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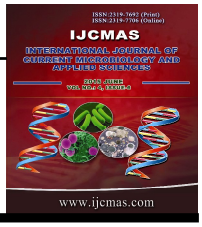

Original Research Article

Psoriasis; a new marker for Hepatitis C among Egyptian Patients

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Keywords

Hepatitis B,
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A B S T R A C T

Egypt has the highest hepatitis C virus (HCV) prevalence in the world. The association of psoriasis with hepatitis viruses B and C hasn't been investigated in the Ismailia province, Egypt. In a case – control study, 50 psoriasis patients (study group) who attended the dermatology department of Suez-Canal University Hospital in Ismailia from February to December 2014 and 50 healthy control blood donors (control group) with matched age and gender were recruited. Psoriasis patients were evaluated for psoriasis area severity index (PASI) score and grade assessment. Serum samples from both groups were screened for HbsAg and anti HCV antibodies by ELISA method using HbsAg ELISA kit and anti-HCV ELISA kit, respectively. The quantitative detection of HCV RNA in the plasma samples was estimated by real-time polymerase chain reaction The prevalence of hepatitis C in patients with psoriasis was increased compared to the prevalence in controls (18% and 4%, respectively; $P< 0.05$), While the two groups tested negative for hepatitis B. There was a positive correlation between HCV viral load and PASI score in the psoriasis patients ($R= 0.5$, $p= 0.15$) but it was not statistically significant. So we support reports of an association between psoriasis and hepatitis C but not with B.

Introduction

Hepatitis C and B viruses (HCV & HBV) are the main causes of chronic liver disease worldwide whereas 130–170 million people are affected by HCV infection worldwide [1]. In Egypt, It is estimated that HCV prevalence among the 15–59 years age group to be 14.7% [2]. Accordingly, Egypt has the highest HCV prevalence in the world [3, 4]. The prevalence of HBsAg ranges from 3% to 11% in Egypt but a decrease in HBV incidence is expected among children where 90% immunization coverage has been achieved [5,6].

Hepatitis C and B viruses primarily involve the liver but they were detected in various

organs of the body. Furthermore, this form of infection may be presented for the first time by an extrahepatic manifestation and the list of these extrahepatic manifestations in hepatitis C infection is extending [7].

Psoriasis is a common, chronic, relapsing/remitting, immune-mediated systemic disease characterized by skin lesions which vary in severity from minor localized patches to complete body coverage [8.9]. Systemic inflammation and tumor necrosis factor (TNF) α have an important role in the pathogenesis of psoriasis [10]. As both types of viral hepatitis are associated with chronic inflammation and aberrant immune response, hepatitis C and B may independently trigger or exacerbate psoriasis [11]. This study aimed to investigate the association between psoriasis and hepatitis C and B among Egyptian patients in the Ismailia province in a case control study.

Materials and Methods

Study populations

This study was conducted on 100 subjects from February to December 2014. They were classified into two groups; the study group included 50 psoriasis patients who attended the dermatology department of Suez-Canal University Hospital, Ismailia, Egypt. The control group included 50 healthy subjects with matched age and gender who came for voluntary blood donation to the hospital. Written informed consent was obtained from all participants enrolled in this study. Information regarding personal history including age, sex, residency, obesity, smoking status and family history was obtained in all subjects using a structured questionnaire. All the psoriasis patients were examined for the presence and severity of psoriasis and asked about duration of disease and therapy administered.

Laboratory investigations

Venous blood samples were drawn into sterile Vacutainer tubes for each member of the two groups. Sera were separated and divided into two tubes; one for detection of HbsAg and the other one for detection of anti HCV antibodies. HbsAg and anti HCV antibodies were detected by ELISA method using HbsAg ELISA kit and anti-HCV ELISA kit (Axiom GmbH, Inc., Worms, Germany), respectively according to the manufacturer instructions. The quantitative detection of HCV RNA in the plasma samples of the subjects with positive anti HCV antibodies was determined by real-time polymerase chain reaction using the Artus HCV QS-RGQ kit (Qiagen, Hilden, Germany).

Statistical analysis

Quantitative data were described by mean, standard deviation, median, and range while qualitative data were described by frequency and percentage. Chi square test was used to compare groups of qualitative data. Pairwise Pearson Correlation was used between quantitative data (age, duration, PASI, HCV Viral load).

Results and Discussion

Demographic data of the two study groups

This study was conducted on 100 subjects divided into two groups; the psoriasis group included 50 patients of whom twenty six (52%) were males and twenty four (48%) were females. Their median age was 50 years (range 15-77). The second (control group) included 31 (62%) males and 19

(38%) females, with a median age of 42 years (range 20-59). The demographic characteristics of the two study groups were shown in Table 1. The psoriasis and control groups did not differ significantly with regard to gender or age.

