

An Israeli national survey on ischemic colitis induced by pre-colonoscopy bowel preparation

O. Tomer¹, Y. Shapira², O. Kriger-Sharabi³, N. Mawasi⁴, E. Melzer³, J. Epshtein⁵, Z. Ackerman¹

(1) Departments of Medicine, Hadassah-Hebrew University Medical Center, Jerusalem, Israel, Faculty of Medicine, Hebrew University of Jerusalem, Israel; (2) Department of Gastroenterology, Sourasky Medical Center, Tel Aviv, Israel; (3) Institute of Gastroenterology, Kaplan Medical Center, Rehovot and Faculty of Medicine, Hebrew University of Jerusalem, Israel; (4) Department of Gastroenterology, Carmel Medical Center, Haifa, Israel. (5) Gastroenterology, Hadassah-Hebrew University Medical Center, Jerusalem, Israel.

Abstract

Background and study aims: Ischemic colitis (IC) may occur as a complication of colonoscopy. The aim of this study was to characterize patients with IC that occurred after exposure to bowel preparation laxatives, prior to an elective colonoscopy.

Patients and methods: A survey among Israeli gastroenterologists. Information was collected regarding individual cases.

Results: Eight patients, who developed IC after bisacodyl ingestion that was taken as part of pre-colonoscopy bowel preparation protocol, were reported. In all patients, severe abdominal pain and/or hematochezia started shortly after the ingestion of the first dose of bisacodyl. IC was found in 7 patients during the planned colonoscopy and in 1 patient using computerized tomography. All patients received supportive treatment and recovered.

Conclusions: IC induced by bisacodyl is a rare phenomenon. Regardless of being rare, we would advise withholding bisacodyl bowel preparation in elderly subjects with risk factors for IC that are scheduled for a colonoscopy. (*Acta gastroenterol. belg.*, 2022, 85, 94-96).

Keywords: Ischemic colitis, Colonoscopy complications, Pre-colonoscopy bowel preparation, Bisacodyl, National survey.

Introduction

Colonoscopy is considered a safe procedure. However, up to 0.28% of patients undergoing colonoscopy, may suffer from severe complications (1). These may include:

colonic perforation, colonic bleeding, cardiovascular or pulmonary complications, dehydration and renal failure (1-3). Ischemic colitis (IC) was rarely reported in patients undergoing an elective colonoscopy (4-6).

In the present study we report the results of a national survey among Israeli gastroenterologists that was conducted in order to characterize the clinical features and natural history of patients with IC that occurred after exposure to bowel preparation laxatives, prior to an elective colonoscopy.

Methods

A national online survey was conducted in two stages. First a letter was sent to all 480 members of the Israeli association of gastroenterology. In this letter, physicians who had encountered patients that were found to have IC while undergoing an elective colonoscopy were asked to contact us. To those who reported to us, a questionnaire

composed of 19 items was sent. The information requested included demographic and clinical data, medications used for the preparation for colonoscopy, symptoms that develop during the preparation for colonoscopy, findings that established the diagnosis of IC and experience with previous or follow-up colonoscopies. This study was approved by the institutional review board of Hadassah-Hebrew University Medical Center, Jerusalem, Israel (HMO-0460-20).

Results

Data regarding 8 patients that suffered from IC induced by pre-colonoscopy bowel preparation that occurred from 2014 to 2019 was reported.

Table 1 summarizes the patients' clinical characteristics. Six of the patients were older than 65 years old and both females and male were affected. Three patients were taking a daily aspirin.

All the patients were prescribed a bowel preparation, which included: a) Laxadin (Bisacodyl, Teva Pharmaceutical Industries Ltd, Israel, 10 mg daily) which should have been taken 3 days and 2 days prior to the procedure. b) Picolax (Ferring GmbH, Kiel, Germany, contains 10 mg of sodium-picosulfate, 3.5g of magnesium oxide light and 12g of citric acid) which should be taken a day prior to the colonoscopy.

In all patients, abdominal symptoms developed few hours after the ingestion of the first bisacodyl dose. Severe abdominal pain was present in all patients, in some; bloody diarrhea was present as well (table 2). After the development of the abdominal symptoms only 3 patients adhere to the full pre-colonoscopy bowel preparation protocol and took the second dose of bisacodyl and the picolax. Three patients took only the picolax and the other 2 patients did not continue to take any of the prescribed medications. The diseased area in the colon was distal to

Correspondence to: Professor Zvi Ackerman, M.D., A.G.A.F., Department of Medicine, Hadassah-Hebrew University Medical Center, Mount Scopus Campus, P.O. Box 24035, Jerusalem, 91240, Israel. Phone: 972-2-5844111, Fax: 972-2-5823515, Cellular phone 972-50-7874337. Email: zackerman@hadassah.org.il

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Table 1. — Patients' clinical characteristics

Pt's N	Age	Sex	Medical background	Previous Gastrointestinal pathology	Current Medications
1	66	F	smoker, s/p HCV infection, obesity	s/p sigmoidectomy due to colonic carcinoma 5 years earlier	aspirin
2	66	F	hypothyroidism	NA	eltroxin
3	73	M	prostatic carcinoma, hyperlipidemia, HTN	radiation proctitis	aspirin, α and β blockers, statin
4	70	M	smoker, HTN, PVD	NA	aspirin, ACE inhibitors
5	53	F	hypothyroidism	NA	eltroxin
6	42	F	NA	NA	NA
7	67	M	hyperlipidemia	NA	Statin
8	69	F	osteoporosis, fatty liver	hiatus hernia	bisphosphonates, calcium carbonate

Pt N = patient's number, HCV= hepatitis C, HTN=hypertension, PVD= peripheral vascular disease, NA= not applicable, s/p= status post, ACE = angiotension converting enzyme.

