

Gastrointestinal Injuries Following the Acute and Chronic Alcohol Abuse: An Update

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Abstract: The deleterious health effects of ethanol abuse are widely known and a diversity of medical conditions appear with excessive consumption. Acute and chronic abuse have different clinical characteristics, although severe intoxications are rare among alcoholics of a long career, where the systemic complications will dominate the symptomatology. While the medical focus acutely will mostly stay on the nervous and circulatory effects, gastrointestinal complications that will come up chronically (liver, pancreas, bowel dysfunction) need proper consideration. Ethanol will affect gastrointestinal functionality through a triple action, directly on the epithelial cell and the secretory activity, by altering the motility and in the long-term scope, through promoting carcinogenesis. Medical teams dealing with acute and chronic ethanol intoxication or abuse must be aware of the multiple effects it shows, and perform a prompt diagnosis as well as appropriate intervention.

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1. Introduction

Ethanol abuse is a highly prevalent disorder, and social, medical and public health issues related to its consumption have become of increasing concern. The clinical picture of acute ethanol intoxication is generally classic but the medical staff generally focus on central nervous system symptomatology that after all, dominate the clinical picture [1]. Nevertheless, excessive amounts of ethanol and surrogate drinks, illegally manufactured, will cause also an impressive number of gastrointestinal disorders [2].

There would be hardly an organ or system that is not be influenced by ethanol and its prolonged abuse. As a lipophilic substance, ethanol easily penetrates cellular membranes and is able to create (once metabolized in the liver) middle-term acting substances of harmful effects [3]. The liver will therefore initially suffer a steatosis condition, and later, irreversible cirrhotic changes potentially able to become malignant. The pancreas and the entirety of gastrointestinal tract (oral cavity, esophagus, stomach, small intestine and the colon) will be directly involved through a diversity of mechanisms [4]. Among such we might count, the direct effect on the epithelial cell; the irritating effect on the secretory function, the effect on the motility and last but not least, the nutritional deficiencies that are so common among alcoholics [5, 6].

2. Ethanol Gastrointestinal Effects: A Pathophysiological Excursus

In the case we might go back to prejudices and beliefs that surrounded ethanol use for centuries, the image below is highly illustrative. During 70's in Albania and maybe not only here, several types of brandy were tagged as being 'tonic and aperitif' (Figure 1).



Figure 1. An old advertisement of years 70's in Albania considered Fernet, a type of brandy, as tonic and aperitif. Both terms were scientifically incorrect, and wrong.

In fact, it has become clear that ethanol is a depressant of the nervous and circulatory system; thus, it decreases the tonus of excitable tissues rather than increasing it [7]. Ethanol inhibits acid secretion in the stomach, and can hardly be an effective aperitif, especially in the long-term use and during abuse [8].

It seems therefore clear that alcohol will affect the gastrointestinal tract from the oral cavity to the end of the route; the upper parts (mouth, esophagus) having a shorter contact time are nevertheless interested. Alcohol abuse affects the structure and function of oral cavity mucosa, salivary glands and saliva composition itself [9]. If we add here the poor dental hygiene (so common among alcoholics), the frequent vomiting following binges, and the frequent tobacco co-consumption, it is clear that long-term effects will be deleterious [10].

There are the following major points to underline, while focusing on the effect of ethanol and the gastrointestinal tract:

1. The effects on the epithelial cell (directly)
2. The effects on the motility
3. The potential role on carcinogenesis

To mention the most notorious consequence, ethanol has since long been considered a risk factor for a diversity of malignancies, here including cancers of the oral cavity, stomach and liver [11, 12].

3. Clinical Considerations

The notion of chronic alcoholism has evolved ever since the grouping of the effects of its exposure along a chronological importance (Table 1).

Table 1. A chronological snapshot of alcohol-related disorders

Disorders of an acute nature	Disorders of a chronic nature
Acute intoxication	Chronic alcoholism: from α to δ [14]
Binges	Nutritional deficiencies: thiamine
Hangover [13]	Complications (malignancies / neuropathy)

The above separation into grossly 'acute' and 'chronic' disorders related to ethanol abuse however is an approximate one. A neuropathy might easily happen after a single binge, due to the compression of a peripheral nerve: just recall the Saturday night palsy

[15]. In addition, Jellinek typology had strong psychological backgrounds and the everyday clinical practice might see overlapping of the conditions [14, 16].

As stated above, binges and emesis will easily provoke dental erosions; but this is not the only issue with the oral cavity. Feter that accompanies alcohol abuse will become as well another harmful factor for social and interpersonal relations.

The entirety of epithelia from the esophagus to the colon will suffer the irritating effect of ethanol. Liver while metabolizing quickly the ethanol (it is impressive the high amount of ethanol metabolized among chronic alcoholics, maybe due to enzymatic self-induction), will soon undergo fatty changes and steatosis before entering the irreversible stages of cirrhosis and hepatic failure [17]. Erosive gastritis and eventually, stomach cancer are among expectable complications, due not only to the ethanol but also to his metabolites, acetaldehyde above all [18].

Very important will become even the deficiencies that will come up after years of ethanol abuse: thiamine and other vitamins in the first line. Hydroelectrolytic disorders will match the malnutrition status and the imbalanced diet: ionic balances are of extreme significance while treating an alcoholic in the emergency room. Reports of some particularities deserved the naming according to eminent medical scholars, such as Wernicke-Korsakoff, and Marchiafava-Bignami syndromes [19].

Medical emergency teams, while dealing with ethanol abuse (acute abuse in the form of a simple intoxication; or chronic abuse with different medical complications) mainly concentrate on the nervous and circulatory system injuries. Such situations might be even more complicated while addict patients consume multiple drugs, with a mixture of nicotine, cannabis, cocaine and benzodiazepines hampering extremely the efficacy of the treatment [20].

There is a clear need for a higher level of awareness and knowledge to timely diagnose and prevent subtle gastrointestinal events that will later come forward with major injuries, mostly of an irreversible nature [21].

4. Conclusions

The appearance of gastrointestinal disorders among alcoholics is a frequent issue of concern [22, 23]. During acute intoxications and binges, patients will come up in the emergency room with severe hydroelectrolytic imbalances needing prompt interventions [24].

The chronicity of alcohol exposure and its severity will cause a diversity of gastrointestinal issue, whose complications might become of imminent character. A fatty liver syndrome will easily lead to hepatic failure while the abusing patient consumes simultaneously other active drugs, an occurrence that is more a rule rather than an exception. Nutritional deficiencies (thiamine in the first place) and a poor diet, along with all direct effects of ethanol on the gastrointestinal secretion and motility, will need a timely assessment as well as a long, multidisciplinary therapeutic intervention [25].

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