Substance abuse and addiction represent a worldwide problem and cause a number of family, social and health problems. Digestive system damage caused by substance intake is an increasing problem among drug addicts. Many studies show that substances can cause cancer of all parts of the digestive system. Alcohol consumption was significantly associated with colon and rectal cancer. For rectal cancer, the risk was increased in association with drinking of alcoholic beverages, specially for beer consumption. Synthetic drugs such as ecstasy may lead also to digestive and hepatic damage, as well as vascular complications of the stomach. Many studies show the existence of substance associated enterocolitis as well as ischemic colitis. Diagnosis of ischemic colitis is based on the presence of rectal bleeding, abdominal pain, a history of substance use, supportive endoscopic and histopathologic findings, and the absence of other etiologic mechanisms of ischemic colitis. Great damage to the digestive system is also produced by smuggling narcotics packed into small pages that are afterwards swallowed or implemented in other sorts of ways inside the smugglers natural body spaces as the rectum or vagina. In the paper authors reviewed literature concerning digestive system damage caused by substance abuse and drug smuggling.

Key words: substance abuse, digestive system damage, enterocolitis

INTRODUCTION

During the past century more and more funds were invested in researching of the potential harmfulness of some worldwide known substances such as alcohol, heroin and cocaine. From 1898 through to 1910 heroin was marketed as a non-addictive morphine substitute and cough suppressant. In 1924, the United States Congress passed additional legislation banning the sale. Cocaine was not considered a controlled substance until 1970, when the United States listed it as such in the. Until that point, the use of cocaine was open and rarely prosecuted in the US due to the moral and physical debates commonly discussed. The United States listed it as such in the

CANCERS CAUSED BY ALCOHOL INTAKE

Global estimates are that about one third of cancers are preventable. Alcohol is a well established carcinogen and is known to increase the risk of several cancers. For head and neck and esophageal cancers, alcohol combined with smoking substantially increases cancer risk is classified by the World Health Organization (WHO) International Agency for Research on Cancer (IARC) as a Group 1 carcinogen. There is convincing evidence of a link between the following cancers and alcohol.

UPPER AERO-DIGESTIVE TRACT CANCERS

The upper-aero digestive tract includes the oral cavity, pharynx, esophagus and larynx. There is very strong evidence that alcohol consumption causes cancer at these sites. With alcohol intake averaging approximately two drinks per day, the risk of cancer of the oral cavity and pharynx is increased by approximately 75%, risk of cancer of the esophagus is increased by approximately 50%, and risk of cancer of the larynx is increased by approximately 40%. At high levels of alcohol consumption (ie, eight drinks per day), the risk of upper aero-digestive tract cancers is approximately 4-6 times that of a non-drinker.

Cancers of the upper-aero digestive tract are also related to tobacco. Alcohol and tobacco interact synergistically so that people who smoke and drink are at a far greater risk than would be expected from adding the risk of each factor individually.

COLORECTAL CANCER

Whilst there is no significant relationship between alcohol consumption and risk of cancers of the colon and rectum in women, high alcohol intake in men is associated...
with a 64% increased risk of colon cancer and a 79% increased risk of rectal cancer. Risk of cancers of the colon and rectum were increased at alcohol consumption of only two drinks per week. Like breast cancer, colorectal cancer is very common (the second-most common cancer) and there are few modifiable risk factors.

**LIVER CANCER**

There is convincing evidence that heavy alcohol consumption increases the risk of liver cancer. The most probable mechanism is through the development of liver cirrhosis. Alcohol intake of approximately two drinks per day increases the risk of liver cancer by 17% compared with non-drinkers.

**STOMACH CANCER**

Alcohol consumption is associated with a modest increase in risk of cancer of the stomach. With alcohol intake averaging two drinks per day, the risk of stomach cancer is increased by 7% compared with non-drinkers.

According to a report from the AIHW, in 2003 there were an estimated 2,844 new cases of cancer and 1,358 deaths from cancer in Australia attributed to excessive alcohol consumption. The age-standardized incidence rate for alcohol-attributed cancer was estimated to be 13.9 per 100,000 persons. The age-standardized mortality rate for alcohol-attributed cancer was estimated to be 6.6 per 100,000.

**CANCERS OF THE ORAL CAVITY AND PHARYNX**

In six retrospective cohort studies of persons with an intake of alcoholic beverages higher than that of the reference population and including alcoholics and brewery workers, the risk for cancers of the oral cavity and pharynx (effectively excluding the nasopharynx) has been examined. In five studies of alcohols, the mortality or incidence ratio was significantly increased by between two and five fold.

