Moderate Alcohol Intake, Genital Vascularization, and Sexuality in Young, Healthy, Eumenorrheic Women. A Pilot Study

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ABSTRACT

Introduction. The relationship between alcohol and sexual function is complex and not completely understood.
Aim. To evaluate (in the early follicular phase and independently from sexual stimulation) in young, eumenorrheic, healthy, lean women the genital vascular effects of the light and moderate use of alcohol.
Methods. Eighty-four women undertook, in the early follicular phase of the menstrual cycle (days 3–5), the administration of the two-factor Italian McCoy Female Sexuality (MFSQ) and the Beck Depression Inventory (BDI) questionnaires; ultrasonographic measurement of the carotid intima-media thickness (IMT); and color Doppler evaluation of the carotid, clitoral, and labia minora arteries. Hormonal (estradiol, androstenedione, and testosterone) and biochemical (lipids, glucose, and insulin) parameters were tested.
Main Outcome Measures. The MFSQ and BDI questionnaires; the carotid IMT; the Pulsatility Index of internal carotid, clitoral, and labia minora arteries; blood pressure measurement; and hormonal and biochemical assays.
Results. The subjects were divided in: nondrinkers (group I); current (>1 year) light drinkers—1–10 drinks/month (group II); and current moderate drinkers—11–20 drinks/month (group III). The majority of the studied parameters did not vary among the different groups. The mean BDI was normal in the studied women. However, the lowest values were observed in the moderate drinkers group. The MFSQ did not show any difference among all the studied women. However, the number of intercourses/week and the incidence of vaginal orgasm were significantly higher in group III (moderate drinkers). The relationship between the drinking habits and different parameters showed an inverse relationship with the BDI. Furthermore, the BDI inversely correlated with orgasm frequency and with orgasm intensity.
Conclusions. Chronic slight/moderate alcohol consumption has no effects on genital vessels and vaginal lubrication. However, a moderate consumption of alcohol, through psychological and social disinhibiting effects, may favor sexual activities. **Battaglia C, Battaglia B, Mancini F, Nappi RE, Paradisi R, and Venturoli S. Moderate alcohol intake, genital vascularization, and sexuality in young, healthy, eumenorrheic women. A pilot study. J Sex Med 2011;8:2334–2343.**

Key Words. Alcohol; Genitalia; Sexuality; Ultrasonography; Doppler; Vascular Response of Clitoral Arteries

Introduction

Alcohol is the most commonly used recreational drug. It is an important risk factor for ill health and is, directly or indirectly, responsible for many different disorders and pathologies. An acute ingestion of excessive amounts of alcohol (binge drinking = ≥72 g of alcohol) has been associated with increased risks of myocardial infarction, stroke, and atrial fibrillation [1–3]. Furthermore, among individuals consuming excessive amounts of alcohol on a regular basis, an increased risk of developing metabolic syndrome, arterial stiffness, hypertension, alcoholic cardiomyopathy, and congestive heart failure has been described [4,5]. However, recent studies suggest that

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regular moderate alcohol consumption (especially red wine) has a protective effect on metabolic syndrome, type 2 diabetes, and cardiovascular diseases [6–8]. The complex biologic effects by which alcohol consumption modulates glucose and lipids metabolism, insulin secretion, energy balance, inflammation mediators, steroids production, and vascular wall reactivity are only partially understood [7,9–11]. In fact, gender, age, body mass index (BMI), beverage type, foods, use of medicines or other recreational drugs, and alcohol sensitivity (genetically determined) may be confounding factors [12].

The connection between alcohol and sexual function is complex. Social and psychological factors may influence substance use and sexual function. This makes it difficult to separate pharmacological responses from other psychosocial reactions. Alcohol is known to decrease inhibitions and is popularly believed to increase libido and sexual performances [13]. Epidemiological studies demonstrate that heavy drinkers are more likely to be sexually active and are more likely to have more sexual partners [14,15]. However, alcohol is a central nervous system depressant that slows down brain functioning, respiration, and circulation [16]. Most notably, as blood alcohol concentrations rise, γ-amino-butyric acid (an inhibitory neurotransmitter) increases and, by reducing the flow of information from the brain to the spinal cord, causes sedation [17]. Acute alcohol intoxication decreases libido, interferes with arousal, and impedes orgasm in women [17,18]. Furthermore, Covington and Kohen [19] demonstrated that chronic alcohol abuse leads to a significantly higher incidence of sexual dysfunction with 64% reporting lack of orgasm, 47% lack of vaginal lubrication, and 24% painful intercourse.

The aim of the present study was to evaluate (in a basal hypoestrogenic state and independently from any sexual stimulation) in young, eumenorrheic, healthy, lean women the genital vascular effects of the light and moderate use of alcohol. Furthermore, we also aimed to study the relationship of alcohol's use with indirect indexes of cardiovascular risk.

Subjects and Methods

Subjects

Between January 2009 and October 2010, 87 Caucasian, adult (18–35 years old), healthy, eumenorrheic (menstrual cycle of 25–35 days) women, who were referred to our clinic for annual gynecological checkup or contraceptive necessities, were progressively recruited into the study. An informed consent was obtained from all women who participated in the study. The study protocol was in accordance with the Helsinki II Declaration and was approved by the Hospital Research Review Committee.

During the first screening evaluation, participants were assessed with a detailed clinical history (i.e., menarchal age, presence of isolated pubarche, sexually transmitted diseases, etc.). Furthermore, we asked each woman on how many days/week she usually drank alcohol and the number of drinks per occasion. One drink (12 g of ethanol) was defined as 125 mL of wine, 100 mL of champagne/Italian spumante, 330 mL of beer, or 40 mL of straight spirit or liquor [12].

The Emilia Romagna Report on Alcohol Use and Abuse [20] evidenced that among premenopausal women who reported drinking alcohol, the average alcohol intake is 10 drinks/month (equivalent to 120 g of absolute alcohol). The U.S. National Health and Nutrition Examination Survey [21] suggested that, in women, an intake of >20 drinks/month has to be considered as a high consumption of alcohol. Thus, on the basis of the alcoholic drinking habitude, the subjects were divided in: nondrinkers (group I); current (>1 year) light drinkers—1–10 drinks/month (group II); and current moderate drinkers—11–20 drinks/month (group III).

A medical examination and an ultrasonographic (US) scan of the utero-ovarian structures were performed.

The women were selected among those who presented a normal BMI (weight in kg/height in m^2; BMI = 19–25) and those who were married or in stable heterosexual relationships (>1 year). Furthermore, the subjects were all para 0.

All subjects did not smoke, made no use of psychoactive or recreational substances, did not exercise intensely on a regular basis, and had not received any hormonal therapy for at least 6 months prior to the study. In addition, binge drinkers (≥6 drinks/day), individuals consuming excessive amounts of alcohol on a regular basis (>2 drinks/day), women who had not engaged in sexual activities during the prior month, and women with neurological, psychiatric, cardiovascular, and endocrine disorders; hypertension (systolic blood pressure >135 mm Hg and/or diastolic pressure >85 mm Hg); hirsutism; diabetes; and renal or hepatic illnesses were excluded from the study. Further exclusion criteria were: uterine mal-

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