



Laxatives : A Review Article

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Abstract

Millions of persons worldwide suffer from difficult or painful defecation, commonly known as constipation. Constipation is a worldwide problem now a day which is most of the time associated with the life style modification. Laxatives, a specific class of medications that are widely used in the community, are used to treat constipation. Laxatives reduce constipation and encourage regular bowel movements, which can have a significant impact on gut health. Improper usage of laxatives can lead to major health problems. The classification with mode of action along with potential harms of laxatives will be presented in detail in this paper.

Keywords:- Laxatives, Purgatives, Constipation, Intestine

Introduction

Constipation is a prevalent condition with varying definitions among patients and physicians. In a clinical context, constipation is characterized by difficult or painful bowel movements. Individuals differ in what constitutes "normality" when it comes to the frequency of their bowel movements; what one person considers constipation may be considered normal by another. The passage of hard stools less frequently than the person's normal bowel pattern" is the standard definition of constipation. The widespread availability of laxatives without a prescription often results in self-medication due to the perceived "need" for a bowel movement. Due to possible drug interactions between laxatives and other prescriptions, this condition may generate issues with patient care. Moreover, long-term laxative misuse can have major negative health effects, necessitating doctor visits and possibly hospital stays for additional testing and treatment.

Mechanism of action¹

Every purgative raises the faeces water content by

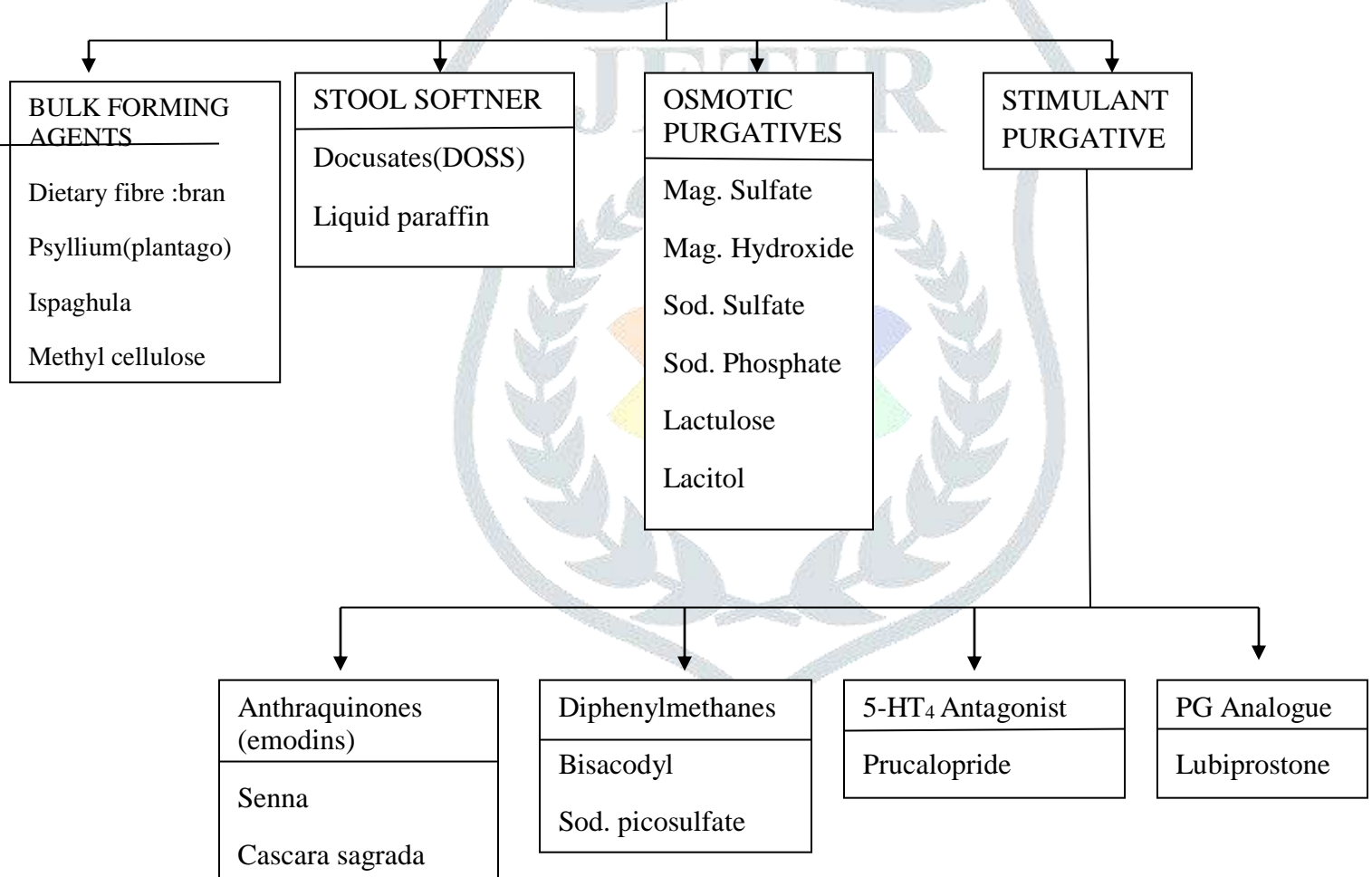
1. The intestinal lumen retains water and electrolytes due to a hydrophilic or osmotic action, which increases the amount of colonic material and facilitates easy passage
2. By acting on the intestinal mucosa, the fluid bulk increases intestinal transit while decreasing the net absorption of water and electrolytes.
3. Increasing propulsive activity as the main action reduces the amount of time that salt and water can be absorbed as a byproduct.

