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Prevalence of sexual dysfunction in male patients with chronic liver disease

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Abstract

Background: Chronic liver disease, especially cirrhosis, can cause endocrine, morphological, and psychological changes that impair sexual health. Despite its impact on quality of life, sexual health remains insufficiently studied in hepatology. This study aimed to evaluate the prevalence of sexual dysfunction in male patients with chronic liver disease and identify associated risk factors.

Materials and Methods: We conducted a single-center, comparative, descriptive, and analytical study in 2023. Male patients with chronic liver disease (Group 1) were compared to controls without liver disease (Group 2). Exclusion criteria were overt hepatic encephalopathy, cognitive impairment, and active alcohol abuse. Sexual function was assessed using the International Index of Erectile Function (IIEF).

Results: The study included 120 participants: 60 with chronic liver disease and 60 controls, with a mean age of 44.6 years. Among patients with liver disease, 65% had cirrhosis, 18% HBV, 18% HCV, 8% NAFLD, and other etiologies. Sexual dysfunction was significantly more frequent in patients with liver disease compared to controls: erectile dysfunction (66.6% vs. 26.6%), orgasmic dysfunction (58.3% vs. 23.3%), decreased desire (68.3% vs. 16.6%), reduced intercourse satisfaction (63.3% vs. 30%), and reduced overall satisfaction (75% vs. 28.3%) (all $p<0.05$). Cirrhosis was the only independent risk factor (OR 7.9; $p=0.019$).

Conclusion: Sexual dysfunction is frequent in male patients with chronic liver disease, with cirrhosis as the main risk factor. Systematic screening and a multidisciplinary approach are needed to improve care.

Keywords: Sexual Dysfunction; Male Patients; Liver Disease; Prevalence

1. Introduction

Chronic liver diseases, particularly cirrhosis, induce significant endocrine disturbances in men, including hypogonadism, reduced bioavailable testosterone, elevated estrogen levels, gynecomastia, and testicular atrophy, especially in advanced stages of the disease. These hormonal imbalances result from impaired hepatic clearance of estrogens, increased peripheral aromatization of androgens, elevated sex hormone–binding globulin (SHBG) levels, and disruption of the hypothalamic–pituitary–gonadal axis [1], [2].

These endocrine and metabolic abnormalities often manifest as sexual health disorders, which are an essential aspect of quality of life but remain insufficiently studied in hepatology. When addressed, the focus is almost exclusively on erectile dysfunction, while other dimensions of male sexuality such as decreased libido, orgasmic alterations, and ejaculatory disorders are largely neglected.

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Erectile dysfunction (ED) is reported at very high rates among men with chronic liver disease, with prevalence ranging from 55% to 90% depending on the series and disease severity [3, 4]. In a meta-analysis including 14 studies and 770 patients, the overall prevalence of ED was estimated at 79%, reaching 88.4% in patients with decompensated cirrhosis compared to 53.6% in compensated cases [4]. In another study focusing on compensated cirrhosis, the prevalence remained high (55.9%), highlighting that sexual dysfunction can occur even in the early stages of the disease [3].

The underlying mechanisms are complex and multifactorial, including hormonal imbalances, portal hypertension promoting the aromatization of testosterone to estradiol, metabolic and cardiovascular comorbidities (diabetes, hypertension, obesity), the severity of liver disease assessed by Child-Pugh and MELD scores, as well as sarcopenia and hypoalbuminemia [5, 6, 4]. Psychological factors (depression, anxiety, loss of self-esteem), social stigma, and adverse effects of certain treatments (non-selective beta-blockers, spironolactone) further exacerbate this issue [5, 6].

Beyond erectile function, these sexual disorders profoundly affect quality of life, fertility, marital dynamics, and the overall psychosocial well-being of patients, making them a frequently overlooked public health concern. Despite their importance, sexual dysfunctions are rarely integrated into clinical management and remain insufficiently explored in hepatology research.

The objective of our study was to assess the prevalence and severity of sexual dysfunction in male patients with chronic liver disease and to identify associated risk factors.

2. Materials and Methods

This was a cross-sectional, comparative, descriptive, and analytical study conducted from July to September 2023 in the Hepato-Gastroenterology and Proctology "Medicine B" department of Ibn Sina university hospital center, Mohammed V University, Rabat, Morocco.

