** from 50 .

chi – square test shows that statistic significant associated between the (HEV) and category of studied population **X2=24.11**

P <0 .005) Table (1) assessing odds ratio that calculate to estimates relative risk test of significant between the presences versus absence of hepatitis E from patients OR = 4.235 times that like to be (HEV) antigen that positive as healthy group donors **CI , 3547-24.383)**

Table 2: Occurrence of the group of hepatitis E (HEV) patients and control group .

HEV	**Categegory**		**total(%)**	**Statistic**
	Patients(n=50	**Control (n=50)**		
Positive	18 (36.0%)	7 (14.0%)	25 (25 %)	X2=24.11 P=0.00
Negative	32 (64.0%)	43 (86.0%)	75 (75%)	
Total	50 (100.0%)	50 (100.0%)	100 (100%)	
OR,4.235;95% CI , 3547-24.383) (				

Chi- square showed that there was not significant associated between preparations (HAV and HEV) of this study seen in (Table 3) .

Of the co- infection from (HAV and HEV) were revealed in **2 (6 .36%)** among 50 control donors and in **13 (26.0%)** among the 50 viral infection patients P<0.005 .The patients are(**OR6.314** and the control groups as likely to co-infections the HAV and HEV as control group(**CI ,1. 354-24.083)** show in the Table (3) .

Table 3: occurrence of HAV and HEV co-infection from patients and control group .

HAV / HEV Co-infection	**Categegory**		**Total "%**	**Statistic**
	Patients (n=50)	control(n=50)		
Presence	13 (26.0%)	2 (6.36%)	15 (16.13%)	X2=8.18 P=0.006
Absence	37 (74.0%)	48 (93.64%)	85 (83.87%)	
Total	50 (100.0%)	50 (100.0%)	100 (100.0%)	
OR,6.314;95% CI ,1. 354-24.083)				

Characterization of risk factors , history for blood transfusions, sex and medical procedure elevated in this study appeared there was no statistic significant between HAV positive alone and HAV / HEV double infection populations and risk factor Table (4)

Table 4: comparison between HAV / HEV as double infection and hepatitis A alone .

Risk factors	Total	HAV only		HAV / HEV co infection	Statistic
Risk factors		Total	HAV only	HAV/HEV co infection	Statistic
Age			31.53±12.30	34.12±9.60	T=0.77 P=0.344
sex	Male	25(80.6%)	(72.22%)13	12(75.00%)	X2= 0.011 P=0.762
	Female	9 (19.4%)	5 (27.78%)	4(25.00%)	
	Total	34(100.0%)	18 (100.0%)	16(100.0%)	
History of symptoms appearance	Presence	13(38.23%)	7(36.84%)	6(40.00%)	X2= 0.211 P=0.528
	Absence	21(61.77%)	12(63.16%)	9(60.00%)	
	Total	34(100.0%)	19(100.0%)	15(100.0%)	
History of working in (bakeries	Presence	25(73.53%)	13(76.48%)	12(70.59%)	X2=0.389 P=0.622
	Absence	9(26.47%)	4(23.52%)	5(39.41%)	
	Total	34(100.0%)	17(100.0%)	17(100.0%)	
History of working in restaurants	Presence	27(79.41%)	14(77.78%)	13(81.25%)	X2= 0.412 P=0.610
	Absence	7(20.59%)	4(22.22%)	3(18.75%)	
	Total	34(100.0%)	(100.0%)18	16(100.0%)	

DISCUSSION

The rate of co – infection from HAV and HEV that analyzed **15 (16.13%)** HAV **35 (35 %)**and HEV**25 (25 %)** respectively . this resut had reactive is agreement with the research by the Al-Naimy et al.s who reported 43% (12).

I believe that the main reason for the spread of infection among restaurant workers and bakery workers is failure to wash hands well after leaving the bathroom and when dealing with tools and preparing food, which led to the spread of the virus among them) some risk factors such as , sex history of liver illness , History of symptoms appearance, age history of the blood transfusions History of working in bakeries , History of working in restaurants according to the table (4), hepatitis (A and E)rates that higher in patients group than from control group which may be as a basic for hepatitis (HAV and HEV) transmission , the (HAV and HEV) virus also were do not detected in control group (they do not have a history for working as a bakeries or restaurants suggest the infection transmission others ways , also the coinfection with two virus present because of rout of entry are similar . On the present study

Also Joon et al. found 29.9% in patients of India infection with (HAV) and(HEV) .The rate of the co-infection in the studied was 11.5% (13). In Bangladesh found (19%) for(HAV),(10 %) for (HEV) in the cases that were detected with age range from (12-25) years ,Hepatitis A found more in female than male (14). Barde et al , described an hepatitis A rate (5.1 %) and hepatitis E rate (13.1%) in acute hepatitis cases (15).In Japanese Takahashi et al , they found infection positive (HAV) (100 %) and (HEV) infection (11%)

(16) .Chandigarh, Kankaria et al. reported (85.1%) for hepatitis E and (12 .8 %) for hepatitis A and (2.1 %) combined infections from both hepatitis A and E (17) . Also observed by Samadar et al. who found high of hepatitis E (9.63%) that compared with hepatitis A (9.96%) (18).Rodriguez lay et al . found IgM for hepatitis E (21.2%) and (36.4) for hepatitis E , and (42.4%) found IgM to both infection from the viruses (19).

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