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MINI REVIEW

Episodic/Chronic Alcohol Consumption and Hip Osteoarthritis

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Abstract

Background: Hip joint osteoarthritis remains an incurable disabling health condition.

Aim: This report aimed to examine what trends exist in the realm of episodic or excess alcohol consumption in the pathology and management of disabling hip joint osteoarthritis and to thereby offer some guiding thoughts to practitioners, public health experts, and researchers.

Methods: An in-depth literature review focusing on hip joint osteoarthritis, a common site for primary and secondary forms of the disease was sought and selected for review if an alcohol-oriented focus was evidenced.

Results: There are fairly substantive attempts to explore alcohol as an outcome, as well as using this attribute as a hip osteoarthritis covariate in clinical studies, but the diverse observations, the failure to examine acute alcohol versus chronic alcohol effects, and extremely discordant conclusions prevail

Conclusion: Future expanded research efforts are needed to elucidate to what degree alcohol use or abuse should not be neglected in hip osteoarthritis care and preventive paradigms.

Keywords: Alcohol, Arthroplasty, Bone Density, Falls, Hip Osteoarthritis, Outcomes, Pathology, Prevention, Surgery

Background

Osteoarthritis, a serious and highly painful disabling joint disorder affecting a sizeable and increasing percentage of older adults often induces a high degree of persistent pain, plus progressive functional disabilities that severely impact life quality and possibly longevity.[1-3]Although deemed incurable with no definitive cause, and a seemingly low clinical and public health priority when compared for example to heart disease, an increasing number of dedicated epidemiologic researchers and others, appear to be continuously striving to better understand the origins of the disease, and possible remediable targets that may help alleviate its distressful life limiting features and immense costs.[4] In the face of shrinking resources and aging populations that are growing in numbers and oftentimes excess rates of disabling osteoarthritis, it has been noted increasingly that a variety of health behaviors or their omission may be pertinent in this regard, rather than age alone.[3] In addition, interventions to relieve pain such as injections[5] that may have limitations due to costs and efficacy even if delivered very carefully in the face of deficient efforts to avert joint stresses may prove costly if the patient as well as the provider ignores the impact of negative behaviors on the healthy as well as on an affected osteoarthritic joint.

In this regard, even though a cogent list of eight home based approaches have been duly advocated,[4] none of these clearly pointed specifically to any role an acute bout of alcohol and more commonly an excess or heavy alcohol usage may play in the osteoarthritis disability cycle, for example its usage may alter episodic or more chronic gait disturbances found in cases who fall[6] plus an ensuing fracture and/or hip and/or secondary osteoarthritis of joints other than the hip.[7] Both sporadic or episodic use as well as excessive alcohol usage can independently or collectively mediate or moderate the impact of therapy, or other interventions, rather than not.[8] According to some reports,[9] chronic alcohol usage, which is widespread, and has a well validated impact on multiple body systems, may increase the risk and severity of radiographic osteoarthritis and/or features of bone cell and mass viability, a condition termed osteonecrosis[10] known to impact the development and progression of hip osteoarthritis.[11] Even if not acknowledged by Ma,[12] alcohol usage may somewhat explain gait variability observations that cannot be attributed to pain and disease status[13] even if disputed by some.[14,15] Excessive alcohol usage also appeared to place persons at risk for knee osteoarthritis,[3,16] joint inflammation in hand osteoarthritis,[17] and its usage may well increase joint surgery hospitalization rates,[3] plus the duration of hospital stays by people with osteoarthritis quite substantively.[18]

Consequently, in light of the growing population of older adults living to higher ages with severe osteoarthritis, and the failure of mainstream interventions to retard or attenuate this condition uniformly and successfully, can more be done to lessen the extent of debility experienced by current cases as well as future cases of hip joint osteoarthritis. For example, can excess alcohol usage be classified as a risk factor rather than a protective factor against osteoarthritis disability in later life even if discounted by some?[19,20]

This question arises because not only is the literature unclear, and often deemed to have no bearing on osteoarthritis outcomes, as per Marchand,[21] and Brockman[22] a role for excess alcohol usage in this regard cannot be ruled out. For example, in addition to fostering surgical dislocations of the prosthesis, surgeries performed to counter excess hip joint degradation may fail due to the presence of a condition termed avascular necrosis or bone attrition due to an underlying alcohol rather than a vascular associated cause.[23] Unfortunately, the various studies conducted on the association between alcohol consumption and osteoarthritis have proved conflicting,[9] and in one case alcohol abstinence was said to be related to lower rather than higher physical performance ability in osteoarthritis cases.[24]