2.1. Study Population

The study included two groups of male patients

- **Group 1 (chronic liver disease):** male patients followed for chronic liver disease.
- **Group 2 (control group):** male patients followed in digestive consultations, without any liver disease.

2.1.1. Exclusion Criteria

- Hepatic encephalopathy greater than grade I.
- History of major psychiatric disorders, particularly depression.
- Hospitalization within the month preceding the questionnaire administration.

2.1.2. Sexual Health Assessment

Sexual health was evaluated using the full version of the International Index of Erectile Function (IIEF) questionnaire, comprising 15 items and validated for the multidimensional assessment of male sexual function. The questions are grouped into five domains

- **Erectile function (6 items):** total score 6–30; erectile dysfunction defined as a score <26.
- **Orgasmic function (2 items):** total score 0–10; orgasmic disorder defined as a score <9.
- **Sexual desire (2 items):** total score 2–10; desire disorder defined as a score <9.
- **Intercourse satisfaction (3 items):** total score 3–15; sexual dissatisfaction defined as a score <13.
- **Overall satisfaction (2 items):** total score 2–10; overall dissatisfaction defined as a score <9.

2.1.3. Data Collection

Data were collected during consultations through standardized interviews and the IIEF questionnaire. The questionnaire was administered only after obtaining the patients' signed informed consent, ensuring voluntary participation and confidentiality. Demographic, clinical, and biological data were extracted from patients' medical records.

2.1.4. Statistical Analysis

Data analysis was performed using Jamovi version 2.3.28.

- Group comparisons (chronic liver disease vs. control) were conducted using Student's t-test for quantitative variables and the chi-square test for qualitative variables.
- Factors associated with sexual dysfunction were analyzed using linear regression, with a significance level set at $p < 0.05$.
- Qualitative variables are presented as counts and percentages, while quantitative variables are expressed as mean ± standard deviation.

The study protocol was approved by the ethics committee.

3. Results

3.1. Demographic and Clinical Characteristics

The study included 120 male patients who agreed to complete the questionnaire: 60 with chronic liver disease (Group 1) and 60 without liver disease (control group, Group 2). All participants had a similar socio-economic status.

- Mean age: 44.6 ± 13.3 years for the overall study population (range: 21–73 years), with 46 ± 12.5 years in the chronic liver disease group and 43.2 ± 14.2 years in the control group.

In the group of patients with chronic liver disease (***Table 1***):

- 34 patients (65%) had F4 cirrhosis, of whom 24 (40%) had a history of decompensation.
- The etiologies were: Hepatitis B virus infection 18 (30%), Hepatitis C virus infection 11 (18%), Non-Alcoholic Fatty Liver Disease 5 (8%), unknown cause 5 (8%), portal hypertension 5 (8%), portal vein thrombosis 4 (6.6%), Autoimmune Hepatitis 2 (3.3%), Primary Biliary Cholangitis 2 (3.3%), Primary Sclerosing Cholangitis 3 (5%), portal cavernoma 2 (3.3%), Budd-Chiari syndrome 1 (1.6%), Hepatocellular Carcinoma 1 (1.6%), and hepatic sarcoidosis 1 (1.6%).

Table 1 Characteristics of the Chronic Liver Disease Group (G)

Characteristics of the Chronic Liver Disease Group (G) N = 60 (%)	
Mean age	46 ± 12.5
cirrhotic F4	34 (65%)
history of decompensation	24 (40%)
HBV	18 (30%)
HCV	11 (18%)
NAFLD	5 (8%)
unknown cause	5 (8%)
portal hypertension	5 (8%)
portal vein thrombosis	4 (6.6%)
AIH	2 (3.3%)
PSC	3 (5%)
portal cavernoma	2 (3.3%)
PBC	2 (3.3%)
Budd-Chiari syndrome	1 (1.6%)
HCC	1 (1.6%)
hepatic sarcoidosis	1 (1.6%)

3.1.1. Clinical Characteristics of Group 2 (Control) (Table2)

Table 2 Clinical Characteristics of Group 2 (Control)