Hepatitis B and C among psoriasis patients and controls

The prevalence of hepatitis C in patients with psoriasis was increased as compared to the prevalence in controls (18% and 4%, respectively; P< 0.05), While the two groups tested negative for hepatitis B (Table 2).

Comparison of disease characteristics among HCV positive and HCV negative psoriasis patients

The mean PASI score was significantly higher in HCV positive than HCV negative psoriasis patients (18.92±10.95 and11±6.91, respectively; P< 0.05).According to PASI grade, most of the HCV positive psoriasis patients had moderate grade (66.67%) while most of the HCV negative psoriasis patients had mild grade (70.73%) which is statistically significant (P= 0.022) (Graph 1). There was no significant difference between the two groups according to duration of disease (Table 3).

Correlation between age, duration, HCV Viral load and PASI among HCV positive study patients

Table 4 shows that there was statistically significant difference (P value <0.05) and positive correlation between disease duration and patient age (R = 0.7). There was no statistically significant difference between HCV Viral load and either patient age or disease duration but there was a positive correlation between HCV Viral load and disease duration (R = 0.6). Also, when HCV viral load was correlated with PASI score, there was a positive correlation between the two variables in the psoriasis patients (R= 0.5, p= 0.15) but it was not statistically significant.

Concomitant HCV infection and psoriasis vulgaris are not uncommon coexisting diseases, especially in areas with high viral hepatitis endemicity. In the current study we observed that psoriasis was associated with hepatitis C but not with B. This association is biologically plausible as systemic inflammation plays an important role in both psoriasis and hepatitis. HCV replicates within extrahepatic tissues with expression of viral proteins, leading to extrahepatic manifestations (EHM). As the virus avoids immune system elimination; chronic infection, accumulation of immune complexes and auto-immune phenomena develop. In addition, HCV shows lymphotropism other than the hepatotropism, which is responsible for many EHM [12]. Our observation is in accordance with many similar studies in other countries. In a recent study conducted in a Brazilian reference center, prevalence of anti-HCV antibodies were higher in psoriasis patients than in the general population of the city and more severe skin lesions were found in HCV patients [13]. Also, the prevalence of HCV infection has been found to be higher in patients with psoriasis than in the general population in other geographical areas, such as Taiwan, Japan, Brazil, Central America and Italy [8].

In another recent study which assessed the frequency of HCV infection in 717 patients with psoriasis who visited Fukuoka University Hospital in 1998–2011. The frequency of HCV infection was significantly higher in psoriasis (7.5%) than in controls (3.3%) [14].

Table.1 Demographic data of the two study groups

Demographic data		Psoriasis Patients	Controls	
		Mean±SD Median(IQR)	Mean±SD Median(IQR)	P value
	Age	44.44±14.2 50(15-77)	40.9±11 42(20-59)	0.17*
Sex	Male*N(%)*	26(52%)	31(62%)	0.313*
	Female *N(%)*	24(48%)	19(38%)	

*P value is insignificant (>0.05)

Table.2 Prevalence of hepatitis B and C among psoriasis patients and controls

Hepatitis Viruses		Psoriasis Patients	Controls	
		N(%)	***N(%)***	P value
HCV	**Negative**	41(82%)	48(96%)	0.002*
	Positive	9(18%)	2(4)%	
HBV	**Negative**	50(100%)	50(100%)	NA
	Positive	0	0	

*P value is significant (< 0.05).

Table.3 comparison of disease characteristics among HCV positive and HCV negative psoriasis patients

		HCV -ve	HCV+ve	
		Mean±SD Median(IQR)	Mean±SD Median(IQR)	P value
Duration (Years)		7.48±9.74 5(0.083-50)	10.72±6.63 12(0.5-20)	0.349
PASI		11±6.91 8.8(1-26.5)	18.92±10.95 20.4(1-37.5)	0.008*
PASI Grade	Mild *N(%)*	29(70.73%)	2(22.22%)	0.022*
	Moderate*N(%)*	11(26.83%)	6(66.67%)	
	Severe *N(%)*	1(2.44%)	1(11.11%)	