As per van Schoor[25] who studied a large European sample of cases deemed to have painful lower limb osteoarthritis, this group found younger age, being categorized as male, having a higher education and mastery level, reporting they smoked and consumed alcohol [yes/no], higher physical activity levels, no chronic diseases, and more contacts with friends were more likely to display resilience or better overall coping ability in one or more domains of osteoarthritis functioning. There were however limited numbers of cases in certain categories, countrywide and gender differences were notable, questions on alcohol use were strictly categorical and based on survey responses, assumptions all respondents could remember their alcohol use accurately were implied but not objectified, and that all respondents had adequate chances of being surveyed, for example if they were not literate. Although missing data prevailed, patients with a post traumatic osteoarthritis diagnosis who were 7.5 years younger on average than the mean, those that reported they used alcohol readily had higher osteoporotic fracture rates and signs of psychosis than patients with primary osteoarthritis.

The above-mentioned findings show that a role for high alcohol usage in heightening a post traumatic arthritis risk cannot be ignored.[22] Moreover, its usage may be quite potent at any age[22,26] due to associated impacts on multiple neural processes, such as the efficient coordination of reflex actions, as well as on general health, and bone structure. The data also imply that alcohol usage may prevail in an effort to quell emotions due to uncertainty and others, for example, how to cope with osteoarthritis pain, thus may warrant due attention.[3,27,28]

This idea appears to follow multiple other convergent reports that alcohol dependency or chronic alcoholism can prove harmful, for example, its use may induce irritability and depressive episodes, violent behaviors, insomnia, and use of other drugs that block and perhaps diminish joint pain, while retarding the onset of timely protection reflex mechanisms and cognitions. In addition, ample research shows continued alcohol abuse may lead to the onset of heart disease, stroke, and certain cancers, along with possible increases in body weight or malnutrition, both hip osteoarthritis outcome determinants.

Current research studies report that alcohol-use disorders may also shorten the life spans of affected people by more than a decade, and its use can have both immediate as well as cumulative effects on an individual's, physical, social, cognitive and coping ability, plus psychological alterations in self image. Its use may have a widespread negative impact on families and communities, and may be implicated in trauma that is a precursor for osteoarthritis degeneration.[29-32]

The aim of this report was to further investigate the relationship between alcohol consumption and osteoarthritis in view of this possibility for generating more rather than less disability, no matter how exemplary the surgery. The fact that the disease symptoms of osteoarthritis do not always correlate well with commonplace radiographic or clinically staged disease classifications may point to some factor that is impacting the disease profile in tangible as well as intangible ways, including self care.

- Moreover, evidence points to a widespread misuse of alcohol, a significant risk factor for premature death and disability; among people between the ages of 15 and 49.
- In addition, recreational alcohol intake is widespread globally and can be a contributing factor to weight gain, a strong osteoarthritis risk factor, if not compensated for.

However, in addition to the assumption osteoarthritis is age related and inevitable, older adults with this condition may not be asked about their personal health practices in general, nor their alcohol usage specifically, or even if they are may be reluctant to volunteer they have any alcohol dependency or do not link their pain to their lifestyles and behaviors. Most professionals especially if they apply standard screening surveys may tend to focus more on other lines of questioning in the assessment process, such as the impact of the condition overall and its severity. This group of primary care providers and their teams of experts may however benefit from more accurate interpretations of their symptoms and whether these are in any way modifiable and if so in what regard.

Method

To examine the aforementioned issues, the **PUBMED, PubMed Central**, and **Google Scholar** data bases deemed to house salient representative data were used. Scanned were data located by searches employing the terms *alcohol, alcohol usage, alcohol and osteoarthritis linkages, hip arthroplasty and alcohol use, and knee and hip osteoarthritis.* Sought were clinically oriented articles dating largely from the most recently studied period of February 12 2024 and specifically related to the context of any study or report detailing some aspect of osteoarthritis biomechanics, functional challenges and diagnoses and alcohol usage or intake patterns. Articles on alcohol additions, and rheumatoid arthritis were excluded. As well, articles that discussed proposed studies were excluded. The term alcohol was applied broadly, and regardless of extent of use, measurement approach, and form of investigation. Deemed acceptable were articles that detailed the topic in question or where the report was informative. A review of this topic can be examined further in the meta-analytic oriented paper by To.[33]

