



Review Article

Sexual dysfunction in alcohol dependence

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Abstract

Alcohol influences human sexual behaviour by acting on limbic-hypothalamic hedonic motivational pathways. Traditionally, alcohol is used to enhance sexual function and is associated with risky sexual behaviours. However, alcohol associated sexual dysfunction is well known and may be caused by various frequently comorbid physical and psychological conditions and by direct effects of alcohol as well. Strained interpersonal relationships, commonly seen in patients with alcohol dependence, also contribute to sexual dysfunctions. Various medications used in treatment of commonly seen co-morbidities and de-addiction prophylaxis are also associated with sexual dysfunction. Sexual dysfunction, thus interferes with treatment adherence and effectiveness of de-addiction interventions. Managing sexual dysfunction related distress is challenging and often requires an integrated approach comprising of pharmacological and non-pharmacological interventions. Partner participation and consultation liaison are key aspects. In the absence of physical co-morbidities, alcohol use related sexual dysfunction is often reversible.

Keywords:

Alcohol, Sexual dysfunction, Erectile dysfunction, Comorbidity, Treatment

Introduction

Alcohol acts on limbic-hypothalamic hedonic motivational pathways, thereby

influencing basic biological functions including sexual behaviors. Alcohol has been traditionally used as an aphrodisiac agent that facilitates sexual behavior. However, alcohol use has been known to cause sexual dysfunction and has been associated with risky sexual behaviors as well (Pahla et al., 2008).

Various drugs used in treatment of alcohol use disorder may have negative impact on sexual function. These side-effects may influence treatment compliance to a great

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extent. Further, numerous physical and psychological comorbidities associated with alcohol use might contribute to sexual dysfunction in these subjects. In recent times, there has been significant research in this field. However, effects of alcohol on human sexuality are difficult to describe. Sexuality differs greatly between various societies and between males and females. Ageing also influences human sexual behavior. Common sexual dysfunctions associated with alcohol include erectile dysfunction, premature ejaculation, decreased libido/desire and retarded ejaculation in males and decreased desire, vaginal dryness and dyspareunia in females (Hayes et al., 2006). In various epidemiological studies, the prevalence of sexual dysfunction has been reported to be between 40-95% in alcohol-dependent individuals. This wide range is due to lack of standard definitions for alcohol use disorder, lack of usage of standard instruments to assess sexual dysfunction and influence of age, socioeconomic status and culture on sexual function (Pendharkar et al., 2016). Sexual dysfunction leads to marked interpersonal difficulty and in turn, worsens alcohol use and decreased adherence to treatment. Addressing this issue may substantially improve their quality of life. Although challenging to address, this aspect must be included in comprehensive assessment and treatment planning in patients with alcohol use disorder (Arackal & Benegal, 2007).

Epidemiology

Chronic alcohol consumption is among the leading cause of sexual dysfunction in both males and females. Population based studies and meta-analysis have suggested high prevalence of sexual difficulties in patients with alcohol dependence. Sexual dysfunction has been found in 40-95% of alcohol dependent subjects, which is considerably higher than healthy controls and those who