Clinical Characteristics of Group 2 (Control) N = 60 (%)	
Mean age	43.2 ± 14.2
Gastritis	5 (8%)
Epigastric pain	8 (13.3%)
Functional oculopathy	4 (6.6%)
Abdominal colic's	4 (6.6%)
Proctological symptoms	7 (11.6%)
Transit disorders	8(13.3%)
Other causes	24 (40%)

3.1.2. Prevalence of Sexual Dysfunction by Group (Table 3)

Patients in the chronic liver disease group had higher rates of erectile dysfunction, orgasmic dysfunction, decreased sexual desire, reduced intercourse satisfaction, and reduced overall satisfaction compared to the control group, with rates of 40/60 (66.6%) vs 16/60 (26.6%) ($p = 0.003$); 35/60 (58.3%) vs 14/60 (23.3%) ($p = 0.012$); 41/60 (68.3%) vs 10/60 (16.6%) ($p < 0.001$); 38/60 (63.3%) vs 18/60 (30%) ($p < 0.001$); and 45/60 (75%) vs 17/60 (28.3%) ($p < 0.001$), respectively.

Table 3 Prevalence of Sexual Dysfunction in the Two Groups

Sexual Domain	**Chronic Liver Disease Group n=60 (%)**	**Control Group n=60 n=60 (%)**	**p**
Erectile dysfunction	40 (66.6%)	16 (26.6%)	0.003
Orgasmic dysfunction	35 (58.3%)	14 (23.3%)	0.012
Decreased sexual desire	41 (68.3%)	10 (16.6%)	<0.001
Intercourse dissatisfaction	38 (63.3%)	18 (30%)	<0.001
Overall dissatisfaction	45 (75%)	17 (28.3%)	<0.001

These results indicate that all aspects of sexual health are significantly impaired in patients with chronic liver disease compared to the control group.

3.2. Statistical Analysis

3.2.1. Factors Associated with Erectile Dysfunction

Univariate and multivariate linear regression analysis showed that among the different factors studied, advanced fibrosis (F4) was significantly associated with erectile dysfunction in patients with chronic liver disease. The risk of erectile dysfunction was therefore seven times higher in patients with F4-stage fibrosis (OR = 7, $p = 0.019$) ***(Table 4).***

No other factors studied (age, smoking, etiology of liver disease, history of decompensation, comorbidities) showed a statistically significant association with erectile dysfunction in our cohort.

Table 4 Statistical Analysis of Factors Associated with Erectile Dysfunction

Univariate Analysis				**Multivariate Analysis**			
Predictor	OR	95% CI	p	Predictor	OR	95% CI	p
Age	1.03	[0.051 - 3.33]	0.105	Age	1.09	[0.99 – 1.20]	0.611
F4 Cirrhosis	19.4	[10.2 - 49]	<0.001	F4 Cirrhosis	7.9	[7.28 – 60.12]	0.019
Decompensation	11.1	[2.06 – 17.91]	<0.01	Decompensation	2.35	[5.94 – 13.22]	0.091
Diabetes	0.41	[0.1 - 0.45]	0.99				
Smoking	0.4	[0.113 – 1.5]	0.178	Smoking	0.15	[0.007 – 3.61]	0.236
Cardiovascular disease	1.3	[0.87 – 2.02]	0.514				
Hypertension	0.81	[0.17– 3.24]	0.789				
Hepatitis C virus	0.25	[0.69 – 4.12]	0.070	Hepatitis C virus	1.8	[0.632 – 5.22]	0.993
Non-Alcoholic Fatty Liver Disease	1.2	[0.371 – 9.35]	1.69				
Hepatitis B virus	0.70	[0.2 – 2.08]	0.551				
Portal Hypertension		[-5.74 – 4.25]	0.766				
Portal Vein Thrombosis		[-4.01 – 7.05]	0.585				

4. Discussion

Sexual dysfunction is a common complication in men with chronic liver disease, particularly cirrhosis, and can significantly affect quality of life. These dysfunctions involve various aspects of male sexuality, including erectile function, sexual desire, orgasmic capacity, as well as sexual and overall satisfaction. However, despite their considerable impact on physical and psychological well-being, these disorders often remain underdiagnosed and insufficiently studied in the clinical literature [7].