Current search results

Key findings

If weighted against the total number of peer reviewed osteoarthritis papers housed in PUBMED, those alluding to any alcohol-based examination, as of February 12, 2024, and in the context of osteoarthritis are clearly limited, 477 versus 117, 829 [1885-2024] respectively. It is also apparent that although there are very few topical papers on alcohol in any form and its impact on hip joint osteoarthritis [or 177 linked references], those that are listed may not discuss hip osteoarthritis, nor do many reports how the variable alcohol use-if assessed-lined up with the observed and reported conclusions. Those that prevail are not only often non-conclusive in their own right due to design issues, or limitations in samples, but clearly vary from being a possible osteoarthritis risk factor to a state that would prevent or minimize osteoarthritis, for example its use appeared more beneficial than its non use.[34] This may be because alcohol use may vary over time, but is not captured in all outcome studies of limited duration, as well as its categorization range, its reliance on retrospective survey data where its usage may vary from none to moderate or occasional usage, but may be hard to verify or clearly differentiate and may thus yield spurious results. As well, cases with osteoarthritis and who exhibit a concomitant alcohol use addiction may be excluded from research studies for multiple reasons, or are not resident in their communities because they are undergoing treatment.

Moreover, it is safe to say most osteoarthritis studies also fail to report on the degree to which alcohol use is a demographic/behavioral feature and even if 'counted' how such data can advance out knowledge is unclear or rarely examined in isolation. It may also be assumed older adults as opposed to younger adults will not be classed as having an alcohol dependency, which may in fact be employed to overcome loneliness, pain, and depression, or deemed safe by cultural or scientific claims of alcohol as a health enhancer.

At the same time, linkages between alcohol usage, bone mineral density, and hip fractures that may heighten hip osteoarthritis risk and possible deficits in surgical responses are not necessarily well articulated in public health realms. They may not be routinely examined in the realm of determining all possible osteoarthritis antecedents. Moreover, alcohol linkages of relevance may be discounted when aggregating osteoarthritis data or eliminated as outliers via statistical processes in more mainstream clinical studies. As a result, surgical joint replacement failures may not be attributed to a history of alcohol abuse or long-term alcohol use,[35] or evidence of no specific problem or concern for women but of concern for men[14,36,37] or at best a marginal effect.[38]

Muthuri[39] who strove to investigate the association between alcoholic and non-alcoholic beverages and knee or hip osteoarthritis using a case-control study design that included Caucasian men and women ages 45-86 with clinically severe and radiographic disease; and controls with no symptoms or radiographic signs found increasing beer, not wine consumption was associated with an increasing risk of osteoarthritis. No precise explanation was forthcoming to explain the possible favorable impact of wine versus beer consumption on knee or hip joint osteoarthritis. No other forms of alcohol were explored, and whether the survey captured any differences between de-alcoholised wine and regular wine or red wine versus white, or total wine or beer consumption was not well explored or detailed. Other forms of alcohol, such as those derived from non traditional sources, if taken in excess, do appear to raise the risk factor for incident knee surgery as well as knee osteoarthritis risk.[3]

In another report, Kang[9] who used survey data that captured a large number of variables from Korean adults who responded to several drinking-related items found symptomatic osteoarthritis of the lumbar spine, hip, and knee found the sample studied was largely unaffected by alcohol usage, as was pain. But a possible role for alcohol consumption in influencing radiographic osteoarthritis was generally upheld. It was felt that perhaps alcohol use reduces pain, and/or may yet have heightened the impact of narcotics if used,[27] hence the discordant findings may in fact be shown more objectively to have a bearing on pain if alcohol use is assessed alongside inflammation of the joint synovial lining as well as in the obesity associated pathways found in osteoarthritis[40] or other drugs with which it can interact negatively, for example to heighten a falls risk.[6,41]

According to Marchand,[21] who examined the relationship between alcohol consumption and hip osteoarthritis in women, alcohol has been associated with both adverse and beneficial health effects generally; however, the relationship between alcohol consumption and hip osteoarthritis has been minimally studied and in some is found to have a lowered risk of surgical complications[42] or an uncertain role.[43] To achieve a desired result on this issue, this group studied a United States cohort where the women sampled had their alcohol consumption assessed every 4 years, starting in 1980. The alcohol intake variable was the cumulative average intake updated over 20-24 years on a scale of 0-4. Women with and without hip osteoarthritis were studied and among 796 cases of total hip replacement due to hip osteoarthritis defined by self-report, alcohol consumption was positively associated with an increased hip osteoarthritis risk and, in a dose-dependent manner. However, this finding was contrary to that of another study of women with and without osteoarthritis who were deemed to be middle aged and unaffected by alcohol usage to any degree.[44]

In another report, smoking and alcohol abuse were shown to slow down the production of adequate bone tissue mass recovery in the proximal Gruen's zones after the individual had undergone prosthetic joint replacement surgery. Moreover, the deficiency of bone tissue mass in these zones persisted for at least 15 months post surgery and was more pronounced in men than in women. Patients of either sex failed to regenerate the tissue lost in the stress-shielding period unlike subjects of the control group. Moreover, the deficiency of bone tissue mass in these zones persisted within 15 months after surgery. The adverse effect of alcohol was more pronounced in women than in men. According to these authors[45] this finding is important because poor bone tissue mass recovery around a surgical prosthesis can increase its mobility and a possible state of joint instability.