consume alcohol occasionally (Pendharkar et al., 2016). Common sexual dysfunctions in alcohol dependent males include erectile dysfunction, reduced sexual desire, premature ejaculation and retarded ejaculation. Further, episodes of erectile dysfunction are fairly common in these individuals and often correlate with quantity of alcohol consumption (Arackal & Benegal, 2007). Reduced sexual desire and erectile failure often coexist (Fahrner, 1987). Greater quantity and duration of alcohol consumption tend to worsen sexual dysfunction in men (Pendharkar et al., 2016). Erectile failure has been found to be significantly higher in those who consume more than three standard units (1 standard unit = 12 g of ethanol) of alcohol daily (Mirone et al., 2004). Arackal et al., studied the prevalence of sexual dysfunction in 100 indoor patients with alcohol dependence in south India. Patients with physical and psychiatric co-morbidities, those who consume substances other than alcohol and those consuming drugs that affect sexual function were excluded. Sexual dysfunction was found in 71% of the participants. The most significant predictor of sexual dysfunction was amount of alcohol consumed (Arackal & Benegal, 2007). Pendharkar et al., also found sexual dysfunction in 58.4 % of patients, seeking treatment for alcohol dependence, in a tertiary care center in north India (Pendharkar et al., 2016). In both these Indian studies, low sexual desire, erectile dysfunction and premature ejaculation were most common sexual dysfunction associated with alcohol dependence. Schiavi et al. did not find any difference in sexual functioning between those who were abstinent for 2-3 months and healthy controls. Hence, it can be fairly said that alcohol related sexual dysfunction is reversible (Schiavi et al., 1995). Sexual dysfunction is fairly common among women who consume alcohol with nearly two-third reporting reduced sexual desire.

Other sexual dysfunctions in women include difficulty in arousal, inability to achieve orgasm and dyspareunia. However, very few women with sexual dysfunction were distressed due to these concerns (Hayes et al., 2006). Sexual dysfunction in patients with alcohol dependence tends to worsen with age in both men and women. However, strikingly as the age advances, fewer of these patients are distressed and concerned about the same. It is believed that various cultural factors and reduced expectations of partners with advancing age, may be responsible for the same (Pendharkar et al., 2016; Derogatis & Burnett, 2008).

Alcohol and high-risk sexual behaviors

Recreational drugs have been implicated in high-risk sexual behaviors like multiple sexual partners, unprotected sex and higher rates of indulging in “Sex for money or drugs” (Lejuez et al., 2005). Alcohol use has also been prominently associated with high-risk behaviors that increase the risk of HIV and other sexually transmitted infections in people of all age groups. Alcohol use may indirectly contribute to sexual harassments and unwanted pregnancies as well. Association of alcohol and high-risk sexual behaviors is also influenced by relationship factors like partner type and duration of relationship (Brown et al., 2016). Alcohol exerts positive effect on instigatory cues like sexual arousal and limits one’s capacity to follow inhibitory cues like sex without a condom (Steele & Josephs, 1990).

Etiology of sexual dysfunction in alcohol use disorder

Hormonal factors

In a systematic review, Erol et al. have concluded increased testosterone and estrogen level increases risk for alcohol use disorder in males and females respectively (Erol et al., 2019). Reduced levels of

testosterone and elevated serum estradiol has been found in patients with alcohol dependence. Significant and progressive decline in testicular mass is seen in alcohol fed rat in very early stages. These gonadal hormonal changes appear before the elevation of serum ceruloplasmin (marker of liver feminization) in animal studies (Tadic et al., 2000). High prevalence of erectile dysfunction in patients with alcohol dependence is not related to reduced testosterone or elevated prolactin levels. Marked rise in gonadotropins in patients with alcohol dependence is consistent with toxic effect of alcohol on testes (Pach et al., 2007). In sobriety, ranging from 2 to 36 months, even persons with prolonged and heavy alcohol consumption have normal sexual functioning, in the absence of severe hepatic and gonadal failure (Schiavi et al., 1995). Hence, it can be concluded that, alcohol consumption is an independent risk factor for sexual dysfunction and gonadal hormonal imbalance contributes to only a small fraction. Importantly, in the absence of substantial liver failure, this dysfunction is reversible.

Neural and vascular factors

Long term and heavy intake of alcohol leads to central and peripheral neuropathy (Taniguchi & Kaneko, 1997). Abnormal deep breathing test (indirect marker of vagal dysfunction) and reduced motor conduction velocity in lower limbs have been observed in patients with alcohol dependence without any obvious nutritional deficiencies. Vagal dysfunction seems to be the major etiology for sexual dysfunction in these patients. Vagal dysfunction has been shown to improve with abstinence. Erectile dysfunction may be the only symptom of parasympathetic neuropathy in heavy drinkers (Villalta et al., 1989). In addition to vagal dysfunction, loss of smooth muscle and decreased activity of nitric oxide

synthase in penis may lead to sexual dysfunction in men with heavy alcohol use (Gen et al., 2006).

