Editorial

Oral Sulfate Solution for Precolonoscopy Bowel Preparation: A New Kid on the Block

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Colonoscopy is a widely used procedure which requires prior cleansing of the bowel. Optimal bowel cleansing is essential for a successful and accurate examination of the bowel. Inadequate bowel cleansing during colonoscopy can result in missed lesions, difficult and incomplete procedures, prolonged cecal intubation time, and increased risk of procedural complications. The adequacy of bowel cleansing mainly depends on the type of cleansing agents, volume of preparation, mode of administration (single dose vs. split dose, single day vs. two days), use of adjunct agents, the preparation-to-colonoscopy interval, and associated comorbidities in patients.[1,2] Other factors for adequate bowel cleansing may include low residue diet, liberal fluid intake, and proper bowel preparation instructions.

Many different bowel cleansing preparations have been developed, all of which have specific pros and cons. Data regarding the comparison of various colonoscopy preparation regimens are still variable. Polyethylene glycol-electrolyte solution (PEG-ELS)-based solutions are most commonly used precolonoscopy cleansing agent because of an excellent safety profile. A split-dose regimen of 4-L PEG-ELS is recommended by the American College of Gastroenterology as an optimal choice for colonoscopy. Studies showed that 4-L split-dose PEG-ELS is better than other bowel preparation agents for colonoscopy with comparable compliance, favorable overall experience, and willingness to repeat the same preparation. However, approximately 5 to 15% of the patients poorly tolerate PEG-ELS, mostly due to large-volume PEG-ELS ingestion.[3] Volume-related adverse effects of preparation regimens can be minimized with the use of low-volume preparations, split-dose regimen, or combination regimens. Two-liter split-dose PEG-ELS preparation, sulfate-based preparations, and specially formulated preparations such as Clensia, NER1006, and Prepopik are currently available low-volume bowel cleansing regimens for colonoscopy.[4]

Low-volume split-dose regimens address volume-related adverse event profile and are associated with better bowel preparation and higher patient satisfaction than with single-dose regimens. Introduction of oral phosphate and sulfate salts offered the advantage of low intake volume, low risk of gastrointestinal irritation, and less volume-related adverse events compared with other available options. Oral phosphate salts have been associated with acute phosphate nephropathy, and rarely chronic renal damage. Oral sulfate salts (OSSs) have recently been approved for precolonoscopy bowel cleansing. Because sulfate absorption from the intestinal tract is saturable, serum sulfate concentrations increase only minimally after ingestion. Excretion of OSS in the kidney is not accompanied by calcium excretion and acute phosphate nephropathy. Use of OSS has not been associated with clinical manifestations of kidney injury but clinically nonsignificant serum electrolyte disturbances.[5]

Studies have shown that OSS is a safe and effective bowel cleansing agent for colonoscopy. The efficacy of OSS in cleansing the colon ranges from 82 to 98%.[6-9] Studies have shown better efficacy and comparable adverse events profile of split-dose OSS regimen compared with split-dose PEG solution regardless of dose. In a study, OSS subjects reported slightly increased gastrointestinal events (abdominal distension, pain, nausea, vomiting, or abdominal discomfort) ($p = 0.009$) in the single-day preparation but not in the split-dose OSS regimen.[7] Colonoscopy preparation using split-dose low-volume OSS appears to be cost-effective compared with PEG-ELS with a cost saving of $16.01 per patient per year for the OSS cohort.[10] It is worth mentioning that data are available regarding the usefulness of OSS as a bowel cleansing agent for colonoscopy; however, most of the studies were performed on outdoor patients. Data regarding the efficacy and safety of OSS in the elderly patients with or without comorbidities and hospitalized patients are very limited.

In the current issue, "Oral sulfate solution versus polyethylene glycol as a single day preparation for colonoscopy: a randomized control trial" by Shah et al[11] showed superior efficacy and comparable adverse events profile of OSS compared with PEG regimen for bowel preparation for colonoscopy. However, the adequate bowel cleansing was achieved

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in only half of the patients in the PEG group and two-thirds of patients in the OSS group. Major limitations of the current study are lower rate of adequate bowel preparation in both arms of the study, and inclusion of outdoor patients only.

In conclusion, low-volume preparation regimens are gaining mainstream acceptance for precolonoscopy bowel cleansing. OSS appears to be a safe and effective preparation agent for colonoscopy in outdoor patients, but current data does not support use of OSS as a bowel cleansing agent for colonoscopy in hospitalized patients with comorbidities. Further studies are required to recommend OSS as the preferred bowel preparation agent for colonoscopy.

Conflict of Interest

None declared.

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