In two prospective cohort studies, the risk for cancers of the oral cavity, pharynx, larynx and esophagus combined and for cancers of the oral cavity, pharynx and esophagus combined increased with the daily number of drinks.

Case-control studies have been performed of cancers of the oral cavity (11 studies), pharynx (ten studies), and oral cavity and pharynx combined (two studies). In all but two of the studies, the risk increased significantly with increasing level of consumption of alcoholic beverages; in two studies, no significant increases were observed. These results persisted after adjustment for smoking. The risk increased with daily intake of alcoholic beverages at any level of tobacco smoking in six studies in which this was examined, and the risk for cancer increased with amount drunk by nonsmokers in three out of four studies in which this aspect was examined.

Epidemiological studies clearly indicate that drinking of alcoholic beverages is causally related to cancers of the oral cavity and pharynx (excluding the nasopharynx).

There is no indication that the effect is dependent on type of beverage.

**CANCER OF THE ESOPHAGUS**

Seven of eight retrospective cohort studies of alcoholics and brewery workers showed two- to four-fold increased risks of cancer of the esophagus, although this was no significant in two. Of 13 case-control studies, 11 showed significantly increased relative risks with level of intake of alcoholic beverages. The increased risk persisted after adjustment for erratic smoking and was seen at all levels of tobacco smoking in the two studies in which this was examined. The risk increased with intake of alcoholic beverages in a small number of persons who had never smoked in the only study in which this aspect was examined.

Epidemiological studies clearly indicate that drinking of alcoholic beverages is causally related to cancer of the esophagus. There is no indication that the effect is dependent on type of beverage.

**CANCER OF THE STOMACH**

In three of 13 cohort studies, stomach cancer risk was increased in association with consumption of alcoholic beverages, but in only one was this statistically significant. Summation of observed and expected number of cases of stomach cancer in the eight retrospective cohorts of persons with above-average consumption of alcoholic beverages indicates a slight deficit in risk.

Data have been reported from 12 case-control studies on the relationship between drinking of alcoholic beverages and stomach cancer. In two studies, the risk for stomach cancer was positively and significantly associated with consumption of alcoholic beverages. In another study, a significant increase in risk was found with one specific drinking practice. One study reported a no significant reduction in the risk for stomach cancer associated with drinking of alcoholic beverages.

In most epidemiological studies of alcoholic beverages and stomach cancer, including all nine retrospective cohort studies, there was no adjustment for any possible confounding effect of diet.

In view of the overall lack of excess risk for stomach cancer in the cohort studies, the inconsistent results of the case-control studies, and the inadequate control for dietary and socioeconomic factors, there is little in the aggregate data to suggest a causal role for drinking of alcoholic beverages in stomach cancer.

**CANCER OF THE LARGE BOWEL**

Two of 13 cohort studies of colon cancer showed an increase in risk, while another showed a no significantly decreased risk associated with raised consumption of alcoholic beverages. Summation of observed and expected numbers of cases of colon cancer in the nine retrospective cohorts of persons with above-average consumption of alcoholic beverages indicates no overall shift in the risk.
For rectal cancer, the risk was increased in association with drinking of alcoholic beverages in four of nine cohort studies. In two of these four studies, a significant increase was seen in relation to beer consumption, including one study in which there was evidence of a dose-response relationship up to a three-fold increase in risk. In the two others, no significant, two- to three-fold increases in the risk for rectal cancer in alcoholics were reported. Summation of observed and expected numbers of cases of rectal cancer in the seven retrospective cohorts of persons with above-average consumption of alcoholic beverages indicates a slight (15%) excess of cases.

Of the four cohort studies in which data were reported on colon and rectal cancers combined, one showed a significant, two-fold increase, while two others showed a no significant increase in risk with raised consumption of alcoholic beverages.

In four of eight case-control studies of colon cancer, a significant positive relationship was evident with drinking of specific beverages: with beer consumption in two studies, and with spirits consumption in three studies.

In six of nine case-control studies of rectal cancer, a significant positive relationship with drinking of alcoholic beverages was reported. In three studies, beer consumption was significantly associated with rectal cancer in men only; in one study, this association was significant for men and women combined. Of the other two studies with significant positive results, one showed an association with consumption of spirits, the other with total ethanol consumption. A case-control analysis within one of the studies of brewery workers showed a positive relationship between drinking of stout and rectal cancer risk.

In most epidemiological studies of consumption of alcoholic beverages and large-bowel cancer, including all nine retrospective cohort studies, there was no adjustment for any possible confounding effect of diet.

