Alcohol Consumption in Patients with Psoriasis and its Relationship to Disease Severity

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Abstract: Moderate to severe psoriasis is associated with increased alcohol intake and excessive mortality from alcohol-related causes. Alcohol biomarkers are those providing an objective measurement of its consumption. The objective of this study is to assess alcohol consumption in a cohort of patients with psoriasis and to investigate the influence of alcohol intake on disease severity. Patients with psoriasis hospitalized at the Clinic of Dermatology, in Mother Teresa University Hospital were recruited in this cross- sectional study. Alcohol consumption was assessed *via* CAGE questionnaire and the self- reported amount of alcohol consumed, whereas disease severity was evaluated *via* PASI scoring system. Blood specimens were taken at admission and levels of gamma glutamyltransferase (GGT), alanine aminotransferase (ALT), aspartate aminotransferase (AST) and mean corpuscular volume of erythrocytes (MCV) were measured. Statistical analysis was performed using SPSS 20.0 statistical package. A total of 62 in- patients completed the study. Significant correlations were observed between GGT and AST values with raki and beer consumption, ALT value with raki, beer and wine consumption and MCV value with raki consumption. Disease severity did not correlate significantly with raki and beer consumption (p> 0.05). Logistic regression analysis between Psoriasis Area and Severity Index (PASI) score and raki consumption in male patients with psoriasis duration of more than 3 years resulted in statistical significance (b= 23.5, p< 0.05). Combination of parameters related to chronic alcohol consumption offers advantage over every isolated test. Measurement of simple laboratory parameters combined with self- report methods of consumption allows identification of users.

Keywords: Alcohol consumption, psoriasis severity, Albania, alcohol biomarkers, raki consumption.

INTRODUCTION

Moderate to severe psoriasis is associated with increased alcohol intake and excessive mortality from alcohol-related causes [1]. Although the methods of self- report offer a reliable and valid approach to measuring alcohol consumption [2], alcohol biomarkers are those providing an objective measurement of its consumption [1]. The effectiveness of screening of single biomarkers has been shown to be insufficient [3], but combination of parameters linked to chronic drinking by different pathophysiological mechanisms, e.g. carbohydrate- deficient transferrin (CDT), gamma glutamyltransferase (GGT) and mean corpuscular volume of erythrocytes (MCV) offers better benefit in detection of alcohol consumption over any isolated test. The serum level of GGT, aspartate aminotransferase (AST) and alanine aminotransferase (ALT) is a sum of drinking activity and liver status; MCV on the other hand seems to be raised with regular drinking, although in alcoholics it may continue to raise despite drinking cessation since the life-span of erythrocytes is 120 days. Alcohol misuse for long has been suspected to contribute to psoriasis pathology, despite numerous difficulties in verification of a relation between its consumption and the disease presentation [4]. Many studies have found a relationship between alcohol consumption and psoriasis as far as it concerns poorer treatment response or gender differences [5-7]. In a study conducted by Kirby *et al.* the amount of alcohol consumed per week correlated with the severity of psoriatic skin lesions [8]. The risk for incident psoriasis was found to be significantly high with the consumption of non-light beer (in an amount of ≥ 5 drinks per week) but not with light-beer or other beverages, in a study of female nurses in USA [9]. McAleer *et al.* did not observe any significant relationship between excessive alcohol consumption and psoriasis severity [1]. In a similar way, disease severity did not differ significantly with alcohol consumption in the study performed by Serwin *et al.* Only the consumption of high grade alcoholic beverages did correlate with PASI value in male patients with a long history of psoriasis duration [10]. The aims of this study were *a)* to assess the alcohol consumption in the hospitalized psoriatic patients *via* CAGE questionnaire, their self- reports and the objective measurement of alcoholic markers in serum/ blood and *b)* to investigate the correlation between alcohol intake and psoriasis severity.

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METHODS

Participants

A total of 62 patients with psoriasis hospitalized at the Dermatology Clinic at "Mother Teresa" University Hospital in Tirana, Albania were the target population included in this cross-sectional study between November 2011 and November 2012. Patients with the presence of hepatic abnormalities and under the age 15 were excluded. The objectives of the study and confidentiality issues were discussed with the patients and their written consent was taken. The study protocol was approved by the Ethics Committee of "Mother Teresa" University Hospital.

Data Gathering

Data gathering was accomplished *via* face to face interviews performed by trained dermatology residents. Patients were asked about the basic socio-demographic data, psoriasis duration, family history of psoriasis, hospitalization frequency, alcohol consumption and smoking (pack per year). CAGE questionnaire was used to screen for chronic alcohol users, who were also asked to report the type and the amount of alcoholic beverage consumed per week (Table **1**). The questions focusing on Cutting down, Annoyance by criticism, Guilty feeling and Eye-openers, constituting the CAGE questionnaire, have proved useful in making a diagnosis of alcoholism [14] making this questionnaire a simple, sensitive and specific tool in screening for alcohol abuse or chronic alcohol use [15]. We did not test the reliability and validity of CAGE in our study, since this instrument has proven validity [16].

