

Review

Alcohol and the Physician – Sri Lankan context

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Summary

This review focuses on chronic alcoholism in Sri Lanka and its contribution to the increased burden of disease, deaths and health costs. The burden of alcoholism is unquestionably rising in Sri Lanka. The review traces briefly the history of alcohol consumption from early times to the present day. It discusses the demographic characteristics, the pattern of drinking and the types of indigenous spirits. It describes the main clinical disorders relating to the liver, heart, nervous system, pancreas and the role of alcohol in the development of cancer. Lastly, it is the physician's duty not only to treat the patient but also to devote himself to addressing the problem of alcoholism and related disorders. He has to remain in close contact with the patient and with those in policy making positions.

Key words: chronic alcoholism, indigenous spirits, kasippu, chronic liver disease, cardiomyopathy, advocacy

Introduction

Historical perspective

The deleterious effects of alcohol have been known from very early times. In the book of Genesis it is said that 'Noah planted a vineyard and he drank of the wine and became drunk and lay uncovered in the tent'. In an admirable study of Sri Lankan Alcohol Industry, Dayaratne¹ traced the history of alcohol and alcoholism from early times to the present day.

According to him people have been consuming intoxicating beverages and liquor derived from the coconut flower and recalls anecdotal evidence about drinking toddy and toddy tapping has been occurring for a very long time. As early as the 19th century arrack made out of toddy was exported to India.

In Sri Lanka the majority of the people are Buddhists. Lord Buddha had cautioned his disciples about deleterious effects of alcohol and advised to abstain from drinking alcohol². The Portuguese (1505-1658) and the Dutch (1640-1796) occupied Sri Lanka and these two periods were the most disastrous years for promoting the drinking habit^{1,2}.

When the British troops occupied Kandy in 1815 they found no arrack³. Besides making infusions decoctions and extracts for medicinal purposes, the people of Ceylon were well acquainted with distillation which they practised to obtain distilled water for medical purposes but more usually to obtain intoxicating liquor³.

During the last 1½ centuries arrack has become a common drink among the poorer classes especially in the low country districts. During the British period licences to open taverns were issued liberally encouraging the drinking habit and privately owned imported foreign liquor outlets were created in the large cities¹.

Prevalence and demographic characteristics

In 2002 among those who consumed alcoholic beverages, 53.1% were males and 6.4% females⁴ and the prevalence of current drinking was 32.9% in urban areas and 20.8% in rural areas⁵. Another study done in 2014 showed that alcohol consumption has increased to 26% among males between the ages 17-64 years⁶. A hospital study in 1986 revealed a strong family history in 56% of the cases and majority were in the lower socio-economic group who drank illicit manufactured brews with high alcohol content⁷. Hazardous drinking was closely associated with low levels of education and age above 70 years⁸. Michelle Ruth Gambard an American anthropologist used the term 'breaking the ashes' – rekindling the kitchen fire, to refer to the urge for a morning drink in those Sri Lankans with an alcoholic problem⁹.

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Types of beverages

According to Somatunga et al⁶ the most common types of alcohol consumed is beer (4.8%) followed by spirits (51.5%), wine (25.8%), *kasippu* (22.2%), palmyrah toddy (16.9%), toddy (16.8%) and other types (5.3%). They are totally different in their alcoholic content, in the numerous additives (congeners) and the process of manufacture, so are the patterns of drinking. Arrack is distilled from fermented toddy or sugar. The fermented liquor consumed contains 4-5% of alcohol whereas distilled liquor contains 30-40%. Owing to the cost of foreign liquor which contains 20-30% alcohol, arrack, locally manufactured beer and gin are the main alcoholic drinks of the middle class. Average Sri Lankan beer has 4-8% alcohol increasing to 8% compared to 4.2% in

American and British beer and in the West it is as low as 3.3%¹⁰. There are several beverages which are prepared illicitly by fermentation or distillation. The term *kasippu* indicates a generic term for of illicit brew. According to Dayaratna an estimated 60% of the total alcohol market is illicit *kasippu* brewed by about 5000 producers nationwide and only 30% is legal hard liquor and about 5% beer¹¹. Some of them have local names and several ingredients go into their manufacture (Table 1) including methyl alcohol, spirits of chloroform, spirits of wine, and parts of torch batteries, metallic copper, formalin and medicinal herbs of various sorts. There is little knowledge about the toxic effects of these botanical additives. Ethanol, congeners or contaminants in alcoholic beverages may each be the cause of the toxicity.

