



A hook to the liver and...to sex

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Abstract

People have heard about hepatic diseases, but others less fortunate are suffering from them; their causes may be gallbladder stones, hepatitis, alcoholism, etc. When such diseases become chronic and lack any medical treatment they may turn into cirrhosis. Cirrhosis is the last phase of chronic liver diseases altering the whole liver architecture and function with pronounced fibrosis. Cirrhotic patients may be beyond recovery and the prognosis is disheartening. Liver is the largest organ in the human body, it is important since it stores and metabolizes carbohydrates, proteins, vitamins, and fat; which in fact is required to be dissolved by the bile acids. Bile acids along with bilirubin constitute the bile produced by liver; if normal bile flow is stopped (cholestasis) their constituents will pass into the blood stream causing jaundice. Moreover, liver metabolizes drugs and alcohol; in fact, alcohol metabolism generates toxic derivatives that provoke liver injury. Liver is related to sexual health: first, liver damaged by alcoholism in men induces testicular dysfunction, low testosterone levels, sexual impotence and infertility. Second, chronic self-medication in women or the intake of high doses of oral contraceptives without medical observation may worsen a previous liver disease, as it is the case of alcoholic women whom are prone to worse hepatic infections. It is imperative to advice that alcohol abuse must be controlled to avoid not only hepatic damage but also sexual health injury; in addition, oral contraceptives intake by women shall be under strict medical surveillance along with prior hepatic check. Therefore, people may drink a glass of wine and women should be able to take the pill, but in a responsible manner, so they keep away from a hook to the liver and...to sex

Keywords: Alcohol, Cholestasis, Cirrhosis, Contraceptives, Liver, Testicles.

Introduction

People have heard about liver diseases (hepatopathies) and some others less fortunate suffer from them, as it is the case of a patient with hepatitis who should rest and get a diet rich in carbohydrates, or a pain-suffering woman complaining about gallbladder stones (cholelithiasis), and, in worst cases, someone who did not receive opportune medical treating for these illnesses as well as a chronic alcoholic person who may be later a cirrhotic patient. Cirrhosis is the final stage caused by many chronic diseases, where the normal architecture and function have been lost in a high extent along with pronounced fibrosis; besides, in such a phase the patient may be beyond recovery and the clinical prognosis is quite disheartening. In fact, cirrhosis and other chronic liver diseases are the second cause of mortality in male and female economically productive population in Mexico.

Liver is the largest inner organ, located to the right side of the human body and it is very important since it is the "biochemical laboratory" because carbohydrates, the main source of energy, are stored and processed in the liver, also, several proteins are degraded and produced in this organ, even some which are required to decompose food, others that constitute cells or those necessary for coagulation in blood; in addition, liver is a reservoir of vitamins and fat. In this respect, fat could not be absorbed by the body if the liver did not produce the "natural detergent" to dissolve and use it. That detergent is comprised of bile acids that together with bilirubin constitute the bile. When bile flow is blocked into hepatic conducts, bile acids and bilirubin pass into the blood stream causing "cholestasis", that stains the skin yellow (jaundice) and provokes itching (pruritus). Another function of the liver is to transform and metabolize toxic or foreign agents, included drugs, which come into the body by diverse ways, most commonly by oral intake; particularly alcohol. Excessive and chronic alcohol drinking may lead to cirrhosis because liver cannot metabolize great amounts of alcohol so fast, in addition to its toxic metabolites to eliminate them or turning them into innocuous.

So far the functions and importance of liver have been pointed out, therefore, two cases deserve to be discussed regarding a close relationship between liver and reproductive health; firstly, chronic liver damage and alcoholic cirrhosis may affect testicles, and secondly, uncontrolled oral contraceptives intake may impair the liver.

Testicular damage as a consequence of chronic liver injury and alcoholic cirrhosis.

As mentioned above, hepatic cirrhosis is the second to fourth cause of death in Mexico and ranking fifth place worldwide. Alcoholism is one of the main causal agents, besides, this affects the economically productive population that is also in reproductive age. The State of Hidalgo in Mexico has the highest rate of mortality due to alcoholic cirrhosis; in addition, it is the second largest consumer state of "pulque", an ancient alcoholic beverage. There is a close correlation between excessive pulque intake and alcoholic cirrhosis, compared with other alcoholic beverages, although continuous abuse of beer drinking is likely a risk factor as well. The hypogonadism is one interesting consequence of chronic liver damage as well as alcoholic cirrhosis in male patients, this is characterized by size reduction and function of testicles. low levels of testosterone (hormone which provokes the masculine characteristics and participates in spermatozoa production), inhibition of libido (lack of sexual desire), impotence (difficulty to get an erection and to have a sexual intercourse), and infertility (not being able to conceive). It is also known that during chronic liver damage there exists a dysfunction in the hypothalamus-hypophysis-gonads axis which means a dysfunction of the brain glandular zone that controls the testicles function and the production of new spermatozoa with the required quality to conceive. Besides, alcoholism causes necrosis (cellular death) and fibrosis (excessive collagen production as internal scars) in testicles as well as an