Other physical comorbidities

Alcohol intake may contribute to obesity, which in turn, is linked to increased risk for cardiovascular morbidity and sleep apnea (Traversy & Chaput, 2015). Prevalence of erectile dysfunction is three times higher in obese men (Anderson et al., 2008). Further, abdominal obesity and lack of exercise have been regarded as independent factors contributing to erectile dysfunction (Janiszewski et al., 2009). Sleep apnea disturbs REM sleep, thereby interfering with nocturnal erections. This can lead to corporeal fibrosis and thus erectile dysfunction (Budweiser et al., 2009). Alcohol consumption has been regarded as one of the most common etiology of chronic liver disease and cirrhosis. Using standardized instruments like International Index of Erectile Function (IIEF) questionnaire, the prevalence of erectile dysfunction in chronic liver disease and cirrhosis was around 50% among Turkish men. Hypogonadism and feminization have been regarded as primary etiologies for the same (Simsek et al., 2005).

Psychological factors

Hazardous use of alcohol jeopardizes family life through conflicts, marital violence, disagreements and dissolution. These marital problems might predispose to increased alcohol consumption as well. This in turn has negative impact on intimacy (Leonard & Eiden, 2007). Alcohol related sexual dysfunction and promiscuity in male partner contributes to sexual dissatisfaction and hence sexual dysfunction in women, as well (Chedraui et al., 2009).

Psychiatric disorders and treatments

Nearly 3/4th of patients with substance use disorder have a life time risk of developing a

mental disorder (Ross et al., 1988). Alcohol and other substance use disorders further worsen the status of psychiatric disorders and vice versa. Sexual dysfunction is common among people suffering from various psychiatric disorders including mood disorders, anxiety disorders and psychotic disorders. Most common sexual dysfunction among these is hypofunction. Premature ejaculation is also common in anxiety and depression (Clayton & Balon, 2009). Various psychotropic medications also lead to sexual side effects and this in turn may affect adherence to treatment protocols. Hence, it is very important to distinguish pre-existing sexual dysfunctions from treatment-emergent ones (Gitlin, 1994). Virtually all phases of sexual activity can be affected by psychotropic agents. SSRI/SNRI mainly affect orgasm, whereas antipsychotics have negative impact on sexual desire. Antipsychotics are also associated with hyperprolactinemia (Gitlin, 1994). It is not clear whether mood stabilizers and benzodiazepines also cause sexual dysfunction.

Drugs used in de-addiction

Disulfiram, baclofen, naltrexone, acamprosate and topiramate are four most common drugs used in pharmaco-prophylaxis of alcohol dependence (Williams, 2005). Sexual dysfunction has been seen in patients receiving baclofen (38.9%) and disulfiram (10%) for alcohol dependence, in a study from north India (Grover et al., 2014). Both augmentation of sexual response and sexual dysfunction have been reported with naltrexone (Sathe et al., 2001). Naltrexone is also used in treatment of compulsive sexual behaviour disorder (Savard et al., 2020). Sexual dysfunction reported with these agents, is a matter of concern, and needs to be addressed as it may influence compliance with treatment (Grover et al., 2014).

Other medications

Besides various psychotropic medications described above, various non-psychotropic medications like thiazide diuretics, beta-blockers, antihistamines and NSAIDs may cause sexual dysfunction in one or more domain (Clayton & Hamilton, 2009).

Approach to the patient

Multidimensional assessment

Several factors contribute to or aggravate sexual dysfunction associated with alcohol. Due to various reasons including lack of privacy, sociocultural aspects and embarrassment, patients may not voluntarily divulge information regarding sexual dysfunction. Poor treatment response, lack of adherence to treatment, relationship problems and depression may be indirect clues to underlying sexual dysfunction. It may be the sexual partner, who actually complains about such concerns first. Clinicians must develop skills and incorporate the assessment of sexual function as a part of comprehensive assessment of persons with harmful use of alcohol. Patients and their partners must be encouraged to discuss about this aspect. Comfort and confidentiality must be ensured.