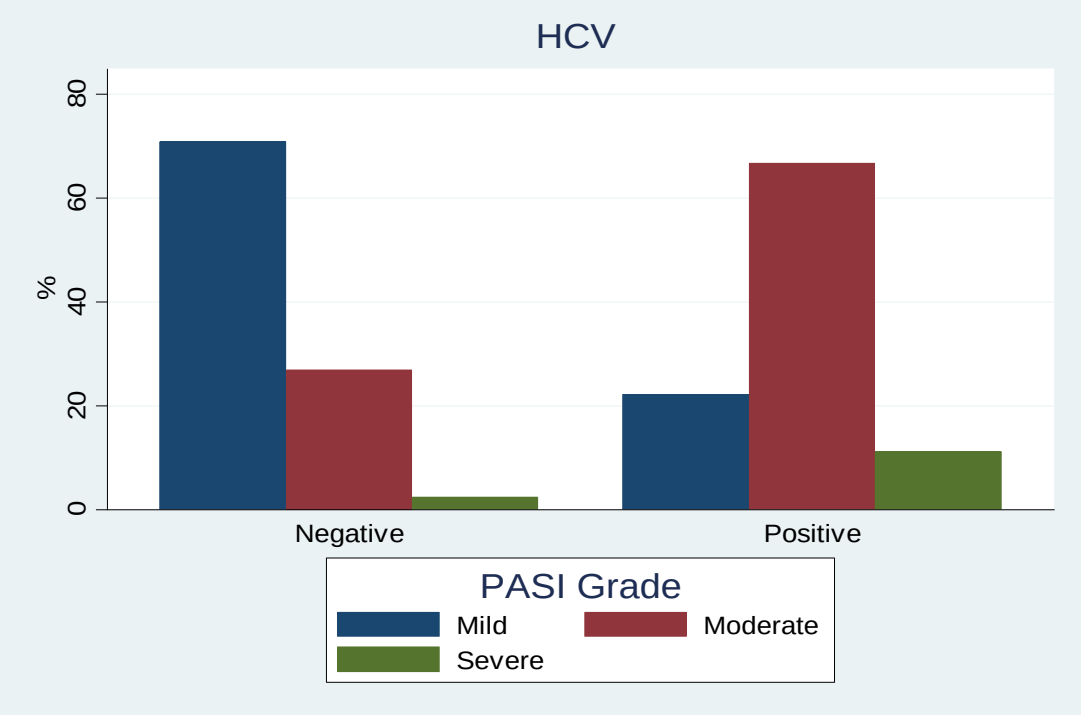
*P value is significant (< 0.05).

Table.4 Pairwise Pearson Correlation between age, duration, HCV Viral load and PASI among HCV positive study patients

		Age	Duration	HCV Viral load
Duration	R	0.718	-	-
	P	0.03*		
HCV Viral load	R	0.215	0.655	-
	P	0.579	0.056	
PASI	R	0.727	0.832	0.518
	P	0.026*	0.005*	0.153

*P value is significant (< 0.05).
R: Pearson's R Coefficient

Graph.1 Bar chart showing comparison of PASI grade among study patients according to HCV infection



These results are in concordance with ours which revealed that the prevalence of hepatitis C in psoriasis patients was increased as compared to the prevalence in controls (18% and 4%, respectively). This could be attributed to the overproduction of pro-inflammatory cytokine tumor necrosis factor (TNF-α) which is a common mediator of the two diseases [10, 11].

In our study, the mean PASI score was significantly higher in HCV positive than HCV negative psoriasis patients. This result is in agreement with the results of Taha et al. [15] who studied the impact of viral load of hepatitis C on patients with concomitant psoriasis vulgaris in Assuit University Hospital, Egypt. They detected significant correlations between the PASI score and the

viral loads. This finding was also observed in our study but it was not statistically significant which could be attributed to the small number of the patients with psoriasis in our study. Similarly, most of the HCV positive psoriasis patients in our study had moderate grade while most of the HCV negative psoriasis patients had mild grade. This finding agreed with Taha et al. [15] who also noticed that when HCV was concomitant with psoriasis vulgaris, a severe disease pattern was found and entails special precautions in the treatment process.

On the other hand, the two groups included in our study tested negative for hepatitis B virus. However studies from other parts of the world have reported a higher prevalence of HBV infection in patients with psoriasis than in the general population [7, 9]. Also, psoriasis wasn't associated with an increased risk of hepatitis B, hepatitis C, or human immunodeficiency virus infection in the United States [7]. This difference in results may be related to endemicity of the virus in each country as Egypt has the highest HCV prevalence and endemicity in the world. Also, HBV incidence decreased in Egypt due to immunization. So our study supports reports of an association between psoriasis and hepatitis C but not with B. Also, HCV association with psoriasis leads to a high possibility of severe disease pattern which necessitates special precautions in the treatment process.

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