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Ethanol Effect Post Gastric Bypass Surgery Case Report

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Abstract

Patients after weight loss are reported to be vulnerable to consume alcohol in greater quantities or more frequently and those with active alcohol use disorder at the time of weight loss surgery are at higher risk for continuation of these problems after surgery. There are very few literatures depicting the effects of alcohol consumption after RYGB hence we would like to report our observations following the treatment of a case of middle aged morbidly obese chronic alcoholic male patient who underwent RYGB. With respect to liver disease some note regression and some other the progression. Protein malnutrition and alcohol intake are some of the plausible explanations for progression of disease. Though there is potential benefit with respect to weight loss the patient needs to be cautioned on rare potential risk of hepatic impairment with malabsorptive procedure (RYGB a combined restrictive and malabsorption procedure) and educated on remission of alcohol consumption among alcohol users and have to address about the possible protein malnutrition during the follow ups.

Keywords: Alcohol Use Disorder; Bariatric Surgery Chronic Liver Disease; Hepatic Failure; Hepatic Impairment; RYGB; Morbid Obesity

Introduction

Bariatric surgery has been another substitute once conservative method of weight loss fail [1]. Moreover, it remains the only proven effective and enduring treatment for severe obesity [2]. RYGB being a highly effective surgery to achieve weight loss, if 10 years post operation, it has resulted in 25% to 30% reduction in total weight and have a 37% decline in long-term mortality [3,4,5,6]. Mortality due to diseases when assessed there was 50% decreased risk of death from cardiovascular disease, a 90% decreased risk of death from diabetes, and a 62% decreased risk of death from cancer [6]. Even with the several benefits observed after bariatric surgery, substance use is observed to be more common in patients subjected to bariatric surgery than in the general population [7]. Among the patients who have undergone weight loss surgery, maladaptive alcohol use has emerged as a risk and they are reported to be vulnerable to

consume alcohol in greater quantities or more frequently. Patients who have active alcohol use disorder or heavy alcohol users at the time of weight loss surgery are at higher risk for continuation of these problems after surgery [8]. Even after exhaustive literature search there are very few literatures depicting the effects of alcohol consumption after RYGB hence we would like to report our observations following the treatment of a case of middle aged morbidly obese chronic alcoholic male patient with RYGB.

Case Report

A 39-year-old morbidly obese male chronic alcoholic, having comorbidities like type 2 diabetes mellitus with hypertension and diabetic neuropathy on regular medications with obstructive sleep apnoea, breathlessness and bilateral knee joint pains presented to Bariatric OPD for weight loss surgery. The patient being a chronic alcoholic, gave a history of consumption of 1 bottle of whisky (750 ml) per day. On general physical examination with the height of 174cm, weight 143.1kg and BMI of 47.3kg/m^2 underwent pre-operative investigations which showed normal upper GI scopy which ruled out the gastric varices hence the portal hypertension, grade-3 fatty changes with mild hepatomegaly on ultrasonography. On blood investigations, patient had normal renal function test, normal liver function test, normal serum electrolytes, dyslipidemia with decrease in calcium and ferritin levels and HbA1c measured 9.1%.

After pre-operative evaluation and psychological counselling, patient was started on breathing exercises along with diet plan for 15 days with cPAP for Obstructive sleep apnoea. After pre-anaesthetic check-up, patient underwent Roux en Y gastric bypass in June 2017. Intra-operative findings showed fatty changes with Pancreato-Biliary limb (BP Limb) of 150cm and Alimentary Limb of 100cm. Flat drain was kept retro gastro-jejunal anastomosis.

Post operatively patient was shifted to Surgical ICU under observation. Patient was ambulated for 6 hrs following surgery. Post-operative day 1, CT with Gastrograffin was performed and later patient was started on liquids orally along with breathing exercises. Drain was removed on post-operative day 2 and on post-operative day 3, patient was discharged in satisfactory condition. On discharge, patient was started on multivitamin, calcium and proteins supplements.

Four months after surgery patient lost 40 kg with resolution of diabetes mellitus, hypertension, obstructive sleep apnoea, GERD reflux symptoms and breathlessness and weighed 103 kg. At the same time, blood investigations showed HbA1c of 4.2% and had normal renal function test, normal lipid profile and liver function test.

