

ORIGINAL ARTICLE

Constipation Looks Git Problem Create Heart Trouble: A Exploratory Study

Mayank Chugh¹, Satender Tanwar²**HOW TO CITE THIS ARTICLE:**

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ABSTRACT

Introduction: Constipation is associated with cardiovascular events. Changes to the intestinal microbiota by constipation can induce atherosclerosis, blood pressure rise, and cardiovascular events. Constipation increases with age and often coexists with cardiovascular risk factors. In addition, strain at stool causes blood pressure rise, which can trigger cardiovascular events such as congestive heart failure, arrhythmia, acute coronary disease, and aortic dissection. However, because cardiovascular medical research often focuses on more dramatic interventions, the risk from constipation can be overlooked. Physicians caring for patients with cardiovascular disease should acknowledge constipation and straining with it as important cardiovascular risk, and prematurely intervene to prevent it. The authors review and discuss the relationship between constipation and cardiovascular disease.

KEYWORDS

• Constipation • Heart • Cardiac • Straining • Health • Cardiovascular Disease • Gastrointestinal tract

INTRODUCTION

Introduction Constipation has been reported to be linked to the occurrence of cardiovascular events. In the Japanese general population, low-frequency defecation (once per 2 to 3 days) is a significantly higher risk of cardiovascular

deaths than high-frequency defecation (more than once per day). Another study has shown that the prevalence of constipation among Japanese patients hospitalized for cardiovascular disease was 47%, and 46% of this population (*i.e.*, 21.6% of the total

AUTHOR'S AFFILIATION:

¹Gastroenterologist, Hepatologist & Endoscopist, Chugh Multispecialty Hospital, Bhiwani, Haryana, India.

²M.S. Surgery, Chugh Multispecialty Hospital, Bhiwani, Haryana, India.

CORRESPONDING AUTHOR:

Mayank Chugh, Gastroenterologist, Hepatologist & Endoscopist, Chugh Multispecialty Hospital, Bhiwani, Haryana, India.

E-mail: chughmayank@gmail.com

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population) only developed constipation after admission. The link between constipation and cardiovascular events might involve a change in intestinal microbiota. Recently, the intestinal microbiota have received attention as a novel risk factor for cardiovascular events.⁴ Moreover, many papers have reported on the association between changes in the intestinal microbiota and increased blood pressure (BP), progression of atherosclerosis, and cardiovascular disease. Oxidative stress may be another link between constipation and cardiovascular disease. Nonetheless, because cardiovascular medical research often focuses on more dramatic interventions, the association between constipation and cardiovascular disease is often overlooked.

Aging is well recognized as one of the most important risks for both constipation and cardiovascular disease. Therefore, the increase in the prevalence of constipation with age parallels that of cardiovascular disease. Figure 1 shows a possible mechanism underlying the association between constipation and the onset of cardiovascular events. Various factors can contribute to the hardening of stool and the weakening of bowel movement. Patients with cardiovascular disease, especially when complicated with heart failure, are instructed to restrict their water intake and are often administered diuretics, which can promote constipation. Moreover, various factors after hospitalization can also promote constipation, such as decreased activity, environmental changes. Chronic constipation induces mental stress, which may be related to rising BP. Constipation also leads to strain at stool, which can include breathing in a strained manner similar to the Valsalva maneuver. Namely, first the BP increases and the heart rate drops transiently. Second, the BP falls and the heart rate rises. Third, the BP transiently drops in an instant. Fourth, the BP reactively rises.

Patients in the acute phase of cardiovascular disease are often confined to bed rest. Therefore, these patients are under high risk of developing constipation, and even if they defecate every day, their physicians should consider whether their stool is hard and whether their bowel movement was facilitated. For these evaluations, the Bristol scale may be useful. Moreover, because constipation may be an initial symptom of colon cancer, it is important to ask patients whether they have experienced constipation with thin stool

or body weight loss. If necessary, physicians should order fecal occult blood tests. Screening for gastrointestinal cancer, which may be a source of bleeding, is important, because patients with cardiovascular disease frequently take antithrombotic drugs.

Hypertension is not only a major risk of cardiovascular disease but also a trigger of congestive heart failure. The BP of a woman hospitalized with congestive heart failure at our institution rose to 204/88 mm Hg when she strained to release her stool, and as a result, she developed flash pulmonary edema even though her heart failure condition has been compensated and she was able to walk around her hospital room. She had not defecated during her hospitalization.

There is a link between constipation and the management of hypertension. Calcium channel blockers, one of the major classes of antihypertensive drugs, promote constipation due to their suppression of smooth muscle movement.

Patients with heart failure often use diuretics and restrict water and sodium for fluid volume control. This decreases the amount of water in the body in general, and the amount of water in the gut specifically. In patients with right heart failure, impairment of intestinal peristalsis occurs in the edematous gut. Other factors related to gastrointestinal disorder in heart failure patients, including hypoperfusion, abnormality of intestinal permeability, and increase of intestinal bacterial colonization, have been reported. Thus, the improvement of heart failure generally parallels the amelioration of constipation, abdominal distention, and anorexia.

In acute coronary syndrome, vagal activity is reduced while sympathetic nerve activity is increased, resulting in constipation. In addition, patients with acute myocardial infarction are often confined to bed rest after catheter intervention. A longer period of bed rest is required in patients treated with intra-aortic balloon pumping. Patients required to rest in bed for long periods are at risk of constipation not only due to the rest-induced decrease of intestinal peristalsis, but also because of the difficulty and shame attendant on defecation in bed. The BP rise upon defecation may induce cardiac rupture, acute heart failure due to increased afterload, and ventricular tachycardia/ventricular fibrillation.

The main causes of aortic dissection are hypertension and atherosclerosis, although forms of vascular fragility, such as Marfan syndrome, may also be involved. In the acute phase of aortic dissection, a longer term of bed rest is required compared with other cardiovascular diseases. As a result, patients with aortic dissection may be more likely to develop constipation. We need to watch for intestinal necrosis or paralytic ileus due to occlusion of the nutrient blood vessels and spread of inflammation when dissection reaches the abdominal aorta.

As a first step in the management of these cases, physicians should intervene in the lifestyle of patients. Patients should be instructed to allow themselves adequate time and privacy for defecation. In addition, an intake of 20-35 g/d of dietary fiber and 1.5-2.0 L/d of water intake is necessary for ideal defecation. As described above, however, patients with heart failure will often be instructed to restrict their water intake.

Biofeedback retraining of muscles related to defecation may be effective for treating chronic constipation irrespective of the presence or absence of pelvic floor dysfunction, and this method has no side effects.

Finally, the bathroom environment is important, including the room temperature and the temperature of the toilet seat.

Constipation is one of the risks of cardiovascular disease, and patients with cardiovascular disease tend to be constipated. Physicians caring for patients with cardiovascular disease should acknowledge constipation and straining with it as important cardiovascular risk, and prematurely intervene to prevent it.

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