

Frequency of Hepatitis C Virus Infection in Vitiligo Patients at Qena University Hospital**Shimaa Arafat Abdel-Monem^a, Soheir Abdel-hamid Ali^b**^aTropical Medicine and Gastroenterology, Faculty of Medicine, South Valley University, Qena, Egypt^bDermatology, Venereology and Andrology, Faculty of Medicine, South Valley University, Qena, Egypt**Abstract****Background:** A range of autoimmune illnesses may be accelerated by hepatitis C virus (HCV). It is yet unclear how HCV infection and vitiligo are related. However, autoimmune pathways may be involved.**Objectives:** In this study, we estimated the frequency of HCV sero-positivity in patients with vitiligo and compared it to the population without vitiligo.**Patients and methods:** A total of 70 vitiligo patients and 70 control non vitiligo-patients were included in this study serum anti-HCV antibodies were measured using HCV third generation ELISA. The total body Vitiligo Area Scoring Index (VASI) is calculated.**Results:** vitiligo patients (mean age: 33.04 ±18.93 years), control population (mean age 30±16.8 years) (41 males, 29 females), and 70 control population were (30 males, 40 females). The mean age was (33.04 ± 18.93). About 15 (21.4) of patients were employees, and 58.6% were from rural areas. Fifty percent were single. The mean duration of illness in all vitiligo patients is about (5.6 ± 5.1 years) (VASI) (3.66 ± 0.77). The control population was 70 with age and sex-matched (30 males, 40 females, mean age 30 ± 16.8 years. The anti-HCV antibody in vitiligo patients and all controls were negative.**Conclusion:** The sero-prevalence of HCV in individuals with vitiligo is not different from that of a control group, suggesting that HCV infection may not play a role in the pathophysiology of those patients.**Keywords:** Autoimmune; Virus; Sero-prevalence.**DOI:** 10.21608/SVUIJM.2024.262409.1778***Correspondence:** shimaa.arafat@med.svu.edu.eg**Received:** 5 February,2024.**Revised:** 9 April,2024.**Accepted:** 12 April,2024**Published:** 24 June, 2024**Cite this article as:** Shimaa Arafat Abdel-Monem, Soheir Abdel-hamid Ali.(2024). Frequency of Hepatitis C Virus Infection in Vitiligo Patients at Qena University Hospital. *SVU-International Journal of Medical Sciences*. Vol.7, Issue 2, pp: 183-188.

Introduction

Hepatitis C viruses are one of the Flaviviridae family, which includes linear, single-stranded RNA, whose genomic diversity is linked to a variety of autoimmune symptoms (**Bonkovsky and Mehta 2001**). Vitiligo is a chronic auto-immune illness defined by the formation of hypochromic and achromic macules and patches on the skin and mucous membranes due to the destruction of melanocytes in the affected area (**Tarlé et al., 2014**).

It is still unknown how viruses cause vitiligo, although many factors, including neurological, immunological, and metabolic ones, have been proposed as etiologic determinants. It has been suggested that various pathways may cause melanocyte destruction to trigger autoimmunity as a secondary phenomenon (**Bystryn, 1997; Ongenae et al., 2003**). A chronic HCV infection is usually manifested with extra-hepatic symptoms. Lichen planus, porphyria cutanea tarda, and mixed cryoglobulinemia are the most prevalent HCV dermatological symptoms (**Bonkovsky and Mehta 2001**).

It is still unknown if vitiligo and chronic HCV infections are related. The current study was conducted to determine the relevance of HCV infection in vitiligo patients since it is not possible to generalize the lack of a relationship between HCV and vitiligo. Therefore, this study aimed to determine the prevalence of HCV-seroreactivity in vitiligo patients.

Patients and methods

Type of study: Cross-sectional study.

Study Setting: Qena University Hospital, Department of Dermatology, Venereology, and Andrology, and an outpatient clinic from May 2023 to December 2023.

Exclusion criteria: Vitiligo patients with a history of viral hepatitis

and auto-immune systemic diseases (psoriasis, alopecia).

Ethical approval: The parents or caregivers of the participants provided written informed permission, and the researcher received approval from the local Ethics Committee at Qena Faculty of Medicine, South Valley University. All participants' parents in the present study were provided with comprehensive information on the purpose and specifics of the research, including the assurance that the findings would remain secret. Ethical approval code (**SVU-MED-DVA012.GIT023.4.5-23.649**).

History taking: personal data: age, sex, occupation, residence, marital status, and BMI calculation. **Specific disease history:** onset, duration of the disease, types of vitiligo, degree of severity of vitiligo, which is assessed from the history or by patient examination.

A serum anti-HCV antibody quantitative assay was performed using Human anti-hepatitis C virus antibody (anti-HCV) (ELISA) Kit (Shanghai Sunred biological company, Catalogue No. 201-12-1600; version 4.0; China **based** on double-antigen sandwich immunoassay, having a sensitivity of 0.285 ng/L, assay range: 0.3 ng/L to 90 ng/L, intra-assay: CV<10%. inter-assay: CV<12%.

Statistical analysis

In the current study, the statistical analysis was done using the Statistical Package for Social Sciences (SPSS) version 20 software for Windows (IBM Corporation, Armonk, NY, USA). A comprehensive analysis was conducted to assess normal distribution of data by using Kolmogorov-Smirnov test. The data was provided as numerical values, percentages, the arithmetic mean, and the standard deviation. The continuous data were provided as the mean and standard deviation (Mean±SD) compared by the

student t-test. The nominal data as percentages, and the Chi-square test and Fisher exact test when appropriate. For a result to be deemed statistically significant, the p-value must be less than 0.05.