Patients consuming alcohol were classified as social drinkers (alcohol consumers on social occasions only), consumers of small amounts of alcohol, moderate amount of alcohol consumers and heavy drinkers. Subjects were also asked for the other types of alcohol used (whiskey, vodka, brandy), but since no other type of beverage was mentioned, we did not include it in our analysis. Beer and wine consumption were also initially divided into light/ non- light and red/

white, respectively; in this case also, non- light beer was the only mentioned beverage. Only one subject consumed white wine and this was included under wine subdivision.

Measurements

Disease severity was assessed *via* Psoriasis Area and Severity Index (PASI) scoring system, which consists of two steps: calculation of body surface area involved and evaluation of lesion severity according to the degree of erythema, induration and scaling, combining then all the calculations in a single score ranging from 0 (no disease) to 72 (all Body Surface Area (BSA) involved by the disease) [11]. According to PASI scores psoriasis severity among our subjects was classified as mild (PASI [2-12]), moderate PASI ((12-18]) and severe (PASI > 18) [10].

According to psoriasis duration in years patients were categorized as the following: patients with psoriasis lasting less than 1 year, between 1- 3 years and those with psoriasis duration of more than 3 years. Blood samples were taken within 24 hours of admission and the values of gamma glutamyltransferase (GGT), aspartate aminotransferase (AST), alanine aminotransferase (ALT) and erythrocyte mean corpuscular volume (MCV) were measured.

Statistical Analysis

Pearson coefficient was used for correlation analysis and regression coefficient was computed from the results of logistic regression analysis. Correlation coefficients between 0.1- 0.3 were considered low, between 0.31- 0.7 were considered moderate and those between 0.71- 1 were considered high. All tests of significance were two-tailed and a *P*-value of 0.05 or less was regarded as significant. Statistical analysis was conducted *via* statistical package SPSS 20.0.

RESULTS

Participants

The study included a total of 62 patients (29 % females, 71 % males). The data on patients'

Table 1: Alcoholic Beverages Consumed by Subjects in Type and Amount

	Small amount (ml/ week)	Moderate amount (ml/ week)	High amount (ml/ week)
Raki	< 50	50- 100	>100
Beer	< 500	500- 1000	>1000
Wine	< 200	200- 500	>500

Table 2:   Characteristics of Patients

Characteristics of patients	Value	Standard Deviation	Range
Total number of patients	62	-	-
Male number	44 (71 %)	-	-
Female number	18 (29 %)	-	-
Average age in years	44.95	13.10	[15-64]
Average age in years (males)	45.25	13.06	[15-63]
Average age in years (females)	44.22	13.57	[15-64]
Average disease duration	13.19	11.47	[1-40]
Presence of psoriasis family history	7 (11.3 %)	-	-
Alcohol use	27 (43.5 %)	-	-
Smoking	29 (46,8 %)	-	-
Unemployment	19 (30.6 %)	-	-

characteristics are as shown in Table **2**. Based on the claimed data on occupation, the majority of our patients (96.7 %) did belong to the low socioeconomic class, that is they did a job that at most requires high school education. 12.9 % of patients were social drinkers, 43.5 % did consume alcohol and the same percentage of patients did not consume alcohol at all. 24 out of 62 patients consuming alcohol (raki, beer and/ or wine) in high amounts were considered as heavy drinkers and thus constituting 39 % of the total number of participants, 3% were moderate drinkers and 1.5 % of participants consumed alcohol in small amounts.

Measurements

The mean PASI value was 26, 03 ± 15, 93 (range 1,8- 65,1). The mean PASI value was 17, 11 ± 11, 07 in females and 29,69 ± 16, 26 in males. The majority of

patients had severe psoriasis (57%) being followed by moderate psoriasis (24%) and mild psoriasis (19 %) patients.

19.4 % of patients had a duration of psoriasis less than 3 years and 80.6 % had psoriasis lasting more than 3 years.

A moderate but significant correlation was observed between GGT value with raki and beer consumption. The same moderate and positive correlation was seen between AST with beer and raki consumption. ALT did positively although moderately correlate with all the three types of alcoholic beverages, while MCV value did moderately correlate with raki consumption and strongly and positively correlate with beer consumption. A detailed description of significance levels and correlation coefficients is shown in Table **3**.

Table 3:   Correlations Between Alcoholic Biomarkers and the Amount of Alcohol Consumed

		Amount of alcohol consumed per week (mL)		
		Raki	*Beer*	*Wine*
Alcoholic markers	GGT	r= 0.45 p< 0.01*	r= 0.36 p=0.04	r= 0.05 p=0.7
	AST	r= 0.48 p< 0.01*	r= 0.63 p< 0.01*	r= 0.23 p=0.07
	ALT	r= 0.36 p< 0.01*	r= 0.55 p< 0.01*	r= 0.34 p< 0.01*
	MCV	r= 0.31 p=0.01	r= 0.98 p=0.04	r= -0.44 p=0.98

r= correlation coefficient.
p=p value.
* =highly significant p value.