Following 4 months post-surgery, patient started consuming half bottle of ethanol (375 ml) daily. Six months post-surgery patient was admitted in hospital with complaints of loose stools 6-8 episodes per day, severe jaundice, (Figure 1) abdominal discomfort, decrease in appetite and breathlessness. Ultrasound was performed which showed moderate hepatomegaly with diffuse coarsened echo-texture, diffuse liver disease with moderate splenomegaly and moderate ascites. Blood investigations showed increase in total bilirubin level up to 17mg/dL with decrease in serum albumin - 1.3g/dL, deranged PT/INR - 21.9/1.78, deranged serum creatinine - 1.7mg/dL and total WBC counts was raised up to 25490 cells/cumm.

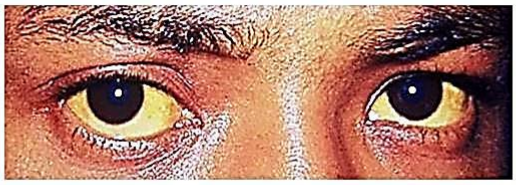

FIG:1 SIGNS OF ICTERUS IN EYES

FIG:2 CIRRHOSIS OF LIVER

FIG:3 ASCITES

Patient was admitted in surgical ICU and started on higher antibiotics. Medical Gastroenterologist, Pulmonologist, Nephrologist opinions were taken. Because of decreased food intake, feeding Gastrostomy to remnant stomach was done in March 2018. Intra-operative findings showed chronic liver disease with cirrhosis of liver, hepatomegaly, splenomegaly and moderate ascites (Figure 2 &3). Post-operatively, patient was started on high protein diet with supplements through gastrostomy tube (Figure 4). Patient's general condition improved following treatment with improvement in levels of bilirubin, albumin, PT/INR and serum Creatinine.

FIG:4 FEEDING GASTROSTOMY TO REMNANT STOMACH

Discussion

The treatment of morbid obesity is intricate and is done with a multi-disciplinary approach. Conservative medical therapy in morbidly obese patients have failed and surgical approaches have emerged as useful alternatives with good short- and long-term results [9,10].

In this case report, a morbidly obese chronic alcoholic patient with BMI - 47.3kg/m2, a K/C/O type 2 diabetes mellitus with hypertension and diabetic neuropathy on regular medications presented with c/o obstructive sleep apnoea, breathlessness and bilateral knee joint pains. In the pre-operative investigations, patient had grade 3 fatty changes however upper GI endoscopy showed normal which ruled out the gastric varices, pre-operative cirrhosis and portal hypertension [11]. Roux-en-Y gastric bypass (RYGB) is the most frequently performed bariatric procedure worldwide and is accepted as the gold standard [12] and similarly the patient underwent RYGB in June 2017 with no contraindications. Treatment was successful in obtaining good weight loss of 40kg over 4 months of surgery with amelioration of comorbidities. Similarly, in a study by Vidal et al., there was a 45% excess weight loss among those who underwent LRYGB by 3 months [13] and Dorado EA et al., along with mean percentage excess weight loss of 35.4kg at 1st month and 62.5kg at 6th month post bariatric surgery also has noted remissions of comorbidities among 52.1% in the 1st month post bariatric surgery [14].

However, the patient being a chronic alcoholic started consuming alcohol four months post RYGB and developed which is an observed phenomenon that individuals undergoing bariatric surgery with a lifetime history of alcoholic use disorder may be at increased risk for relapsing to alcohol use after surgery [15]. Svensson PA et al., noted that male gender and baseline alcohol consumption had increased likelihood of alcohol abuse and the risk for at least medium risk alcohol consumption, alcohol problems, and alcohol abuse diagnoses with an adjusted Hazard Ratio of 2.75, 5.37, and 4.76 respectively after gastric bypass surgery [16]. However, the increased alcohol problems after bariatric surgery persisted beyond 2 years in their study which is slightly contradictory to the study finding by Svensson PA et al., wherein, they have noted decreased alcohol consumption during the first year following surgery [16]. This may be due to the pre-existing degree of alcohol use disorder which is not defined and classified as per WHO or DSM during the history taking [17,18].

The gastric bypass alters the normal anatomy and physiology of the upper gut hence affects alcohol uptake, effects, or metabolism which is supported by previous studies demonstrating higher peak alcohol levels and longer alcohol elimination times after gastric bypass [2,16,19,20]. These findings have been ascribed to reduced first-pass metabolism of ethanol by alcohol dehydrogenase and faster transport of alcohol to the small intestine and in the stomach. In addition, alcohol use disorder has general detrimental health effects of alcohol [16].

