

# Neutral oral contrast agents for computed tomography enterography

*Contrastes orais neutros para enterografia por tomografia computadorizada*

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The study of the small bowel has always represented a challenge to investigators. Until recently, methods with several limitations, such as small bowel follow through and conventional enteroclysis were the only available imaging methods to explore this bowel segment<sup>(1,2)</sup>.

In the last years, with technological advances, several methods have been developed for imaging the small bowel. Nowadays, capsule endoscopy<sup>(3)</sup> and double-balloon enteroscopy<sup>(4)</sup> may be mentioned, but are expensive methods and are not widely available in Brazil. Computed tomography (CT) or magnetic resonance (MRI) enterography and enteroclysis combine the advantages of conventional radiological methods with those of sectional methods, i.e., luminal distention associated with multiplanar visualization of the whole abdominal and pelvic cavity without images overlapping. With such methods, the whole thickness of the intestinal wall can be visualized, including the mucosa, submucosa, muscular and serous layers, as well as the perienteric fat, vasa recta, lymph nodes and the contrast enhancement pattern, allowing the identification of parietal thickening, inflammatory signs, fistulas, collections, besides foci of bleeding and tumors, among others<sup>(2,5-7)</sup>.

Luminal distention constitutes an essential step in the interpretation of small bowel images, since collapsed loops with adhesions may either hide or simulate diseased segments<sup>(2,5-7)</sup>.

In the present issue of **Radiologia Brasileira**, D'Ippolito et al.<sup>(8)</sup> evaluate the performance of different neutral oral contrast media, comparing capability of bowel distention, intestinal wall definition, patient's acceptance and side effects. The authors describe the

study of 30 patients submitted to CT enterography, randomized between three available types of neutral oral contrast agents, namely, water, whole milk and polyethylene glycol (PEG). In such a study, the PEG concentration was lower than that utilized in previous studies, with the objective of reducing undesirable side effects, while maintaining the capability of intestinal lumen distention. Preparation with PEG resulted in the best bowel distention (57.5%), with no significant difference being observed between milk (35%) and water (25%). In all the groups, appropriate definition of the intestinal wall was observed, with good acceptance of the contrast media by patients. Among those patients who ingested PEG, 80% presented diarrhea, a side effect which was not observed with the utilization of water and milk. Such a study clearly demonstrates that water and milk are not effective oral contrast media for utilization in enterography, as they are absorbed by the bowel and do not distend the loops appropriately, which is a very important condition for the correct interpretation of the images. Also, it demonstrates that PEG is effective in the study of the small bowel and presents a good level of tolerance by patients as great amounts (1,500 ml) of the substance are ingested. Additionally, it demonstrates that diarrhea is a habitual undesirable self-limited side effect, occurring with most patients, a fact which is inherent to the property of PEG not being absorbed along the intestinal tract. Further studies comparing the utilization of PEG at low concentrations with PEG at the habitual concentrations will be necessary for a better assessment of luminal distensibility and incidence of side effects, particularly diarrhea. A study comparing PEG with mannitol would also be interesting, as the latter has a very low cost and is widely available in the public hospital network.

The evaluation of patients presenting with diagnosis or suspicion of Crohn's disease is one of the main indications for the small bowel study, since such patients

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are young and will require repeated examinations throughout their lifetime. Thus, the radiation dose to which such patients are submitted should be taken into consideration, while trying to reduce such radiation dose as much as possible<sup>(9)</sup>. This latter aspect was approached by the study developed by D'Ippolito et al.<sup>(8)</sup>, where only the enterography phase was performed, as the pre-contrast, arterial and delayed phases would not significantly add new diagnostic data, while quadrupling the radiation dose to which the patients would be exposed. Another option for such population is MRI enterography, whose diagnostic accuracy is similar to that of CT enterography, with the advantage of not relying on ionizing radiation, thus not causing any harm to the patient when repeated multiple times<sup>(6)</sup>.

The comparison between different types of oral contrasts agents available for utilization in CT enterography is a quite relevant theme because of the high prevalence of patients with small bowel diseases who can benefit from this imaging method, such as those patients presenting inflammatory intestinal disorders, particularly Crohn's disease and irritable bowel syndrome, for whom other causes of abdominal pain must be ruled out, those with intestinal bleeding and those with small bowel tumors. Computed tomography is

widely available in our country and it is important that radiologists be familiarized with such method, in order to significantly contribute to the diagnosis, treatment and follow-up of patients with bowel disorders.

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