

CHAPTER 2

REVIEW OF RELATED LITERATURE

2.1 Literature search strategy

“Pub-MED” and “ProQuest Medical” reference database are searched to identify the information for this review. The term “bowel preparation”, “gut lavage”, “gut irrigation”, “equivalence trial” and “senna” are used to find general review, randomized clinical trials and meta-analyses. The literature search covered the time 1978 – 2002.

2.2 Literature review

Laxatives and lavage solutions are used in the treatment of constipation, toxic ingestion and for preparation of the colon before endoscopic or surgical procedures. Several different categories of agents are available for use. These include bulking agents, osmotic agents, secretagogues and agents with direct effects on epithelial nerve or smooth muscle cells, and lubricating agents. Each category has different pharmacologic effects, side effects, and clinical indications.^[22]

Pharmacology and adverse effect of Senna compound

Senna (*Cassia angustifolia* Vahl, Leguminosae, Indian senna, Tinnevely senna) is classified as stimulant laxative drug. Stimulant laxatives drug stimulate the intestinal motility and affect epithelial transport of water and electrolytes. Most of these agents belong to the following groups: diphenylmethyl derivatives (phenolphthalein, bisacodyl and sodium picosulphate), anthranoids (senna and cascara), ricinoleic acid (castor oil) and surface-acting agents (docusates).

The active ingredients of senna compound are sennoside A and B, aloe emodine, anthraquinone glycoside. After oral administration they are carried, unabsorbed, to the large intestine, where the active aglycon or rheinanthrone is released by bacterial hydrolysis of sugar. Rheinanthrone induced colonic motility by stimulating myenteric plexus in the submucosa of colon. Glycosides may be absorbed and transformed to glucuronide and sulfate derivatives, which excrete in urine and bile. The color of urine or stool may turn red when anthraquinone is in alkali condition. Glycosides did not excreted in milk during lactation.^[23]

The serious adverse effect of senna are: asthma^[24], hepatitis^[25], hypertrophic osteoarthropathy^[26], cachexia, hypo-gammaglobulinemia, finger clubbing^[27] and tetany.^[28] These adverse effects are uncommon and resulted from long-term and large amount used.

Previous study about efficacy of Senna compound

Seven randomized-controlled trials (single-blinded) study the efficacy of senna compared with other laxatives for colonoscopy.

Gould (1982)^[29] conducted a prospective trial in 46 patients who had inactive chronic ulcerative colitis. Patients are randomly received senna compound (Senokot[®]) 375 mg or castor oil 30 ml.. No difference is demonstrated between two preparation, which gave perfect or adequate bowel preparation. The efficacy of senna is 85 % (20 of 23 patients) while castor oil has 82% efficacy.

Hangartner (1989)^[30] compared three cleansing methods in 300 ambulatory patients. Group 1 patient had 4 liters of balanced salt solution (Golytely[®]), group 2 patient had 2 liters of Golytely combined with Cascara-Salax[®], group 3 patient had senna solution (X-Prep[®]) combined with an enema. The dose of senna is not described. The efficacy of these three groups are 88%, 81% and 77 % respectively. This study concluded that while 4 liters of Golytely and X-Prep with an enema have equivalence cleansing efficacy for colonoscopy, X-prep is less unpleasant.

Borkje (1991)^[31] compared three cleansing regimen in a prospective study in 271 patients stratified as in- and out-patients. They are randomly assigned to either (I) a diet and senna laxative (X-prep), combined with a saline enema (n=88) (II) 4 liters of Golytely (n=90) or (III) a combined regimen of Cascara-Salax laxative (n=93) and 1.5 liters Golytely. The efficacy of regimen I, II, and III, are 86%, 93% and 88 % respectively. These three bowel preparation regimens had no clinically important differences. An oral regimen is acceptable to the patients and may be preferable because it provides more flexibility to the endoscopy service unit.

Valverde (1999)^[32] study two hundred and sixty-two patients undergoing elective colonic resection . Patients were allocated to senna group and 2-3 liter of PEG solution. The efficacy of senna and PEG are 69.5% and 57.5%. The author concluded that senna is better than PEG.

Dahshan (1999)^[33] study seventy children undergoing colonoscopy to evaluate the efficacy of three different bowel preparation : group A (Senna and magnesium citrate) , group B (Dulcolax and fleet enema) and group C (PEG solution). The efficacy of these three bowel regimen are 70%, 31% and 80% respectively. PEG solution provided the best cleansing but least well tolerated.

Chilton (2000)^[34] compare triple regimen (senna syrup, sodium picosulphate and polyethylene glycol) and sodium phosphate solution in 132 patients for colon cleansing before colonoscopy. They found that the efficacy of triple regimen and NaP solution are 73% and 57%. The author concluded that triple regimen produces a cleaner colon than fleet phospho-soda.

Arezzo (2000)^[35] compared effectiveness and tolerance of different bowel preparations. Three hundred patients are randomized into three groups, to be administered either senna compound and magnesium sulphate solution (group A), a 4 liter of polyethylene glycol lavage (group B), or an oral sodium phosphate solution (group C). The efficacies of three

preparations are 73%, 77% and 95 % respectively. The author believes that NaP solution should be the standard preparation for elective colonoscopy.

In conclusion, the efficacy of senna is about 70–85 %. However, it is difficult to compare between each study because these studies used different bowel regimens and different subjects. Senna are alone or used in combination with other laxatives or enema. Another important factor is the difference of criteria of measurement. Most of the study had different score and criteria to interpret the adequacy or cleanliness of bowel preparation.

Furthermore, all of these studies are in western countries that might have different bowel habit from Thai people. Therefore, this trial should be conducted to evaluate the efficacy of senna in Thai patient.



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