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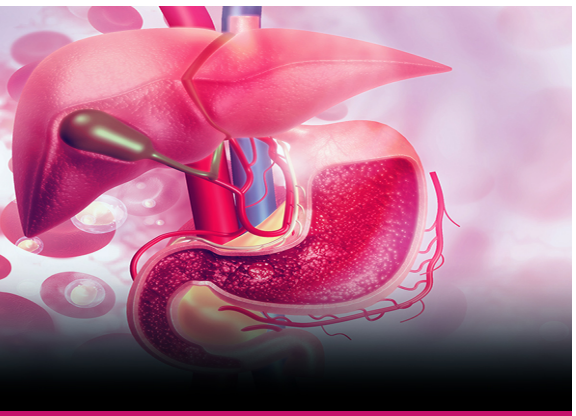
Enteron



Dear Doctor,

Greetings from Micro Labs limited.

Inside This Issue

Should you require any specific article or medical information, please feel free to contact us at medicalservices@microlabs.in Looking forward to your valuable feedback

The role of proteolytic activity in disruption of intestinal barrier function and irritable bowel syndrome symptoms

There are a large number of proteases and protease inhibitors are present in the intestinal lumen and the mucosa. The pancreas, intestinal epithelial cells, immune cells and the commensal microbiota all produce proteases. These proteases play a vital role in maintaining physiological homeostasis, in host defence mechanisms during infection and inflammation. Serine and cysteine proteases are the most abundant family of faecal proteases. Protease inhibitors like secretory leucocyte protease inhibitor (SLPI), serpins and elafin secreted by the host and microbes counter the action of proteases. A significantly higher and qualitatively different proteolytic activity (PA) has been described in the ileostomy contents compared with the faeces.

Several experts have hypothesized that microbiota present in the colon plays a significant role in modulating PA, and that PA is reduced during colonic movement, either because of the direct effects of microbiota or because of the effects of microbiota on the host.

Elevated PA levels from patients with diarrhea and constipation-predominant irritable bowel syndrome (IBS-C) have been identified in fecal and tissue supernatants. Researchers researching these conditions have observed decreased intestinal permeability and visceral hypersensitivity while administering such supernatants in mice.

Based on this information, a group of researchers recently conducted a review to define and correlate the impact of proteases on intestinal barrier activity in individuals with post-infection IBS (PI-IBS) and IBS-C with clinical symptoms and composition of microbiota. Their test findings were released in 2020 at Gut.

The research recruited 39 IBS patients and 25 balanced participants, who completed questionnaires and received additional examinations. The researchers conducted in vivo permeability tests, ex vivo colonic barrier work in Using galleries, close junction proteins and ultrastructural morphology, 16S fecal microbiota rRNA gene sequencing, and a casein-based test to calculate PA in fecal supernatants. And they tested role of PA and intestinal barrier in germ-free mice following administration of human feces with high or low PA rates.

The following were the findings of the study:

- In IBS patients fecal PA rates were greater than in healthy volunteers. Elevated rates of fecal PA were found in 40% (8/20) of PI-IBS patients and 16% (3/19) of IBS-C patients.
- Patients with elevated fecal PA levels had more frequent and looser bowel movements more-severe symptoms and increased colonic permeability both in vivo and ex vivo.
- Patients with IBS and high PA levels had lower occludin expression, wider tight junctions on biopsies and reduced microbial diversity compared with patients with low PA levels.
- Elevated PA levels in fecal supernatants were associated with disruptions in intestinal barrier permeability via decreased occludin and increased phosphorylated myosin light chain (pMLC) expression.
- Serine protease inhibitors, but not cysteine protease inhibitors, significantly blocked the effects of high-PA fecal supernatants on intestinal barrier function. And pharmacological or siRNA inhibition of protease-activated receptor-2 diminished these effects.
- Germ-free mice that received feces with microbiota from high PA IBS patients had greater in vivo intestinal permeability than mice receiving microbiota from low PA IBS patients.

Overall, this research has demonstrated that a subset of IBS patients, especially those with PI-IBS, have dramatically increased rates of fecal PA, increased frequency of IBS symptoms, including worse diarrhea, decreased barrier function and reduced microbial diversity.