In view of the inconsistent findings from epidemiological studies and the probability of uncontrolled confounding by dietary factors, no conclusion can be drawn about any possible confounding effect of diet.

In view of the inconsistent findings from epidemiological studies and the probability of uncontrolled confounding by dietary factors, no conclusion can be drawn about any possible confounding effect of diet.

Overall, some of the epidemiological studies provide suggestive but inconclusive data for a causal role of drinking of alcoholic beverages, most often beer consumption, in rectal cancer.

**CANCER OF THE LIVER**

Of four cohort studies of the general population, two showed a significantly increased risk for liver cancer among drinkers of alcoholic beverages, whereas in a third study an increased risk was found only among a subgroup of drinkers in one of the two populations studied. Three of ten cohort studies of persons with high intake of alcoholic beverages showed a significant association between consumption of alcoholic beverages and primary liver cancer. In five other studies the association was positive but no significant. Summation of observed and expected numbers of cases of liver cancer in these ten studies on special cohorts indicates a significant 50% increase in risk.

Six of ten case-control studies showed significant associations at the two- to three-fold level between consumption of alcoholic beverages and primary liver cancer. A particularly strong association between consumption of alcoholic beverages and primary liver cancer was demonstrated in a cohort study of hepatitis B surface antigen-positive volunteer blood donors. The results of one case-control and one cohort study suggest that the risk for liver cancer is particularly high among people who both drink alcoholic beverages and smoke cigarettes.

Potential confounding due to hepatitis B virus, tobacco smoking and aflatoxin was not explored in all the studies; whenever it was, it did not alter the findings qualitatively. The available results, taken together, indicate that drinking of alcoholic beverages is causally related to liver cancer.

**CANCER OF THE PANCREAS**

Of five cohort studies of the general population, only one showed a significantly increased incidence of cancer of the pancreas among regular drinkers of alcoholic beverages; of ten cohort studies of persons with high intake, none showed a significant association between consumption of alcoholic beverages and pancreatic cancer risk. Of 14 case-control studies, only one has indicated an increased pancreatic cancer risk among regular drinkers of alcoholic beverages. Taken together, the results of these 29 studies suggest that consumption of alcoholic beverages is unlikely to be causally related to cancer of the pancreas.

Chronic alcohol consumption also increases the risk of ulcer formation. The incidence of new discovered peptic ulcers is estimated on 500,000 cases per year in U.S. A peptic ulcer, also known as PUD or peptic ulcer disease, is an (defined as mucosal erosions equal to or greater than 0.5 cm) of an area of the that is usually acidic and thus extremely painful. A peptic ulcer may arise at various locations: (called gastric ulcer) (called duodenal ulcer) (called esophageal ulcer) (called Meckel’s Diverticulum ulcer).

About 1 in 10 Americans develop at least one ulcer during their lifetimes.

Ulcers affect about 5 million people each year. More than 40,000 people a year have surgery because of persistent symptoms or problems from ulcers. Each year about 6,000 people die of ulcer-related complications. Ulcers can develop at any age, but they are rare among teenagers and even more uncommon in children. Duodenal ulcers occur for the first time usually between the ages of 30 and 50, and more frequently in men than women. Stomach ulcers are more likely to develop in people over age 60, and more often in women than men.

And it is obvious that smoking aggravate peptic ulcers. With increasing age the percentage of smoker decrease, however, 49.2 percent of men at ages over 70 still smoke in Japan. Giving up smoking is important in the prevention of peptic ulcers. On the other hand, it is not regarded that peptic ulcers are correlated with alcohol intake. But alcohol intake causes the acute injury of the gastric mu-
cosa. It seems that moderate drinking is important in the prevention of peptic ulcers, especially in the elderly

**ECSTASY INDUCES GASTROINTESTINAL DAMAGE**

3,4-methylenedioxymethamphetamine (MDMA), more commonly known as 'ecstasy' or XTC, is frequently used by young adults in the major cities. Life-threatening complications of chronic ecstasy use include hyperthermia, hyponatraemia and liver failure. Potentially fatal reactions to 3,4 methylenedioxymethamphetamine (MDMA) or 'ecstasy' include cardiac arrhythmias, fulminant hyperthermia, convulsions, disseminated intravascular coagulation, rhabdomyolysis, acute renal failure and hepatotoxicity. Non-fatal reactions have included psychosis and depression, panic disorders and impulsive behaviour have been reported. Oral effects include xerostomia, bruxism, and an increased risk of developing dental erosion. Mucosal changes have also been reported. Recent use of ecstasy may interfere with dental treatment.