For some of the drugs, controversy continues as to whether they increase water content of stools as the primary action or it is a consequence of increased motility, because the amount of water absorbed largely depends on transit time. Nevertheless, some purgatives do work on the myenteric plexuses to promote motility. By altering the mucosal cell's fluid dynamics, laxatives may result in fluid buildup in the gastrointestinal lumen through one or more of the following mechanisms:

1. Water and electrolyte absorption are hampered when villous cell $\text{Na}^+ \text{K}^+$ ATPase is inhibited.
2. Water and electrolyte secretion is increased when crypt cells adenylylcyase is stimulated.
3. Stimulating mucosa PG production, which raises secretion
4. Enhancing secretion and preventing non-propulsive intestinal contractions by increasing NO production.
5. Damage to the absorbing gut mucosal cells structural integrity

Classification²

Laxatives



Bulk purgatives

Indigestible, hydrophilic colloids known as bulk-forming laxatives absorb water to form a thick, emollient gel that distends the colon and encourages peristalsis. Fibre is the term used to describe the soluble and insoluble undigested residue that is left over after a meal. It might include cellulose, hemicellulose, pectin, gums and mucilages, polysaccharides, and lignin. Numerous of these insoluble polymers are hydrophilic, which means that they draw and hold water to increase the volume of the stool. Bulk forming laxatives are generally safe and also a source of dietary fibre. All bulk-forming agents must be taken with copious amounts of water.

Stool softener

By acting on the intestinal mucosa, these drugs cause a net water accumulation in the gut lumen, which softens the stools. It emulsifies the colonic contents and increases penetration of water into the faeces.

Osmotic Purgatives

Faecal fluid cannot be concentrated or diluted in the colon because it is isotonic throughout³. Osmotic laxatives are soluble but non absorbable substances that cause an obligatory rise in faecal fluid, increasing the fluidity of the stool. Nowadays, saline purgatives are rarely used to treat constipation due to their inconvenience/ unpleasant. Nonetheless, they could be used to prepare the intestine prior to surgery and to relieve constipation quickly