Most previous studies on male patients with liver disease have primarily focused on erectile dysfunction, without systematically evaluating other dimensions of sexuality. However, evidence suggests that sexual desire, orgasm, and overall satisfaction can also be impaired in these patients, contributing to a significant deterioration in their quality of life [8].

The strength of our study lies in the comprehensive assessment of all domains of male sexuality, with a direct comparison to a healthy control group, allowing for a better characterization of the overall impact of liver disease on sexual function. These results provide a more precise and exhaustive understanding of this issue.

In our series, sexual dysfunction was highly prevalent among patients with chronic liver disease. Erectile dysfunction affected 66.6% of patients compared to 26.6% of controls (p = 0.003). Disorders of sexual desire (68.3% vs 16.6%), orgasmic dysfunction (58.3% vs 23.3%), and the high proportion of dissatisfaction (63.3% for intercourse satisfaction, 75% for overall satisfaction) reflect a multidimensional impairment of sexuality, far beyond erectile function alone.

These findings are consistent with the existing literature. Several reviews and meta-analyses estimate the overall prevalence of erectile dysfunction (ED) in cirrhotic patients to range from 50% to 90%, reaching 88% in some cohorts of decompensated cirrhosis [9, 6]. A recent meta-analysis reported an average prevalence of 79% in cirrhosis [7]. In contrast, in non-cirrhotic chronic liver disease, the figures are lower, with non-cirrhotic chronic Hepatitis B patients showing reduced rates [10] and approximately 29% in Hepatitis C virus-infected patients without cirrhosis [11]. The association between Non-Alcoholic Fatty Liver Disease (NAFLD) and ED has also been widely demonstrated, with prevalence around 30–50% even in the pre-cirrhotic stages [12].

Sexual desire was also impaired in our population (68.3%). However, this domain is often less studied than erectile dysfunction. In some series, the prevalence of decreased sexual desire ranges from 20% to 70% depending on the stage of liver disease [13]. Even in the absence of cirrhosis, reduced desire has been observed in chronic viral hepatitis and in Non-Alcoholic Fatty Liver Disease (NAFLD), likely related to hypogonadism, chronic fatigue, and depression [12]. Impairment of sexual desire therefore appears to be a central element in the deterioration of quality of life, often underestimated in clinical practice.

Regarding orgasmic function, 58.3% of our patients reported impairment compared to 23.3% of controls. The literature describes prevalences ranging from 30% to 60% in cirrhosis [14], but this domain is rarely detailed in most studies. The high prevalence of dysfunction observed in our series highlights the necessity of using a comprehensive tool such as the IIEF-15 to assess all dimensions of sexuality, beyond erectile function alone.

Sexual dissatisfaction was also prominent in our cohort (63.3% for intercourse satisfaction, 75% for overall satisfaction). Several studies confirm that sexual satisfaction and overall quality of life are markedly compromised in chronic liver diseases, and improvements observed after liver transplantation in some series underscore the causal relationship between liver impairment and sexual function [15].

From an etiological perspective, sexual dysfunction can be observed regardless of the type of liver disease. Whether viral, metabolic, or toxic in origin, sexual dysfunction appears as a frequent consequence of chronic liver disease.

In our study, F4-stage fibrosis (cirrhosis) emerged as an independent predictor of erectile dysfunction (OR ≈ 7.9; $p = 0.019$). This aligns with the literature, where liver disease severity (Child-Pugh, MELD scores) is recognized as the main determinant of erectile dysfunction [9, 6]. Other factors reported in the literature include age, diabetes, hypertension, obesity, testosterone deficiency, hypoalbuminemia, and the use of certain medications (beta-blockers, diuretics) [13, 16].

Our results confirm the importance of a systematic evaluation of sexual function in patients with chronic liver disease. The use of validated questionnaires such as the IIEF-15, combined with a multidisciplinary management approach (hepatologist, endocrinologist, sexologist, psychologist), appears essential to improve the quality of life of these patients.

5. Conclusion

Sexual dysfunction is common in patients with chronic liver disease, with cirrhosis being the main risk factor. Sexual dysfunction should be systematically screened for, using a multidisciplinary approach to ensure optimal patient management.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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