Ecstasy could also be harmful to the liver. There are a case-report present about a 17-year old female patient who regularly used "ecstasy" over a six-month period. Two days after the last use of "ecstasy", she reported to her general practitioner with nausea, vomiting, abdominal pain and jaundice. Within 10 days the patient developed acute liver failure. With criteria for liver transplantation fulfilled she was listed for orthotopic liver transplantation of high urgency which was carried out only one day later. Histological examination of the explanted liver showed evidence for a toxic fulminant hepatitis. After transplantation the patient made a full recovery and was released from hospital on day 26 after transplantation. Possible mechanisms of hepatic damage include influence of MDMA on body temperature regulation, harmful effects of the substance or further components of the "ecstasy"-tablets on the liver cell or a genetic vulnerability of some individuals against amphetamines and amphetamine derivatives. There are no parameters existing which could predict the course and severity of "ecstasy"-induced hepatopathy.

Further case reports of eight patients show that acute liver damage can be formed in several ways after ecstasy ingestion. Eight cases of ecstasy related acute liver damage referred to a specialized liver unit are described. Two patients presented after collapse within six hours of ecstasy ingestion with hyperthermia, hypotension, fitting, and subsequently disseminated intravascular coagulation with rhabdomyolysis together with biochemical evidence of severe hepatic damage. One patient recovered and the other with evidence of hyperacute liver failure was transplanted but subsequently died, histological examination showing widespread micro vesicular fatty change. Four patients presented with acute liver failure without hyperthermia. All four fulfilled criteria for transplantation, one died before a donor organ became available, and two died within one month post-transplantation of overwhelming sepsis. Histological examination showed submucosal collapse. Two patients presented with abdominal pain and jaundice and recovered over a period of three weeks; histological examination showed a lobular hepatitis with cholestasis.

Another type of liver damage induced by ecstasy is recurrent hepatitis. This occurred to a young patient who developed liver cirrhosis shown by biopsy and CT scanning after several months.

In UK and Europe within young, ecstasy and amphetamines were usually considered as a not so dangerous substance. However, deaths have occurred and hepatotoxicity has featured in many cases of intoxication with amphetamine or its methylenedioxy analogues such as ecstasy.

Vascular complications of ecstasy ingestion are rare but were reported by a case of a 23-year-old man with sudden onset of severe epigastric pain radiating to the back. He had vomited. The night before he had taken "ecstasy" for the first time.

**COCAINE INDUCED DIGESTIVE SYSTEM DAMAGE**

Cocaine-associated enterocolitis

Case studies in USA showed the existence of cocaine-associated enterocolitis. There were 18 patients identified. The interval from last use to the onset of pain was fewer than one day for seven patients, one to three days for seven patients, and more than three days for four patients. Physical examination demonstrated diffuse peritonitis in two patients, tenderness localized to a single quadrant in 11 patients, and tenderness in two or more quadrants in 5 patients. Computed tomography was obtained in 11 patients with 10 demonstrating signs of inflammation or ischemia. The anatomic locations of disease were proximal colon (14 patients), small bowel/gastric (1 patient), and distal colon (3 patients). The initial management was nonoperative in 15 patients. One patient presented in shock and died. Another developed peritonitis and underwent laparotomy. Surgical intervention occurred in four patients (3 initially, 1 on Day 4) for peritonitis. Two died postoperatively, a 50-percent surgical mortality. This study showed that cocaine-associated enterocolitis usually presents within three days of cocaine use. Inflammatory or ischemic changes are most common in the proximal colon. The majority of patients will recover with nonoperative therapy; however, those who develop peritonitis and undergo laparotomy have a 50 percent mortality.

Besides enterocolitis studies in USA showed the possibility of ischemic colitis occurrence in cocaine users. Diagnosis of ischemic colitis is based on the presence of rectal bleeding, abdominal pain, a history of cocaine use, supportive endoscopic and histopathologic findings, and the absence of other etiologic mechanisms of ischemic colitis. Lesions seen by endoscopy, which were restricted to the left colon, included hemorrhagic edematous mucosa, pseudopolyps, and ulcerations. Rectal involvement, not a common feature of ischemic colitis, was seen in five from seven patients. In two patients histologic lesions were classified acute/sub acute, and in three patients as sub acute/chronic. In the remaining two patients lesions were combined acute/sub acute and chronic. The presence of
sub acute/chronic lesions suggested recurrent ischemic episodes and could reflect repeated use of cocaine.