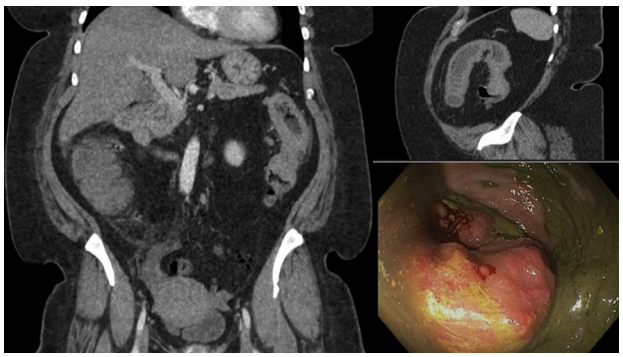
REFERENCE

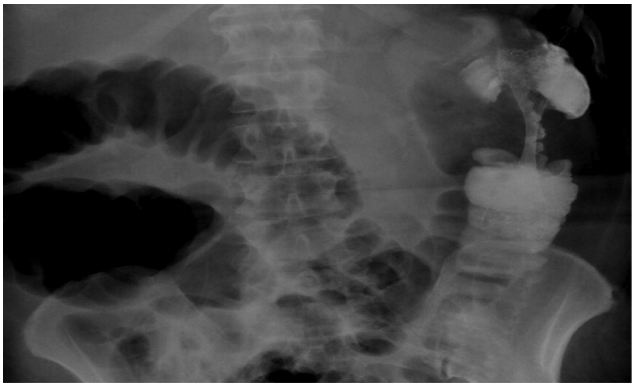
Edogawa S, Edwinson AL, Peters SA, et alSerine proteases as luminal mediators of intestinal barrier dysfunction and symptom severity in IBS. Gut 2020; 69:62-73.

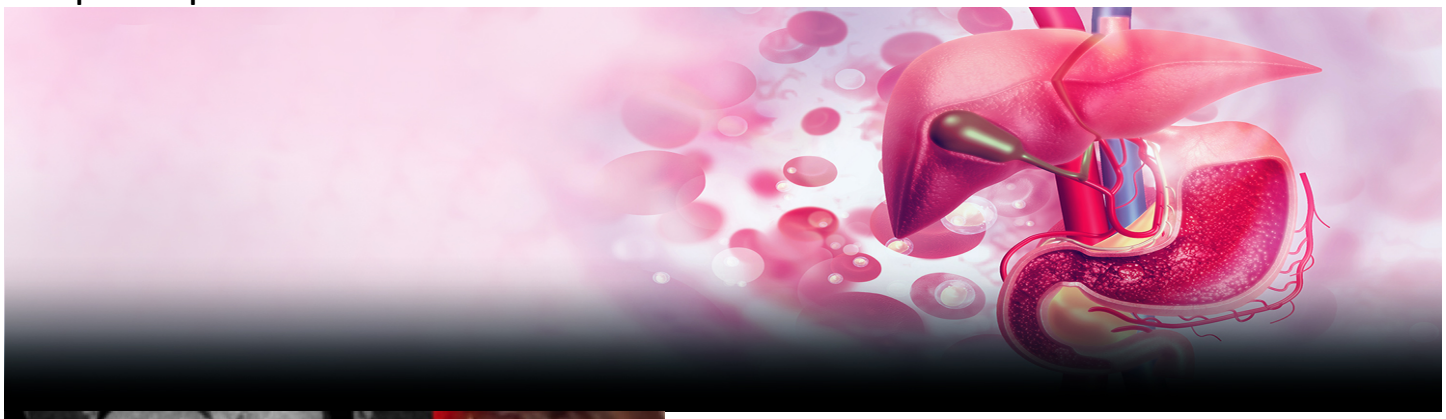
Colonic Obstruction caused by Cherry Pits