Results

Vitiligo patients (mean age: 33.04 ±18.93 years), control population (mean age: 30 ± 16.8 years) (41 males, 29 females), and 70 control population (30 males, 40 females). The mean age

was 33.04 ± 18.93. About 15 (21.4%) of patients were employees, and 58.6% were from rural areas. Fifty percent were single. The mean duration of illness in all vitiligo patients is about 5.6 ± 5.1 years (VASI) (3.66 ± 0.77). The control population was 70 with age and sex-matched (30 males, 40 females, mean age 30 ± 16.8 years). The anti-HCV antibody in vitiligo patients and all controls were negative (Table.1).

Table 1. Demographic and clinical characteristics of the studied vitiligo patients

Variables No. (%)		vitiligo patients (N=70)	control (N=70)	P value
Age (mean ± SD)	Years	33.04 ± 18.93	30±16.8	0.03*
Sex	Male	41 (56.6%)	30(42%)	0.36#
	Female	29 (41.4%)	40(58%)	
Occupation	Employee	15 (21.4%)	38 (54%)	0.18#
	Not working	55 (78.6%)	32 (46%)	
Residence	Rural	41 (58.6%)	20 (29%)	0.77#
	Urban	29 (41.4%)	50 (71%)	
Marital state	Single	50 (50%)	37(53%)	0.29&
	Married	14 (41.4%)	15 (21%)	
	Widow	3 (4.3%)	10 (14%)	
	Divorced	3 (4.3%)	8 (12%)	
Family history of vitiligo	Yes	4 (5.7%)	0 (0%)	0.00&
	No	66 (94.3%)	70 (100%)	
BMI	Mean	18.68±10.45	27.04 ± 6.37	0.90*
Duration of illness	Years	5.68 ±5.15		
VASI score	Mean	3.66 ± 0.77		
Vitiligo subtypes	Generalized	45 (64.2%)		
	Acrofacial	10 (14.2%)		
	Acral	15 (21.4%)		

*t student test, # the chi-square test, and & Fisher exact test

cutaneous disease that is thought to have certain hereditary components (Simmonds, 1995). There is currently no proof of a confirmed serum or tissue marker linked to its incidence, despite studies showing the involvement of several genes in its pathogenesis in the past (Efe et al., 2012). We still don't fully understand how HCV infection and vitiligo are related (Bukh, Simmonds, 1995). Replication of the virus in

Discussion

Chronic illnesses known as autoimmune diseases are brought on by a decrease in immunological tolerance to auto-antigens. Autoimmunity mechanisms have a partially understood origin, and their development is associated with a wide range of genetic, immunological, environmental, and hormonal components (Tarlé et al., 2014). Vitiligo is a persistent autoimmune

as in seronegative controls. Also, **Tawfik et al. (2020)** reported that 33 patients (8.6%) out of 1000 with HCV reactivity had vitiligo. **Elshimi et al. (2013)** showed 51.66% (27 out of 56 patients) had an HCV infection among vitiligo patients. Furthermore, they found that vitiligo patients had a much greater prevalence of HCV infection (51.66%) than did non-viligo persons (19%; $p < 0.01$). This discrepancy can result from variations in the age range and sample size.

This high prevalence of HCV among vitiligo patients is explained by the fact that HCV is usually linked to the onset of autoimmune disorders (**Jadali and Alavian, 2010**). Chronic HCV infection is associated with extra-hepatic dermatological disorders (**Bonkovsky and Mehta, 2001**). Also, it appears that the varying incidence of HCV in various countries may be the cause of the difference in the connection between HCV and vitiligo in different research studies. Hence, patients with vitiligo should only have HCV screening in areas where the virus is very prevalent. Also, this variation may be caused by variations in HCV genotypes as well as other environmental and genetic factors. In Egypt, the most common HCV genotype is genotype 4, while the most common genotypes in Iran and Turkey, respectively, are genotypes 1a and 1b (**Gower et al., 2014**).

Conclusion

The sero-prevalence of HCV in individuals with vitiligo is not different from that of a control group, suggesting that the pathophysiology of vitiligo may not be related to HCV infection.

Conflict of interest the authors declare that they have no conflict of interest.

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lymphocytes, especially B cells, stimulates and multiplies polyclonal lymphocytes, which in turn produce antibodies. Furthermore, high amounts of B-cell activating factor, which promotes B-cell differentiation and antibody production, are linked to HCV infection (**Seneet al., 2007**).

The findings of the present study demonstrated that the anti-HCV antibody was negative in all vitiligo patients and all controls. This is in **agreement** with relevant case reports that have been published earlier, the first to look into the connection between vitiligo and HCV in Iran. **Yamamoto and Nishioka (1998)** reported on five individuals with vitiligo who tested positive for HCV. Also, **another study** of a patient with vitiligo and prurigo in the context of HCV infection was presented by **Pondanyi et al. (1998) and Nihat et al. (2004)**, who reported the seropositivity of HCV in one patient. This suggested no definitive correlation between vitiligo and hepatitis C infection.

Previous studies in **Turkey** by **Adiloglu et al. (2003)** and **Iran** by **Jadali et al. (2005)** have shown that there is no detectable variation in HCV seroreactivity between healthy controls and vitiligo patients. Furthermore, **Topal et al. (2016)** discovered that among one hundred patients with vitiligo, the prevalence of HCV-seroreactivity was just 1%. This may be explained by the fact that HCV is less common in Turkey's general population (0.6% to 2.1%) and Iran's populations (0.2%–1%), respectively (**WHO, 2018**).

In contrast to the present study, out of 108 vitiligo patients, 18 (16.7%) demonstrated HCV-reactive vitiligo that started in adulthood (**Fawzy et al., 2022**). **El-Serag et al. (2002)** found that the prevalence of vitiligo was around twice as high in HCV patients

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