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OCCURRENCE OF HCV AMONG THE POPULATION OF GHEDWA VILLAGE, LIBYA

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Abstract:-

Hepatitis C virus (HCV) is a globally prevalent pathogen and a leading cause of death and morbidity. HCV exhibits high genetic diversity, characterized by regional variations in genotype prevalence. Hepatitis C virus was found to be endemic in certain countries, and different studies have confirmed such endemicity. There is an alarming news is that HCV transmission is more by household contacts of people. Aim of the present study is that to determine the occurrence of HCV in Ghedwa village and find out the possible risk factors behind the prevalence of HCV in this region.

Study and data collection are from the Sabah city central hospital, Libya during 2014 and 2015. 300 cases have divided in to 4 groups on the basis of age (165 samples of age group less than 30 years old included 74 males and 91 females, 77 samples of age group 31-50 years old included 44 males and 33 females, 44 samples of age group 51-70 years old included 24 males and 20 females and 14 samples of age group 71-90 y ears old included 8 males and 6 females). 5 ml of blood samples collected and centrifuged to collect the serum. HCV infection, HCV IgM and IgG antibodies were analyzed using a third-generation ELISA kit (DIALAB, GmbH, Austria). [(2)] Ministry of health, Ghedwa , Libya. In Ghedwa village, the study shows that male cases with HCV positive were more than the female cases. Education and profession also play a major role in the HCV infections. This preliminary report regarding the number of HCV cases and seropositive study of IgG and IgM both reflect more cases in male middle age group. The presence of hepatitis C across Libya is not homogeneous and show high rate in some areas. This indication of the effect of the higher rates in some area is due to the effect of alarming levels in neighboring countries.

Keywords:-*Hepatitis C virus, Ghedwa village, IgG and IgM sero-positivity*

INTRODUCTION

Hepatitis C virus has been considered to be one of the most potential pathogens that have hindered the medical community all over the world. Indeed, since its discovery in 1989, hepatitis C virus (HCV) has been recognized as a major cause of chronic liver disease worldwide and due to the surpassing hepatitis B virus[1]. WHO reported that the prevalence of HCV infection is 2.2%, and more than one million new cases were reported annually. Furthermore, an estimated 27% of cirrhosis and 25% of hepato-cellular carcinomas (HCC) worldwide occur in HCV-infected people[2]. Hepatitis C virus was found to be endemic in certain countries, and different studies have confirmed such endemicity[3]. Prevalence of HCV in Arabian Peninsula ranges from to 0.8% to 2.1%[4]. In Libya, HCV has been intensively studied by Daw and his collaborators over the last ten years; the prevalence of HCV among Libyans was 1.2% though among hemodialysis was 20.2%[5]. There is an alarming news is that HCV transmission is more by household contacts of people. A prevalence of 2.2 percent was detected among 181 household contacts with chronic HCV liver disease in Korea[6]. Aim of the present study is that to determine the occurrence of HCV in Ghedwa village and find out the possible risk factors behind the prevalence of HCV in this region.

MATERIALS AND METHODS

Study and data collection are from the Sabah city central hospital, Libya during 2014 and 2015. 300 cases have divided in to 4 groups on the basis of age.

1. One hundred sixty five samples of age group less than 30 years old included 74males and 91females.
2. Seventy seven samples of age group 31-50 years old included 44 males and 33 females.
3. Forty-four samples of age group 51-70 years old included 24 males and 20 females.
4. Fourteen samples of age group 71-90 y ears old included 8 males and 6 females' Preliminary data like sociodemographic information, age, gender, blood transfusion, tattoo and surgery were collected through Questionnaire.

5 ml of blood samples collected and centrifuged to collect the serum. HCV infection, HCV IgM and IgG antibodies were analyzed using a third-generation ELISA kit (DIALAB, GmbH, Austria).

RESULTS AND DISCUSSION

Table 1: Details about the cases.

S. No.	Parameters	Male		Female		Total	
		Nos.	%	Nos.	%	Nos.	%
1	Age (Years)	No	%*	No	%*	No	%*
	11-30	64	21.3	61	20.3	125	41.7
	31-50	84	28	33	11	117	39
	51-70	24	8	20	6.7	44	14.7
	71-90	8	2.7	6	2	14	4.6
	Total	180	60	120	40	300	100
2.	Education Level						
	Illiterate	21	7	27	9	48	16
	Elementary school	72	24	65	21.7	137	45.7
	High school	38	12.7	40	13.3	78	26
	Graduated	26	8.6	11	3.7	37	12.3
	Total	157	52.3	143	47.7	300	100
3.	Occupation						
	Unemployed	25	8.3	9	3	34	11.3
	Student	77	25.7	66	22	143	47.7
	Administration job	59	19.7	5	1.6	64	21.3
	Housewife	0	0	59	19.7	59	19.7
	Total	161	53.7	139	46.3	300	100
4.	Marrital Status						
	Married	67	22.3	63	21	130	43.3
	Single	83	27.7	87	29	170	56.7
	Total	150	50	150	50	300	100
5.	Previous Medical History						
	General surgery	26	8.7	25	8.3	51	17
	Dental surgery	86	28.6	70	23.4	156	52
	Blood transfusion	9	3	6	2	15	5
	Total	121	40.3	101	33.7	222	74

Table 2: IgM seropositivity cases to HCV among different age groups.