Stimulant purgatives

Stimulant laxatives have direct effects on enterocytes, enteric neurons, and GI smooth muscle and probably induce limited low-grade inflammation in the small and large bowel to promote accumulation of water and electrolytes and stimulate intestinal motility⁴. Long-term use of cathartics has raised concerns since it may cause dependence and damage to the myenteric plexus, which could lead to colonic atony and dilatation. Higher doses of stimulant purgatives may result in excessive purgation, which may cause electrolyte and fluid imbalance

Potential harms of Laxatives

- Impaired function of the intestines

Changes in muscular function, innervation and surface epithelium in the myenteric plexus can occur at therapeutic doses when laxatives are over used. Because of this the intestines lose normal tone and nerve response, and can no longer contract to evacuate stool normally⁵. This is often reversible, but recovery may be a slow process.

- Dependency

Abuse of laxatives results in muscular and nerve atrophy in the intestines. The intestines then dilate and lose their ability to expel stool. As a result, the laxative becomes dependable, requiring greater and larger dosages to induce feces. Laxative misuse often requires medical help for both physical and mental treatment.

- Dehydration

When too much fluid is lost due to laxative abuse-induced diarrhea, the body's water content falls below normal. This can cause tremors, weakness, blurry vision, and kidney damage. In extreme cases, it can also lead to death

- Electrolyte imbalance

The increased intestinal loss of K⁺ can lead to hypokalemia while Na⁺ loss can result in secondary hyperaldosteronism. This can exacerbate renal K⁺ excretion leading to further reduction of colonic motility. This situation results in fatigue, muscular weakness, mental disturbances, steatorrhea, electrocardiographic abnormalities and kidney dysfunction.

- Rectal prolapse⁶

Chronic severe diarrhea caused by laxative abuse can cause the inside of the intestines to protrude through the anal opening. This condition usually requires surgical treatment.

- Melanosis coli

Anthraquinone laxatives commonly produce melanosis coli, a deposition of lipofuscin-like pigment that gives the lining of the mucosa of colon and rectum which is usually pink in color changes mahogany to dark brown color. This is believed to be due to the sequestration of drugs by macrophages in the mucosa. Melanosis coli normally reversible and disappeared within 4-11 months after stop the intake of laxative.

DISCUSSION

One of the main reasons for using laxatives is the belief that one needs a regular bowel habit. Additional factors such as the intake of food with a low fiber content, change in habits or lifestyle such as travel, pregnancy, old age and lack of physical exercise, also contribute to the use of laxatives. Laxatives are frequently used as a routine medication for patients in hospitals and are the most frequently prescribed drugs in long-term care facilities. In the case of acute constipation, in some cases of chronic constipation (in order to accustom the patient to regulating the bowels), and in cases of constipation caused by atonia of the intestinal musculature, preference is given to Anthraquinone laxatives (cascara, senna) because they are well tolerated and have a mild action⁷. On the other hand, laxatives are not just used to relieve constipation. They are also used in cases of drug and food poisoning, patients bed-ridden for a long time as it is preferable to soften the feces, also prescribed to patients after anorectal surgeries like hemorrhoids, anal fissure and after the administration of anthelmintics, where saline purgatives are preferred. Before taking a laxative it is important to be sure the person is actually constipated and that the constipation is not due to an underlying, undiagnosed condition.

CONCLUSION

Laxatives are very beneficial medications when taken as prescribed. But overuse of them in clinical care can result in misuse. Loss of water, electrolytes, and Vitamin-K can result from laxative overuse. Oral malabsorption, renal lesions, habituation, and ileal paralysis are also possible in more severe cases. Furthermore, symptoms including diarrhoea, bloating, flatulence, and abdominal pain may worsen in tandem with an excessive dose. Although laxatives can help relieve constipation, it's important to use them cautiously and only when absolutely required. Improving diet and increasing activity can also help to reduce constipation, and therefore reduce the need for laxatives. Consult a doctor if a person suffers from chronic constipation or if over-the-counter drugs are not providing relief. Anyone who suffers from a gastrointestinal ailment or is taking any medications should always consult a physician before using a laxative.

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