

Introduction

Sevelamer is a phosphate binder that is used to treat hyperphosphatemia in patients with chronic kidney disease.

Sevelamer is known to cause multiple gastrointestinal side effects including nausea, vomiting, constipation, and abdominal pain. However, sevelamer crystals were observed in rare cases in the gastrointestinal tract (GIT) with associated serious injuries including inflammation, ulceration, ischemia, and perforation.

In this study, we conducted a systematic review to investigate the association of sevelamer with GIT injuries.

Methods

We conducted a systematic search in MEDLINE, EMBASE, Scopus, and Cochrane Central Register of Controlled Trials to identify eligible reports of sevelamer-associated gastrointestinal tract injuries. The bibliographies of identified articles, Google scholars, and websites of relevant professional associations were also searched for relevant studies. Two independent reviewers identified eligible studies and data were extracted in Excel. Only studies that had sevelamer crystals seen in the histopathological exams were included.

Variable

N=77

<i>Demographics, n (%)</i>	
Age	58.88 ± 10.9
Females	35 (44.5)
<i>Comorbidities, n (%)</i>	
Diabetes	27 (35.5)
Constipation	4 (5.2)
Previous abdominal surgery	15 (19.5)
Blood thinners	16 (20.8)
Possible Slow GIT motility	49 (63.3)
<i>Sevelamer treatment, n (%)</i>	
Sevelamer carbonate	16 (20.8)
Sevelamer hydrochloride	12 (15.6)
Median daily dose	3,200 mg
Duration	5 days – 7 years
<i>Symptoms, n (%)</i>	
GIB	34 (44.2)
Abdominal pain	29 (37.7)
Diarrhea	12 (15.6)
Nausea/vomiting	10 (13)
Esophageal dysphagia	1 (1.3)
<i>Histopathological abnormalities, n (%)</i>	
Ulceration	40 (52)
Inflammation	37 (48.1)
Perforation	14 (18.2)
Necrosis	11 (14.3)
Ischemia	6 (7.8)
Stricture	3 (3.9)
Inflammatory polyp	3 (3.9)
<i>Pharmacological interventions, n (%)</i>	
Stopped Sevelamer	35 (45.5)
Decreased sevelamer dose	1 (1.3)
Continued Sevelamer	1 (1.3)
<i>Procedural interventions, n (%)</i>	
Surgical intervention	16 (20.8)
Endoscopic treatment	5 (6.5)
Endovascular intervention	1 (1.3)
<i>Outcomes, n (%)</i>	
Recovered	35 (45.5)
Death	5 (6.5)
Not reported	37 (48.1)

Results

We included 58 studies describing a total of 77 patients with a mean age of 58.8 years.

Diabetes was present in 27% of cases and at least one risk factor to have slow GIT motility was identified in 63.3% of patients. Both sevelamer carbonate and sevelamer hydrochloride were reported to be associated with GIT injury.

Gastrointestinal bleeding (44.2%) and abdominal pain (37.7%) were the most common presenting symptoms.

The large intestines were the most common area of involvement (74%), especially in the rectosigmoid area (36.4%).

Ulceration (52%) and inflammation (48.1%) were the most common histopathological findings.

Stopping sevelamer was the most common pharmacological intervention.

20.8% of patients required surgical intervention, while 6.5% had an endoscopic intervention. Full recovery was reported in 45.5% while 6.5% of patients died.

Discussion

While sevelamer crystals can be found incidentally in the mucosa of the GIT, there is growing evidence that sevelamer use can be associated with GIT injury. Slow GIT motility can be an important risk factor to develop sevelamer-associated GIT injury. If a GIT injury was found during endoscopy and sevelamer crystals were identified on histopathological exam, discontinuing sevelamer and using an alternative phosphate binder should be considered.

Further studies are needed to identify risk factors and the best approaches for primary and secondary prevention.

Location of GIT Involvement (N=77)