Age	Seropositivity Male		Seronegativity Male		Total Male		Seropositivity Female		Seronegativity Female		Total Female	
	No	%*	No	%*	No	%*	No	%*	No	%*	No	%*
11-30	2	1.3	72	48	74	49.3	1	0.7	90	60	91	60.7
31-50	4	2.7	40	26.7	44	29.4	0	0	33	22	33	22
51-70	0	0	24	16	24	16	0	0	20	13.3	20	13.3
71-90	0	0	8	5.3	8	5.3	0	0	6	4	6	4
Total	6	4	144	96	150	100	1	0.7	149	99.3	150	100

N.B %* were correlated to the total number of male cases involved in the study.

Table 3: IgG seropositivity cases to HCV among different age groups.

Age	Seropositivity Male		Seronegativity Male		Total Male		Seropositivity Female		Seronegativity Female		Total Female	
	No	%*	No	%*	No	%*	No	%*	No	%*	No	%*
11-30	6	4	68	45.3	74	49.3	4	2.7	87	58	91	60.7
31-50	7	4.6	37	24.7	44	29.3	3	2	30	20	33	22
51-70	3	2	21	14	24	16	0	0	20	13.3	20	13.3
71-90	4	2.7	4	2.7	8	5.4	0	0	6	4	6	4
Total	20	13.3	130	86.7	150	100	7	4.7	143	95.3	150	100

N.B %* were correlated to the total number of male cases involved in the study.

Table 4: IgM seropositivity cases to HCV with previous medical history.

Previous Medical history	Seropositivity Male		Seronegativity Male		Total Male		Seropositivity Female		Seronegativity Female		Total Female	
	No	%*	No	%*	No	%*	No	%*	No	%*	No	%*
General Surgery	0	0	26	21.5	26	21.5	0	0	24	24	24	24
Dental surgery	5	4.1	81	67	86	71.1	1	1	69	69	70	70
Blood transfusion	1	0.8	8	6.6	9	7.4	0	0	6	6	6	6
Total	6	4.9	115	95.1	121	100	1	1	99	99	100	100

N.B %* were correlated to the total number of male cases involved in the study.

Table 5: IgG seropositivity cases to HCV with previous medical history.

Previous Medical history	Seropositivity Male		Seronegativity Male		Total Male		Seropositivity Female		Seronegativity Female		Total Female	
	No	%*	No	%*	No	%*	No	%*	No	%*	No	%*
General Surgery	3	2.5	23	19	26	21.5	2	2	22	22	24	24.8
Dental surgery	16	13.2	70	57.9	86	71.1	5	5	65	65	70	69.3
Blood transfusion	1	0.8	8	6.6	9	7.4	0	0	6	6	6	5.9
Total	20	16.5	101	83.5	121	100	7	7	94	93	100	100

N.B %* were correlated to the total number of male cases involved in the study

Table 6: IgM seropositivity cases to HCV with Educational level.

Educational level	Seropositivity Male		Seronegativity Male		Total Male		Seropositivity Female		Seronegativity Female		Total Female	
	No	%*	No	%*	No	%*	No	%*	No	%*	No	%*
Illiterate	0	0	21	14	21	14	0	0	27	18	27	18
Elementary school	2	1.3	63	42	65	43.3	0	0	72	48	72	48
High school	3	2	35	23.3	38	25.3	0	0	40	26.7	40	26.7
Graduated	1	0.7	25	16.7	26	17.4	1	0.7	10	6.6	11	7.3
Total	6	4	144	96	150	100	1	0.7	149	99.3	150	100

Table 7: IgG seropositivity cases to HCV with Educational level.

Educational level	Seropositivity Male		Seronegativity Male		Total Male		Seropositivity Female		Seronegativity Female		Total Female	
	No	%*	No	%*	No	%*	No	%*	No	%*	No	%*
Illiterate	3	2	18	12	21	14	1	0.7	26	17.3	27	18
Elementary school	10	6.7	55	36.6	65	43.3	2	1.3	70	46.7	72	48
High school	4	2.6	34	22.7	38	25.3	2	1.3	38	25.3	40	26.7
Graduated	3	2	23	15.4	26	17.4	2	1.3	9	6	11	7.3
Total	20	13.3	130	86.7	150	100	7	4.7	143	95.3	150	100

Table 8: IgM seropositivity cases to HCV with Marital status.

Marital status	Seropositivity Male		Seronegativity Male		Total Male		Seropositivity Female		Seronegativity Female		Total Female	
	No	%*	No	%*	No	%*	No	%*	No	%*	No	%*
Married	4	2.7	63	42	67	44.7	1	0.7	62	41.3	63	42
Single	2	1.3	81	54	83	55.3	0	0	87	58	87	58
Total	6	4	144	96	150	100	1	0.7	149	99.3	150	100

N.B %* were correlated to the total number of male cases involved in the study.