Complete history including information about current and past alcohol consumption, temporal onset of sexual dysfunction with heavy alcohol use, associated physical and psychiatric co-morbidities, medications (current and past), interpersonal relationships must be enquired. Each phase of sexual response must be discussed in detail and dysfunction, if any, must be assessed by using standardized tools. Impact of dysfunction on interpersonal relationships, treatment adherence, drinking pattern and overall mental health status must be assessed. Sexual experiences other than heterosexual

intercourse must be enquired. If the patient or the partner do not express any distress, no treatment may be required.

Various investigations including CBC, RFT, LFT, FBS, Chest X-ray, ECG, lipid profile, routine and microscopic examination of urine, viral markers, HIV, VDRL and hormonal profile may be considered. It is appropriate to consider multidisciplinary approach by involving internists, urologists and experts of other specialities while assessing these patients, to screen for and manage physical causes contributing to alcohol related sexual dysfunction.

Treatment

Clinicians must integrate general evidence-based treatment of sexual dysfunction with specific needs of those with alcohol use disorder. Sexual dysfunction may act both as a window to abstinence or a trigger for relapse. Hence, it must be addressed as a part of motivational interventions building up a need to change their drinking behavior, moving from pre contemplation stage to contemplation and then to preparation stage of quitting drinking and finally to an action stage. Relationship conflicts can be a contributing factor in alcohol consumption, poor treatment adherence and sexual dysfunction. Hence, it is important to address sexual dysfunction in context of a relationship rather than for the patient alone. SSRIs like paroxetine, fluoxetine and citalopram may be useful in treatment of premature ejaculation (PE). Dapoxetine - a short acting SSRI has been approved in various countries for PE. (Dadfar & Baghinia, 2010). Topical lignocaine and Master and Johnson's "Squeeze technique" have also been tried. Phosphodiesterase-5 inhibitors are effective in treatment of erectile dysfunction and have advantage of on-demand effectiveness. Although there are no long-term side effects, sometimes they are

contraindicated. Orgasmic dysfunction, loss of confidence and relationship stress must be addressed in counselling sessions. Cock rings and vacuum devices are popular non-drug aids and can be tried. Role of androgen replacement in those with hypogonadism and heavy alcohol use is questionable. Despite the lack of conclusive evidence, their excessive and inappropriate use has been a matter of concern. Androgen replacement has not been found to benefit those with decreased desire or orgasmic dysfunction (Stroberg et al., 2007). Systemic testosterone may have role in hypoactive sexual desire in females. But various side-effects including hirsutism, deepening of voice, clitoromegaly and the risk of cardiovascular disease and breast cancer must be discussed beforehand. Systemic estrogens can improve reduced genital arousal and lack of lubrication but does not increase sexual desire. Consultation liaison must be considered where physical comorbidities and medications are thought to contribute to sexual dysfunction. Opportunity to discuss drug-related sexual risks and promoting safe sex must not be missed during such sessions (Davis et al., 2004).

Conclusion

Human sexual behavior is complex and its dysfunction is often multi-factorial. Alcohol related sexual dysfunction may be contributed by psychological/ social factors, physical/ psychiatric illnesses, medications used in treatment and de-addiction of alcohol, besides alcohol use itself. Sexual dysfunction influences self-esteem, confidence and inter-personal relationships to a great extent. In addition, it markedly affects compliance and success of de-addiction treatments. Management includes pharmacotherapy, psychotherapy and various off-label treatments. Involvement of partner can improve prognosis substantially. Consultation liaison must be encouraged

when physical co-morbidities and medications are contributing to alcohol related sexual dysfunction.

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