Table 1. Some illicit indigenous alcoholic beverages

<i>Local names of liquors</i>	<i>Description of ingredients</i>	<i>Process of manufacture</i>
Pot arrack	Fermented toddy, sweet toddy or treacle to which jaggery or sugar is added	Distillation
Ala hodi, hartal Ratnapura	Hops, potatoes, sugar, sweet or fermented toddy	Boiling and then fermentation by addition of yeast
Caltex, imitation toddy	Sweet toddy, brown sugar, daluk roots (<i>Euphoria antiquorum</i>) torch batteries, yeast	Fermentation
Tea cider	Tea leaves, sugar and herbs	Fermentation
Arista, top cider	Polpala (<i>Aeura javaica</i> ; <i>A lanata</i>), Red sandalwood Valmi (<i>Glycyrrhiza glabra</i>), Molasses, yeast, sugar, arrack, Aralu (<i>Terminalia chebula</i>), Khomba (<i>Azadirachta indica</i>)	Boiling and fermentation
Whisky	Spirits of chloroform, essence of whisky, syrup, caramel	Mixing in water

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Toddy is the sap obtained from coconut (*Cocos nucifera*), palmyra (*Borassus flabellifer*) and other palms. Under the Excise Ordinance which was amended in 2013, kithul (*Caryota urens*), palmyra and coconut trees were exempt from licensing. In 2017 according to the new amendment, no toddy can be tapped from coconut and palmyra trees without a licence issued by the Department of Excise¹¹.

Clinical

A number of abnormalities have been shown to occur in some alcoholics who appear to be in good physical health. Besides mild abnormalities of liver function, water metabolism may be disturbed as alcohol inhibits production of antidiuretic hormone (ADH) and dysproteinaemias are not uncommon as alcohol influences the production of immunoglobulins¹². Alcoholics in poor general health may have an extraordinary variety of conditions. These conditions have been well recognised since antiquity. Hepatic,

pancreatic, neurological, psychiatric and cardiac manifestations are well known. Haematological abnormalities have been recognised so are those affecting primarily the muscles (Table 2).

Furthermore, the association of alcoholism with common conditions such as myocardial infarction, peptic ulcer, appendicitis, pulmonary tuberculosis, depressive states or hypertension may cause serious difficulties in diagnosis and treatment. General nutritional deficiencies are not uncommon among chronic alcoholics. Disturbances of tryptophan metabolism, hypomagnesaemia, hypokalaemia, zinc deficiency, phosphate deficiency, protein and vitamin deficiencies especially folic acid, thiamine and B6 are not infrequently found. Alcohol is strongly linked with domestic violence, suicide, trauma and accidents. In the United States 40% of car accident deaths involve alcohol¹³. In Sri Lanka 48% of suicides are related to alcohol consumption².

Table 2. Alcohol-related disorders

Liver	Fatty liver in the absence of other known cause Acute alcoholic hepatitis Cirrhosis Cancer of the liver
Neurological	Toxic amblyopia Peripheral neuropathy Alcoholic cerebellar degeneration Central pontine myelinolysis Marchiafava-Bignami disease
Psychiatric	Wernicke-Korsakoff syndrome
Cardiac	Alcoholic cardiomyopathy
Pancreatic	Pancreatitis in the absence of cholelithiasis Pancreatic calcification
Haematological	Anaemia – hypochromic, normocytic, macrocytic haemolytic with stomatocytosis, low folic acid Clotting disorders – prothrombin elevation, thrombocytopenia
Muscles	Alcoholic myopathy

I. Hepatic

The metabolism of alcohol generating acetaldehyde is carried out by enzymes, alcohol dehydrogenase, cytochrome P450 2E1, to a lesser extent catalase¹⁴ and by bacterial metabolism in the gastrointestinal tract¹⁵. Acetaldehyde is deleterious to the hepatocytes and generates radical oxygen species (ROS) damaging intestinal mucosal barrier¹⁵. Five sequential phases of hepatic injury have been seen in alcoholics; namely subcellular alterations, fatty liver, alcoholic hepatitis, cirrhosis and hepatoma. One of the conditions we would like to make special mention of is acute alcoholic hepatitis. Identification of this portion of the spectrum of alcoholic liver disease is important because of its prognostic implications. Its reported mortality rate ranges from 58%-78% at one year¹⁶. Portal endotoxaemia and cytokines induced in the liver have an important role in its development¹⁴. It should be remembered that 'drunkenness' is not essential for its development. Although its occurrence in the alcoholic has long been recognised it has received scant attention in Sri Lanka, either it is not thought of even in a known alcoholic or frequently mistaken for some other condition. Clinically the condition may be associated with constitutional disturbances such as fever with chills, loss of appetite, abdominal pain, nausea, vomiting and jaundice of varying degree. It therefore sometimes closely simulates hepatic amoebiasis, a condition commonly met with in this country. In one study the biochemical and haematological data were normal or near normal in this group with normal or near normal serum bilirubin, with normal or slightly elevated alkaline phosphatase, transaminases and a polymorphonuclear leucocytosis. In this study all the patients had been treated initially as amoebic hepatitis¹⁷.