When analyzing the amount of alcohol consumed in correlation to PASI score, the disease severity did not differ significantly with alcohol consumption ($p > 0.05$). No significant correlation was observed between PASI value with either raki or beer consumption. A significant and positive although moderate correlation was noted between PASI value in all individuals and wine consumption ($r = 0.37$, $p < 0.01$) and PASI value in males with wine consumption ($r = 0.34$, $p < 0.05$). Logistic regression analysis between PASI score and raki consumption in male patients with psoriasis duration of more than 3 years resulted in statistical significance ($b = 23.5$, Chi- Square value $= 9.7$, $p < 0.05$). The same analysis has shown no association between psoriasis severity and beer/ wine consumption with the above mentioned category.

No significant association was observed between PASI score, alcohol consumption and employment status.

DISCUSSION

Our study has confirmed the literature results and the efficacy of clinical experience of traditional markers like gamma glutamyltransferase (GGT), aspartate aminotransferase (AST), alanine aminotransferase (ALT) and mean corpuscular volume of erythrocytes (MCV) in the identification of alcohol users [12, 13]. These alcoholic biomarkers have positively correlated with alcohol consumption, especially with raki consumption. One explanation can be the fact that raki consumption was more popular among our patients when compared to beer or wine consumption. This can also be related to the relatively affordable price of raki and the low socioeconomic status of our in- patients. Indeed, the correlations we found between alcohol consumption and the values of these markers were moderate in the majority of cases. We think that other factors might have contributed to these results, including age, gender, medications, herbal preparations, medical conditions like obesity, diabetes, hypertension, thyroid problems and smoking [4]. Similar results were observed by Poikolainen *et al.* in male psoriatic patients in Finland with moderate correlations between GGT and alcohol consumption ($r = 0.35$, $p < 0.01$) and between AST and alcohol intake ($r = 0.3$, $p < 0.01$) [7].

Most of our patients had severe psoriasis, their disease was resistant to either topical or systemic treatment, the majority of them were males and they did consume alcohol significantly more than female psoriatic patients, a fact already confirmed in previous studies [6, 7]. We think that multiple factors contribute to these outcomes. Apart from genetic predisposition, immune system response and other factors contributing to psoriasis severity, alcohol abuse commonly encountered in these patients together with low socio- economic status can be a burden to their disease severity.

As shown in this study, identification of alcohol consumers with CAGE questionnaire, followed by a self- reported amount of alcoholic beverages type and amount, combined with the measurement of affordable and readily accessible parameters like GGT, AST and ALT in serum and MCV in erythrocytes is a simple way of helping dermatologists dealing with alcohol issues in psoriatic patients.

Regarding the results of this study no correlation between psoriasis severity and alcohol consumption could be established. Indeed, a positive correlation was found between wine consumption and psoriasis severity ($r = 0.37$, $p < 0.01$), however we did not regard this result as valid due to the small percentage of our patients consuming it, their low socioeconomic status and the possible consumption of wine made by traditional techniques.

On the other hand we did observe a significant association between raki consumption and psoriasis severity in male patients with a long duration of psoriasis ($b = 23.5$, $p < 0.05$). Similar results were observed in the study by Serwin *et al.* except that the consumption of high grade alcoholic beverages as a group did correlate with psoriasis severity in male patients with long- lasting disease ($R = 0.41$, $p < 0.05$), with no significant association found between beer or wine consumption with psoriasis severity ($-0.18 < R < 0.13$) [10]. On the other hand Kirby *et al.* found a significant association between physical severity of psoriasis and weekly alcohol consumption ($r = 0.27$, $p < 0.05$) [8].

We believe this finding makes our study unique since the specific role of raki in psoriasis severity has not been previously tested. Raki is a high grade alcoholic beverage that is traditionally and massively consumed among the Albanian people, men mostly. It contains about 45 % alcohol and is consumed plain, not mixed with ice or water as Turkish people do. It is similar to ouzo consumed by the Greek or grappa consumed by Italians [17].

Still our study has several limitations. We could not include other markers of alcohol use as carbohydrate-deficient transferrin (CDT) shown to be superior to other markers, due to its being not available as a test in our laboratories. We could not test the correlation of alcoholic markers with the amount of alcohol consumed as far as it concerns the gender differences, since our female patients consuming alcohol constituted a small part of the social drinker category only. Other beverages like non- light beer or those containing high grade alcohol were not the favorite of our patients, probably due to their low socioeconomic status and male predominance. Obviously, further studies and a more heterogenous group of psoriasis patients (in terms of socioeconomic status) are needed to assess the increased severity of the disease in patients consuming alcohol.

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APPENDIX

PASI = psoriasis area and severity index

GGT = gamma glutamyltransferase

AST = aspartate aminotransferase

ALT = alanine aminotransferase

MCV = mean corpuscular volume

CDT = carbohydrate- deficient transferrin

BSA = body surface area

r = correlation coefficient

b = regression coefficient

p = p value

R = Spearman's rank coefficient

CONFLICTS OF INTEREST

None.

FUNDING SOURCES

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