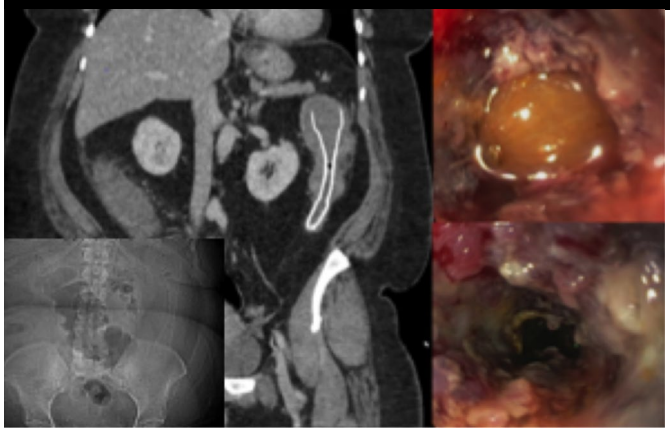
CASE PRESENTATION

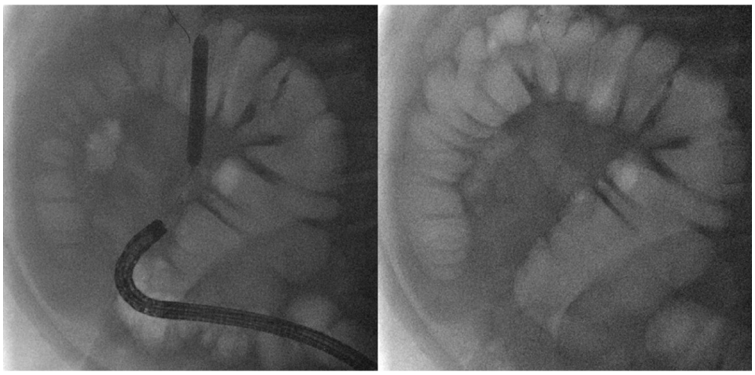
A 65-year-old patient with stage IV colon cancer pesented to the hospital with stomach pain, nausea and vomiting for 3 days. In the descending colon CT showed a circumferential mass with proximal distension and 10 cm cecal diameter. Colonoscopy was done following consulting with the departments of surgery and oncology, showing a stricture of 4 cm x 2 mm in the proximal descending colon. A 25 mm x 8 cm exposed stent of metal was put under fluoroscopy and verified in good position. She was recommended to follow a low-fiber diet and stool softeners and get 2 soft stools a day, owing to the extent of the stringence. She was re-presented to the hospital three days later with persistent symptoms. She recorded inability to comply with low-fiber diets and bowel regimens. With a slight circular radiolucent lesion in the center of the stent, Repeat CT showed proximal colonic distension and the stent in good place around the stricture. Because of the question over stent blocking, repeat colonoscopy was done, exposing cherry pits within the stent lumen, causing obstruction. The stent was run over a guidewire multiple times using a balloon catheter, and it extracted some cherry pits. After, balloon dilation was done with sufficient stool streaming. She was released the following day with complaint relief.











Upon colonic stent installation no commonly agreed-upon diet remains. I usually urge patients in my clinic to transition gradually to a low-residue diet and eliminate bulk vegetable matter, for fear of clogging the stent. It is urged to doctors to follow a routine laxative protocol. Also, there are practitioners who encouraged patients to restore a regular diet and didn't administer a laxative every day. This example highlights the dangers of a high-fiber, high-residue diet; this individual produced a persistent large-bowel obstruction from cherry pits, which effectively created a "logjam" at the stent position. It is interesting that the stent is far from totally gone just 72 hours on, and has what can only be considered a very thin lumen.

REFERENCE

Lew D, Ansstas M, Park K. Cherry pits causing colonic obstruction. Gastrointest Endosc. 2020;91(5):1212–1213.

Prevention of gastric cancer development post *Helicobacter pylori* eradication: A Meta-analysis

INTRODUCTION

Gastric cancer (GC) is one of the world's main cancers, especially in countries in East Asia such as Japan, South Korea and China. GC correlated with *Helicobacter pylori* (*H. Pylori*)- is induced by multifactorial and multistep systems. The World Health Organization's International Agency for Research into Cancer classified H. pylori in 1994 as a category I carcinogenic GC factor.