II. Neurological

The neurological complications include acute intoxication, withdrawal state, diseases associated with prolonged alcoholism and nutrient deficits and neurological states associated with alcoholism (Table 2). Of particular interest in this country is prolonged coma often fatal following ingestion of indigenous distilled spirits. The patients we have seen were in coma for several days. They have marked rigidity of the trunk and extremities, unequal pupils and bilateral extensor plantar responses. Their posture resembled that seen with decerebrate rigidity. The diagnosis can be difficult and confusing. Those who recovered were not normal mentally. Those who died soon after consuming large quantities of indigenous spirits showed no gross pathology at autopsy so it was not

possible to postulate the nature or site of the lesion. In a study of 5681 patients having immediate CNS effects and admitted to the medical wards over a period of 18 months, 42 had a history of acute alcoholic intoxication, alcoholic coma or delirium tremens; an incidence of 0.72%¹⁸.

III. Cardiac

The toxic effect of alcohol is now supported by experimental evidence that alcohol is undoubtedly cardio-toxic producing myocardial lesions. Alcohol consumption is associated with myocyte loss¹⁹ and myocyte dysfunction²⁰. Endomyocardial biopsy showed myocarditis with lymphocytic infiltration, myocyte degeneration and focal necrosis in about 30% of patients with alcoholic cardiomyopathy²¹. In a study of 27 Sri Lankan patients with alcoholic heart disease²² there was only slight derangement of liver function tests, except in two cases with cirrhosis of the liver and one with alcoholic hepatitis. Serum cholesterol was low. The radiological features though characteristic were not diagnostic of the condition and consisted of an enlarged heart shadow with pulmonary congestion. The electrocardiogram showed tachycardia, arrhythmias, conduction defects, T wave changes and patterns simulating myocardial infarction. In a large number of cases of cardiomegaly of unknown origin in this country alcohol looms in the background.

IV. Pancreatic

Chronic alcoholism is an established factor in the causation of pancreatitis and pancreatic calcification in Western countries. In a study of 53 Sri Lankan patients with chronic alcoholism, the serum amylase levels were normal in 70% of the cases. However pancreatic calcification was found in two cases, an incidence of 2.4%²³.

V. Cancer

Chronic alcoholism is closely linked with upper alimentary tract cancer including cancer of the oropharynx, larynx and the oesophagus²⁴. Acetaldehyde is carcinogenic and mutagenic²⁴ and decreases DNA repair mechanisms leading to chromosomal aberrations²⁵. In a study of 27 Sri Lankan patients with primary cancer of the liver, 75% of the males had consumed alcohol²⁶. The diagnosis was made on the basis of the histopathology of the liver following percutaneous liver biopsy or autopsy.

Physicians obligations

Physicians are responsible for diagnosis and treatment. In Sri Lanka the diagnosis of alcoholism is

not as frequently made as it should be. Physicians are disinclined to make the diagnosis for two reasons. One is that they tend to underestimate the prevalence of alcoholism in the community and the other is that they tend to discount its contribution to many medical emergencies even though they are aware that the patient is an alcoholic. Among the reasons for this attitude are (1) a history of alcoholism is not easily obtainable, for alcoholics rarely speak the truth, (2) patients err greatly on the side of understatement unless they are subjected to persistent interrogation, (3) rather poor results of treatment and (4) the diagnosis is in turn related to the support of his family, his financial resources and his socio-economic status.

When alcoholism is unrecognised the dangers are obvious and the strength of the dependence can be under estimated or the associated illness missed or misdiagnosed. A variety of medical, social and economic consequences can result when alcoholism is untreated. A hospital study in 1999 showed that 24% of male deaths were alcohol related. Annually 20,000 die due to alcoholic consumption²⁷. Apart from treating alcoholism the physician must be aware of the health burden, the annual cost of the damage caused by alcohol which is estimated at Rs 141 billion²⁸. Doctors need practice in referring patients to specialised treatment services. In Sri Lanka there is a clinic in every hospital to treat addicts and there are six rehabilitation hospitals in this country²⁹.

Physicians managing alcoholism and alcohol-related complications should be able to liaise with the government and more so with those in policy making positions. The College of Physicians and the College of General Practitioners should play an active part to this end. About 5-10% of hospital admissions in Sri Lanka are directly or indirectly related to alcohol abuse⁷. Hence physicians are well placed to identify and manage patients for they are the first point of entry for patients presenting to hospital with alcohol related complications. They have the opportunity not only to manage these patients but also advise them about the harmful effects of alcohol and how it has contributed to their present problems³⁰.

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