This is also confirmed by Woodard GA et al., that consumption of even a single glass of red wine led to a peak breath alcohol level greater than the legal driving limit of 0.08 indicating the intoxication. RYGB patients experienced different symptoms of intoxication, and hence the patient might not recognize that they have had too much to drink and can lead to overindulgence [2]. In the early postoperative period the fasting and low calorie intake and defects in hepatic mitochondrial function, existing fatty liver disease with obesity, per se, may reduce or impair the metabolism of products of the ADH pathway, decreasing hepatic clearance of alcohol. The gastric bypass patient, therefore, may not only have higher rates of alcohol absorption, but at

least in the early postoperative period, possible defects in alcohol clearance as well [21]. In addition, massive and rapid weight loss might also lead to metabolic changes and may affect the amount of alcohol cleared by the liver via the microsomal ethanol metabolizing system (P4502E1). Activities along this pathway are induced both by alcohol intake, free fatty acids and possibly, ketone bodies and are increased in association with obesity. Alcohol metabolism by the microsomal ethanol metabolizing system substantially increases the risk for liver damage [21].

Thus, with the alcohol consumption, the patient in our report progressed with the liver damage and presented with signs of hepatic failure which may be due to ethanol related chronic liver disease and were like the signs of hepatocellular failure with deranged liver functions that developed after jejunoileal bypass, biliopancreatic diversion and gastric bypass in a study by Sgambato D et al [22]. The mechanism of progression and/or regression of hepatic steatosis after bariatric surgery is poorly understood. The progression of hepatic steatosis as per clinical, laboratory, and histologic findings raises the possibility of multiple factors contributing to its pathogenesis. Initial findings by D'Albuquerque LAC et al., suggest progression of the histologic findings found in patient with pre-existing steatohepatitis. However, a more detailed analysis of their findings raised the possibility of hormonal, autoimmune, and/or inflammatory factors may contribute to such an entity. In addition, the procedures that induce malabsorption can lead to injury to the intestinal mucosa barrier due to non-use or functional exclusion of the alimentary bolus. In their study, it was observed in 3 patients who, 7 to 24 months after bariatric surgery, developed hepatocellular failure. The postoperative profile of serum biochemical liver test results indicated that 2 months post-surgery, the results had deteriorated, but subsequently by 12 months, they had undergone an improvement [23]. The cause of loose stools must be due to pancreatic exocrine insufficiency.

However, findings of regression of steatosis and inflammation, including decreased bridging fibrosis due to weight loss has been noted following RYGB [11]. Kral *et al*., described their findings in 104 patients who underwent repeat liver biopsy after a prior duodenal switch/biliopancreatic diversion (DS/BPD) for a variety of reasons. Severe fibrosis was recorded to be decreased in 28 patients and 11 patients with confirmed cirrhosis at the time of the DS/BPD showed even disappearance of regenerative nodules and bridging fibrosis along with decreased fibrosis. However, alcohol intake, hemosiderosis, or obstructive biliary disease or other known causes of liver damage, worsened the fibrosis or resulted in its persistence after bariatric surgery [24].

While some studies note the improvement [24] following RYGB, some other study questioned the role of malabsorptive procedures in inducing liver disease. In the report by Baltasar et al., 10 out of 470 patients who had no known liver disease preoperatively other than NAFLD and underwent DS/BPD developed clinically significant hepatic impairment, including one death from liver failure. With enteral or parenteral supplementation, all except one patient eventually had a favourable outcome similar to the improved prognosis observed in the current study. Plausible explanations include protein malnutrition, deficiency of hepatotrophic factors, accumulation of free fatty acids and bacterial overgrowth causing excessive endotoxins. Some malabsorptive procedures have not reported this complication or have found only transient increases of the liver enzymes that normalize subsequently [25,26].

In summary, the available data seem to confirm that bariatric surgery can be performed safely in morbidly obese patients with no signs of hepatic failure. Hence among patients with alcohol

use disorder and fatty liver the risk of hepatic complications should be weighed against the potential benefits of weight loss and improvement in other comorbidities. Although rare, there is a potential risk of hepatic impairment with malabsorptive procedures which needs to be cautioned about and educated on remission of alcohol consumption and the possible malnutrition specially protein malnutrition during the follow ups.

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