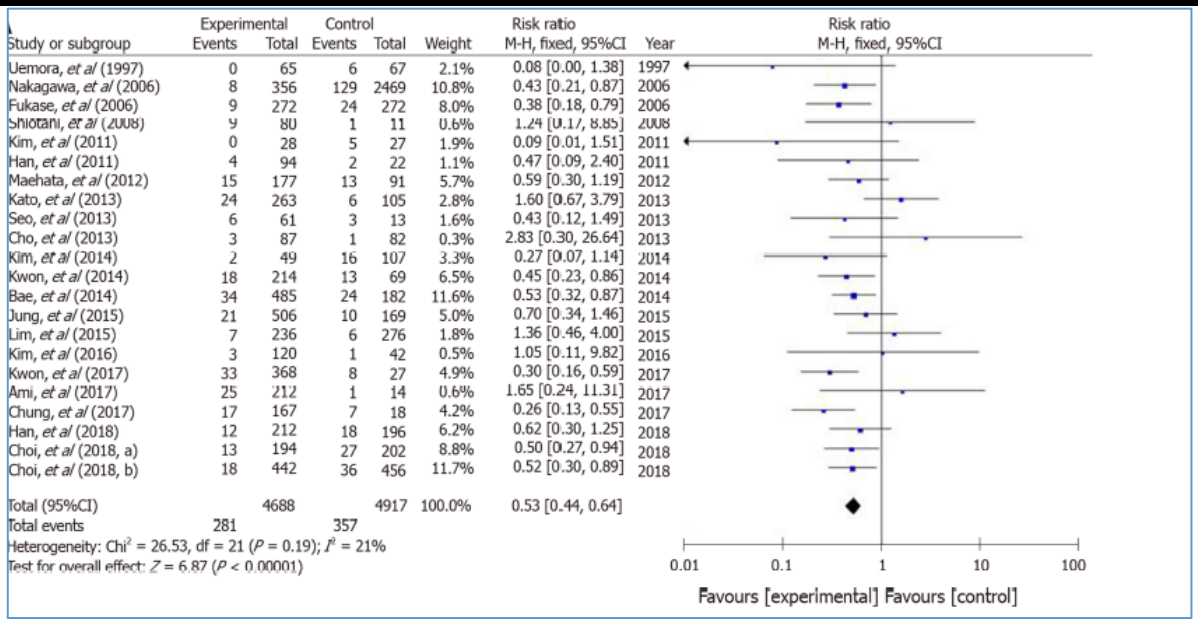
Numerous clinical trials revealed that *H. pylori* infection with is correlated with a high risk of GC progression not only in patients with atrophic gastritis and intestinal metaplasia alone but also in patients already diagnosed with GC resection. However, given the limited sample size in each study, it remains uncertain if GC's danger relates to *H. Pylori* is comparable as applied to post-resection patients with atrophy and intestinal metaplasia alone. *H. Pylori* eradication treatment decreases the incidence of gastric cancer in patients after endoscopic and surgical GC resection as well as in patients with atrophic gastritis that are not GC. This research was aimed at clarifying the chemopreventive impact of *H. Pylori* eradication treatment with a large prevalence of GC in the East Asian community.

METHODS

PubMed and the Cochrane library were searched for randomized control trials (RCTs) and cohort studies published in English up to March 2019. Subgroup analyses were conducted with regard to study designs, country where the study was conducted, and observation periods. The heterogeneity and publication bias were also measured.

RESULTS

For non-GC patients with atrophic gastritis and patients after resection for GC, 4 and 4 RCTs and 12 and 18 cohort studies were included, respectively. In RCTs, the median incidence of GC for the untreated control groups and the treatment groups was 272.7 (180.4–322.4) and 162.3 (72.5–588.2) per 100000 person-years in non-GC cases with atrophic gastritis and 1790.7 (406.5–2941.2) and 1126.2 (678.7–1223.1) per 100000 person-years in cases of after resection for GC.



A forest plot for the incidence of metachronous gastric cancer between *Helicobacter pylori*-eradication group and non-eradication group in various studies

Compared with non-treated *H. Pylori*-positive controls, the eradication groups had a significantly reduced risk of GC, with a relative risk of 0.67 [95% confidence interval (CI): 0.47–0.96] for non-GC patients with atrophic gastritis and 0.51 (0.36–0.73) for patients after resection for GC in the RCTs, and 0.39 (0.30–0.51) for patients with gastritis and 0.54 (0.44–0.67) for patients after resection in cohort studies.

CONCLUSION

With strong chance of GC, in East Asian population *H. Pylori* eradication effectively raising GC risk, independent of previous cancer background. GC vulnerability is understood to rely on the mixture of bacterial factors (e.g., cagA status and vacA type), genetic factors of the host (e.g. inflammatory molecule polymorphism) and environmental factors (e.g., salt and smoking). Of such risk factors, since gastric mucosal modifications (e.g., stomach mucosal atrophy and intestinal metaplasia) with the possibility of contracting GC slowly improve after infection with *H. pylori*, the safest approach is to prevent *H. pylori* infection. When it is *H. Pylori* infections, eradication treatment should be performed at a younger age as early as possible before the onset of gastric mucosal atrophy in *H. Pylori* patients.

REFERENCES

Sugimoto M, Murata M, Yamaoka Y. Chemoprevention of gastric cancer development after Helicobacter pylori eradication therapy in an East Asian population: Meta-analysis. World J Gastroenterol 2020; 26(15): 1820-1840