As per Smith[46] even if alcohol use is lowered post hip joint replacement, a small number of cases may not follow this trend, and those who were alcohol dependent before non elective hip replacement surgery may use alcohol at higher rates than those who were not. As a whole those partaking in substantive alcohol consumption may experience higher rates of revision after three years.[47] Dislocations of the

prosthesis used in hip replacement surgery may also follow alcohol usage patterns[48] and noted by Rodionova.[45]

Additional observations and clinical implications

According to Fransen[49] there is clearly an absolute scarcity of longitudinal cohort studies evaluating alcohol consumption as a risk factor for incident osteoarthritis thus actionable conclusions remain unobtainable. For example, one study mentioned by this group implied that when alcohol consumption was assessed according to its magnitude, an increased risk of knee and/or hip osteoarthritis for the highest quartile among men aged <50 years was observed. This however was stated to be less than definitive because other potential risk factors, such as joint injury and/or heavy occupational load exposure were not assessed.

By contrast, Choi[50] found no significant association between osteoarthritis and several variables including alcohol consumption. To add to the confusion, Lavernis[51]-did report excessive alcohol consumption as having a history of being associated with adverse health measures after elective surgery. In an effort to determine differences among patients with different alcohol consumption levels in preoperative and postoperative patient-perceived outcomes and hip scores followed for at least one-year, moderate drinkers tended to have better pre-surgical function scores. There were no differences postoperatively among groups who used or did not use alcohol. However, nondrinkers had greater improvements (preoperative to postoperative) in their function, pain, and total scores. Even if only a small risk, the risk of incurring less favorable hip joint arthroplasty surgery outcomes than desired should not be overlooked though[38] and should examined more intently to avert serious as well as costly complications such as falls and fractures[52] especially among opioid and/or depressed users.[53,54] In addition, among patients with alcohol linked cirrhosis undergoing joint reconstructive surgery of the knee or hip due precautions are indicated to avert any increased risk of peri-operative complications, lengthier hospital stay durations, and higher costs than average costs as noted by Best.[55] Especially crucial to avoid in this regard are intra operative bone fractures.[56]

In sum, even if this review is not all inclusive, there is a sizeable degree of confusion in what is observed in this present realm of inquiry. However, alcohol consumption does appear to be of import to examine in this regard, as shown by Joseph[57] who observed alcohol consumption of the order of 1–7 drinks/week was associated with worse cartilage and meniscus joint morphology. This finding appears noteworthy because the attrition tended to occur in those areas of the knee joint frequently implicated in osteoarthritis. In line with their findings, it seems possible that alcohol use may have a bearing on osteoarthritis outcomes and possibly its development at certain joints sites among vulnerable adults with alcohol disorders, including the hip joint.[58,59] As such, in addition to its use as a disease covariate in case control studies, its unique pathogenic influence should be studied more intently to justify or refute the belief that innocuous levels of alcohol are harmless in this regard. Its cognitive effects also warrant study because even if taken sporadically, alcohol may prove injurious, for example if an adult persists in or undertakes to drive under the 'influence'. In addition to an examination of a patient's past and current alcohol behaviors, the use of alcohol by the disabled hip osteoarthritis adult to quell pain and depression may be emergent rather than chronic and should be borne in mind by the provider, because additional evidence from a mouse model of excess alcohol ingestion showed a distinct link between alcohol post ingestion and the emergence of osteoarthritis like pathology.[60]

Additionally, young male adults deemed homeless and alcohol dependent were found to require joint replacement surgery in sizeable numbers,[51] and a Mendelian randomization analysis of osteoarthritis susceptibility showed this disease and its manifestations rose accordingly with an increase in alcohol consumption.[61]