Table 2. — Procedure's characteristics

Pt's N	Symptoms	Onset of symptoms after the first bisacodyl dose	Location and extent of ischemic colitis
1	abdominal pain, vomiting, diarrhea	6 hours	from 10 to 40 cm, proximal to the surgical anastomosis
2	abdominal pain, bloody diarrhea	few hours	From 25 to 40 cm, proximal to anus
3	abdominal pain	few hours	from 35 to 45 cm, proximal to anus
4	abdominal pain	6 hours	left colon
5	abdominal pain	few hours	sigmoid colon
6	abdominal pain, bloody diarrhea	few hours	descending & sigmoid colon
7	abdominal pain, bloody diarrhea	few hours	descending & sigmoid colon
8	abdominal pain	few hours	sigmoid colon

In all patients, except the 4th patient, the presence of ischemic colitis induced by pre-colonoscopy bowel preparation was diagnosed by colonoscopy. Pt N = patient's number.

the splenic flexure, meaning the descending and/or the sigmoid colon (table 2). In the patients that underwent the planned colonoscopy (7 out of 8), biopsy from the diseased area was suggestive of IC.

All patients received supportive treatment and recovered. Three patients were found to have a documented prior colonoscopy examination; all were without any pathological findings. Two of these patients were prescribed the same bowel preparation in the previous colonoscopies. In five cases a follow-up colonoscopy examination was made using a different bowel preparation. All exams were found to be normal.

Discussion

All the patients described herein suffered most probably from IC induced by pre-colonoscopy bowel preparation. Ischemic colitis is the most common form of intestinal ischemia (6). The incidence of IC in the general population ranges from 4.5 to 44 cases per 100,000 person-years. Elderly subjects with multiple co-

morbidities have a relatively higher risk for IC (6). It is assumed that the colon is predisposed to ischemia due to its relatively low blood flow compared to the rest of the gastrointestinal tract (7).

All the patients that were collected in the present national survey were in a stable medical condition while preparing for the elective colonoscopy. None of them suffered from acute medical conditions that could compromise their systemic as well as their intestinal blood flow. The only clinical parameter in common to all our patients was an exposure to the same pre-colonoscopy bowel preparation. Colonic ischemia is known to be induced by a large variety of pharmacological agents (8,9). These may include constipation inducing medications, digitalis, hormonal therapies, immunosuppressive agents, non-steroidal-anti-inflammatory drugs, illicit pharmacological agents, antimicrobials, decongestants, diuretics, vaso-pressor agents, as well as and various laxatives (8-11).

The understanding that medications may promote the development of IC, lead Bielefeldt to search the

Federal Adverse Event Reporting System of the Federal Drug Administration (FDA), for reports that listed IC as a treatment complication of various medications or medical procedures. Between 2004 and 2015, the FDA received 2811 reports that linked drugs to incident cases of IC. In 60 case reports, colonoscopy was reported as the indication for drug administration and the related event of IC (9). Most of these patients were exposed to pre-colonoscopy bowel preparation agents that included a combination of polyethylene glycol and bisacodyl (9).

Vodusek *et al.* reviewed reports that describe possible pharmacological etiologies for IC (8). Among these, the authors detected reports of IC that occurred after exposure to bowel cleansing preparations (taken before an elective colonoscopy) like oral sulfate solution (4), bisacodyl (10,11), hyper osmotic laxatives as sodium phosphate and magnesium citrate (8).

The pathophysiology of ischemic colitis induced by pre-colonoscopy bowel preparation is not clear. It is assumed that a variety pathophysiological mechanisms operate for each of the cleansing agents that are involved in colonoscopy induced IC (8). In case of IC induced by bisacodyl it is postulates that the stimulation of the colonic motility may increase the intestinal luminal pressure and thus cause compression of the splanchnic circulation and a decrease in colonic perfusion (8).

Concern regarding the safety of pre-colonoscopy bowel preparation kits that contained high dose bisacodyl, lead the FDA, a decade ago, to order a withdraw of a pre-colonoscopy bowel preparation kits (HalfLytely) that contained bisacodyl tablets in the total dose of either 20 or 10 mg (Federal Register. 2010; 75:53:13292 and Federal Register. 2011; 76:159: 51037-51038).

The findings from our national survey point that bisacodyl induced IC is a rare phenomenon. Regardless

of being rare we would advise withholding bisacodyl bowel preparation in elderly subjects with risk factors for ischemic colitis that are scheduled for a colonoscopy.

Disclosure of conflicts of interest

All of the authors report no conflict of interest.

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