imbalance in the immune system that leads to an increase in penis and testicle infections and also to chronic testicular inflammation. It is very well known that male patients with chronic liver diseases have a higher rate of erectile dysfunction (ED); in addition, alcohol-dependent men commonly suffer from ED and men with ED are frequently chronic alcohol addicts. Thus, there is a strong correlation among liver damage, ED and low testosterone levels. One may think that only alcoholic or cirrhotic men would suffer from some hypogonadism effects, however it is wrong, experiments performed in rats and humans have shown that the acute administration of some milliliters of alcohol (1.5-2.5 g/kg as dose) are enough to significantly lower testosterone concentration, even to 50% present in blood. In fact, an undesired erectile dysfunction may suddenly appear with 60 up to 120 mL of alcohol intake (4 to 7 average drinks, 15 mL of alcohol each one, in a male weighing 75 kg). In addition, a significant decrease in plasma testosterone concentration has been shown in men during a hangover period of 12-20 hours after the ingestion of 1.5 g/kg of alcohol. Moreover, plasma testosterone concentrations are lower in subjects who have the most severe hangover, and will take much longer to ejaculate if they are able to do so.¹⁻¹²

Liver damaged by chronic high doses and self-medication with oral contraceptives.

Oral contraceptives (OC) are drugs widely consumed around the world as well as in Mexico.

Formulation of OC is often the mixture of two compounds, one estrogen and one progestin (Fig. 1). In the 70's there were several clinical reports claiming either estrogen or progestin were suspicious of causing liver damage and cancer in women who consume them chronically and uninterruptedly or in doses not controlled by a physician. It is worth to note that OC are not recommended when any antecedent of liver disease exists, even more, OC are contraindicated in patients with viral hepatitis (B or C), gallbladder diseases, or in alcoholic women; hence, it is known that OC increases liver damage started off by those diseases, which are risk factors for a later cirrhosis.¹⁻¹²

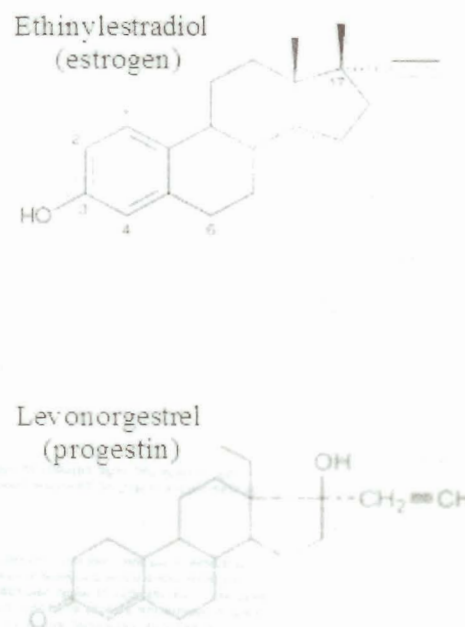


Figure 1. Examples of estrogen and progestin, constituents of many combined oral contraceptives.

It is very important to mention that deleterious effects elicited by OC depend on the dose, thus, the higher the dose the higher the risk for hepatic injury; nevertheless, the current doses in OC are much lower than those administered in the 70's, similarly modern doses are the minimal amount to provide reliable contraception (97-99 % of efficacy). Unfortunately many women take OC in high doses without the adequate medical surveillance of a gynecologist. Therefore, OC self-medication in women who ignore the case may suffer perhaps from a silent hepatic disease and worsen their preceding condition to future cirrhosis.¹⁻¹² Various animal experiments have demonstrated that OC or its constituents when administered for a long period of time and in high doses may worsen liver damage, cause cholestasis, and augment toxic effects of infections in alcoholism. Other reports point out that some ethnic groups show genetic predisposition towards developing cholestasis by OC intake. There are diverse deleterious mechanisms through OC inducing liver injury: a) diminishing cholesterol solubility in bile then increasing gallbladder stones, b) inhibiting bile canalicular membrane transporters in hepatocytes provoking cholestasis, c) impairing hepatic membrane integrity, and d) enhancing oxidative stress with the consequent peroxidation of membranes and DNA damage. Undoubtedly, OC also brings along several benefits to reproductive health, the most important is to avoid undesired pregnancies (their noncontraceptive health benefits are, among others, improvements in dysmenorrhea, anemia, acne, etc.), but women taking OC should be under medical advice and be sure not to have been subjected to any previous liver disease. Furthermore, contraceptive transdermal patches are a new method very appreciated by many women for its once-a-week convenient application, but some versions contain higher doses of estrogens and progestins than OC; thus, the potential for an excessive hormonal exposure raises concerns for the risks of adverse effects (cholestasis and liver damage of course, among many others)¹⁻¹²

Conclusions

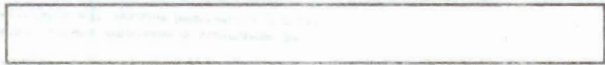
Nobody shall keep men from enjoying wine, beer, pulque, etc., neither keeping women from using the "pill" so long as it proves to be an effective contraceptive method. On the contrary, it is imperative to keep reproductive health in shape without neglecting hepatic health or vice versa through educated medical guidance and personal responsibility. Everyone has the right to be informed, so medical information concerning reproductive and hepatic health should be accessible from the big cities to marginalized little towns. Indeed, it is much better to be responsible and informed in time than receiving a hook to the liver and... to sex.

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