**Damage to the digestive system caused by drug smuggling**

Great damage to the digestive system is also produced by smuggling narcotics packed into small pages that are afterwards been swallowed or implemented on other sorts of ways inside the smugglers natural body spaces as the rectum or vagina.

Drug smuggling by swallowing condoms or capsules containing narcotics is now a worldwide ethical-legal problem. It also is of therapeutic and prognostic importance as this may lead to such emergencies as mechanical obstruction, rupture of the drug-containing foreign bodies, and life-threatening intoxication of the carrier.

One study represented a case of an intestinal cocaine packer—in slang, "mule"—, who suffered massive absorption of the drug, resulting bowel, liver and renal ischemia. This situation, previously undescribed in the literature, ended in kidney rupture. An attempt of embolization, was unsatisfactory, and nephrectomy was finally required. This case, albeit quite exceptional, is illustrative of several of the renal actions of cocaine, and reveals the effects of absorption of cocaine at the intestinal level.

Plain abdominal radiography in the diagnosis of the "body packer" is an important tool in the management of cases of suspected drug smuggling by internal body concealment. One case study represented a man who was transporting two sealed containers in his rectum, each containing approximately 70 ecstasy tablets. A plain abdominal radiograph demonstrated two well circumscribed foreign bodies lying within the pelvis. Radiography may detect over 80% of such concealed packages.

Containers, kinder eggs, folia, condoms and other ways of internal drug concealment can rupture, lead to severe consequences and even death due to enormous drug absorption.

Cocaine smuggling may lead to mechanical pylorostenosis which was represented in a case report document. It showed data of a body packer, who confessed to have swallowed 44 packages of cocaine in a total dose of approx. 360 g, who was admitted to hospital because of clinical signs of acute intoxication with cocaine followed by ileus.

**CASE REPORTS OF DRUG SMUGGLING**

**Case 1**

A 21-year-old Colombian woman presented under arrest with abdominal pain and vomiting. She had already vomited 15 packets of cocaine prior to arriving in hospital. A plain abdominal radiograph revealed the presence of more packets. Proctoscopy revealed a rectum loaded with packets, six of which were removed via the proctoscope. She was treated conservatively with an enema and suppositories and discharged after 3 days having passed a further 14 packets.

**Case 2**

A 54-year-old Nigerian man presented via Her Majesty’s Customs and Excise (C&E) having been found to be in possession of cocaine. He complained of loss of appetite and a plain abdominal radiograph revealed a number of packages within the abdomen. He was not obstructed, and was treated conservatively with a course of laxatives. He was discharged 3 days later, after passing 63 packets.

**Case 3**

A 30-year-old German woman flying from Colombia was found to be in possession of 250 g of cocaine when searched in Customs. She was not stopped but was allowed to continue and was followed to a local hotel where she was arrested together with three accomplices and her British contact. She complained of constipation and admitted to having ingested up to 20 packets of cocaine and some charcoal prior to her flight. A plain abdominal film revealed at least 10 small packets within the abdomen. Operative intervention was offered as it was thought she was demonstrating signs of acute cocaine intoxication but was refused. Over the next 24 h she became less confused and agitated and after spending 4 days in hospital she was discharged having passed a further 34 packets.

**Case 4**

A 22-year-old British woman was admitted under arrest complaining of abdominal pain. A plain radiograph revealed the presence of packets within the abdomen (Figure 2). She was treated conservatively with an enema and suppositories. She passed 22 packets containing heroin wrapped in condoms and was discharged after 4 days.

**Case 5**

A 22-year-old German man, known to have swallowed a number of packages of cocaine, presented to the Accident and Emergency Department (A& E) having had a tonicclonic seizure following his arrest by the C & E authorities. In A & E he had a respiratory arrest and following resuscitation was taken to theatre where an emergency laparotomy was performed. One hundred and twenty-two packets of cocaine were removed through a gastrostomy and an enterostomy. He was discharged on the tenth day.

**SUMMARY**

**OŠTEĆENJA DIGESTIVNOG TRAKTA UZROKOVANA ZLOUPOTREBOM SUPSTANCI**

Zloupotreba droga i zavisnost od supstanca predstavljaju veliki problem širokom svetu i dovode do brojnih problema u okviru porodice, društvenih i zdravstvenih problema. Oštećenje digestivnog trakta prouzrokovano supstancama koje su unete u organizam je rastući problem medju zavisnicima od droge. Mnoge studije pokazuju da supstance mogu prouzrokovati rade i kog segmenta digestivnog

Ključne reči: zloupotreba supstanci, oštećenja digestivnog trakta, enterokolitis

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