Discussion

Many current efforts are underway to understand the determinants of osteoarthritis and to reduce the immense and burgeoning osteoarthritis burden. In this regard, this current review revealed no shortage of data affirming that older adults who are increasing in numbers worldwide currently suffer and will continue to suffer at increasing rates from hip joint osteoarthritis, a chronic joint disease that severely limits mobility and induces high levels of intractable pain that often worsens over time, despite many advances in this realm. While this well established widely observed reduced ability to function physically and the degree of joint destruction is generally associated with age and a variety of biomechanical factors, other factors including behavioral factors may play an independent or collective role in its inception and progression. Among those factors that may contribute to, mediate or moderate hip osteoarthritis outcomes are a lack of physical activity, and being overweight, however, a role for excess alcohol use and/or a confirmed alcohol

abuse disorder, which has been put forth by some, as well as even modest levels of alcohol weekly consumption[33,57] is either not examined or not observed by all.[20,62]

The rationale for this idea, is based on a potential impact of alcohol to foster inflammatory processes that can induce cartilage cell damage,[3,57,63] and therefore those who regularly consume alcohol may yet encounter preventable degrees of osteoarthritis pathology, plus one or more unwanted post-surgical complications or delays in recovery, and in some suboptimal bone remodeling.[64] Other complications may arise, such as fractures, and excess pain[65] if not acknowledged early on. While not different in this respect from other related research, a role for alcohol usage both in binge forms or in excess may be difficult to discern, and even more difficult to reverse over time if this is habitual/and also if sporadic.

Since alcohol usage may be one of several factors explaining the need for joint surgery, and possibly for worse than anticipated joint replacement surgical outcomes in hip osteoarthritis cases,[48,62] at least among some who continue possibly harmful alcohol related behaviors after hip joint arthroplasty surgery[46] this topic appears timely and warrants more attention, as the need for hip replacement surgery with severe pain complaints increases worldwide.

In a practical sense however, this may require careful interpersonal communications, and confidentiality here may need to be specifically supported in efforts to identify and advocate for treatments such as substance abuse education, as well as osteoarthritis treatments. Despite the confusing literature it can be argued that a failure to examine a patient's alcohol related practices and their possible unique or collective implications early on, as well as later on, may yet dictate the need for hip replacement surgery, or if required – fail to foster its anticipated benefits, and overall wellbeing.[66-69] Those at high risk should potentially be screened periodically, especially if it is possible to avert any adverse alcohol inflicted joint associated ramification and possible excess destruction. However, in addition to careful screening, it is important to bear in mind why the individual is possibly reliant on alcohol,[28] and that alcohol withdrawal is associated with increased risk of in-hospital mortality, medical and surgical complications that may prevail, unless implemented with due caution.[69] To help uncover the network of facts that expose a hip joint to attrition in the face of high alcohol intakes, attention to its interaction with muscle physiology, muscle fat mass, frailty, depression, and falls risk, plus osteoarthritis subgroup variations is indicated.[71,72] In the realm of therapy, motives for excess or a periodic binge drinking form of alcohol usage should be specifically explored and targeted accordingly[28] and to avert any increased alcohol need.[29] How modest drinking benefits joints as outlined by some also warrants attention.

Until then, it appears it may still be safer to assume a possible alcohol linked hip osteoarthritis problem rather than solution - may emerge - even if not causative, and before a failure to do this produces excessively costly unwanted persistent and progressive joint and health complications. As obesity as well as muscle mass attrition and frailty are key osteoarthritis risk factors that may be impacted by the degree of alcohol use, perhaps some thought should be given here to exploring their linkages among those suffering from hip osteoarthritis more intently.

By remaining open minded rather than by adopting long standing preconceptions that osteoarthritis is age related and inevitable and especially if they can obviate alcohol use and abuse preconceptions researchers and clinicians can make sound contributions in multiple spheres in this regard in our view. Understanding how alcohol is used to allay pain and distress, may prove fruitful as well.

Conclusion

While the negative influence of alcohol in the hip osteoarthritis pain cycle is still under review, it appears possible to conjecture that:

- While discordant, the degrees of disablement seen among some older adult including functional impairment may be mediated in some cases by acute as well as chronic alcohol consumption.

- The disease, while largely impervious to the sole application of various drugs, and other modalities, may yet be impacted favorably by concomitant or independent efforts to identify adults at risk for excess alcohol consumption and to offer alternatives and insights accordingly.

- To advance this line of inquiry, alleviate undue suffering, and public health costs, the genetic, biochemical and molecular as well as kinetic and cognitive aspects of how alcohol in its various forms can interact with one or more disease attributes, including age, and muscle morphology and function before as well as after osteoarthritis of the hip onset must be sought intently.

- A failure to pursue this topic will prove costly to both society and many older adults wherever they reside.

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Conflicts of Interest

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