Table 9: IgG seropositivity cases to HCV with Marital status.

Marital status	Seropositivity Male		Seronegativity Male		Total Male		Seropositivity Female		Seronegativity Female		Total Female	
	No	%*	No	%*	No	%*	No	%*	No	%*	No	%*
Married	13	8.7	54	36	67	44.7	1	0.7	62	41.3	63	42
Single	7	4.6	76	50.7	83	55.3	6	4	81	54	87	58
Total	20	13.3	130	86.7	150	100	7	4.7	143	95.3	150	100

Distribution of patient involved in the study according to their age, education level, occupation, marital status and prehistoric medical history were presented in the table 1. Highest numbers (84) of cases were seen in male (28%) in the age group of 31-50 years and followed by male (21.3%) in 11-30 years old age group. Regarding education level, mostly male stands first. 24% of males with HCV were in Elementary school level. In occupation, students have the HCV positive more were in boys (25.7%) than the girls (22%). Married people have less occurrence of HCV (27.7%) than the single (29%). In the previous medical history, most cases were observed after the Dental surgery was male (28.6%). This indicates that persons with young age, less education, studying, single and Dental surgery cause more cases in the study area.

IgM seropsitivity to HCV among male cases indicated that low percentage of IgM seropositive cases (2.7% and 1.3% among age groups of 31-50 and 11-30 years respectively). This means low percentage of recent HCV infection (acute) among the studied male cases. The results of female cases indicated that only one female case showed IgM seropositive (0.7%) among age group of 11-30 years) (Table 2). The prevalence rate (4%) of HCV in male cases is low compared to the previous studies which reported 6%[7]. 13.3% of chronic HCV infection (IgG) among the studied male cases and 4.7% among female cases (Table 3). The reasons of this may be more exposure of males to contaminated environment, accidental cuts, razor trauma of shaving and circumcision.

Table 4 and 5 indicates that IgM and IgG seropositivity to HCV with different medical history respectively and reveal that Dental surgery causes the major infection problem in the studied area. There is evidence that HCV can be transmitted by percutaneous exposure to blood. HCV is present in saliva as well as blood and are of major concern in the dental clinic. These findings were similar to other study which detected a high prevalence of (22.4%) anti-HCV seropositivity following dental surgery[8]. Similar studies conducted in Pakistan, Turkey, Morocco, and Italy had reported that dental procedure was one of the major risk factor for HCV transmission[9].

IgM and IgG seropositivity among the education level (Table 6 and 7) reflects that male has more cases in both chronic and acute infections. But in female, only chronic infections are more in elementary school and high school level of education. Highly educated only can understand about the various infections and its prevention method. This is also by the paucity of health education programs in Libya. Similar result is also observed in Libya by (Mohamed and Abdella, 2015)[10]. Table 8 and 9 give the results of IgM and IgG seropsitive against HCV among the marital status. Highest percentage of IgM seropositivity to HCV was observed among married males was 2.7% and in married female were 0.7%. The chronic cases (IgG) were more in married males (8.7%) and single females (4%). The sexual transmission is considered as a hidden source of transmission of HCV infection especially with prolonged duration of marriage. Intrafamilial transmission cannot be ignored. However, families with HCV clustering needed HCV genotyping to match the type in these patients to that of other family members. Marriage emerged as a risk factor for acute HCV infection, supporting the possibility that HCV is transmitted between spouses. Interspousal transmission has been addressed in different studies and achieved somewhat conflicting results **[11].**

Elasifer et al., (2010)[12] carried out a comprehensive study on 1240 Libyans. Deferent genotypes were reported in the study; genotype 4 was the commonest (35.7%), followed by genotype 1 (32.6%). According to subtypes, 28% were unclassified as genotype 4, 14.6% were genotype 1b, and some patients were infected with more than one subtype (2.3%genotype4c/d, 1%genotype2a/c). Genotype1 was the commonest among males, while genotype 4 among females. Despite the obvious role of prevention and control of such virus and data available by Libyan researchers, the national authority failed to adapt these regulations at a national level, though every centre has its own way of adapting such recommendations. Hepatitis C virus (HCV) exhibits high genetic diversity, characterized by regional variations in genotype prevalence. This poses a challenge to the improved development of vaccines and pan-genotypic treatments[13]

CONCLUSION

Libya may be considered an area of low-intermediate endemicity for hepatitis C virus infection, with lower rates in young age groups and an area of low endemicity for hepatitis C. In Ghedwa village, the study shows that male cases with HCV positive were more than the female cases. Education and profession also play a major role in the HCV infections. This preliminary report regarding the number of HCV cases and seropositive study of IgG and IgM both reflect more cases in male middle age group. The presence of hepatitis C across Libya is not homogeneous and show high rate in some areas. This indication of the effect of the higher rates in some area is due to the effect of alarming levels in neighboring countries.

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