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TC rectal pathology: Findings at CT-colonography☆

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Abstract
Objective: To review the spectrum of benign and malignant rectal diseases, their findings on CT colonography, and their management.
Conclusion: Although CT colonography is not the first choice for the study of rectal disease, it is indicated in cases where optical colonoscopy is contraindicated or cannot be completed. Rectal lesions can go undetected because this anatomic area is difficult to evaluate; for this reason, it is essential to ensure optimal preparation and distension, moderate balloon insufflation, and careful 2D and 3D navigation with knowledge of the spectrum of rectal disease and its CT colonography signs.

PALABRAS CLAVE
Colonografía-TC;
Patología;
Recto;
Cáncer;
Técnica

Patología del recto: hallazgos en la colonografía-TC

Resumen
Objetivo: Revisar el espectro de la patología rectal benigna y maligna, sus hallazgos en la colonografía-TC (CTC) y su manejo.
Conclusión: Aunque la CTC no es la herramienta de primera elección para el estudio de la patología rectal, está indicada en casos de colonoscopia óptica incompleta o contraindicada. Las lesiones rectales pueden pasar desapercibidas por la dificultad que representa la valoración de esta área anatómica, y por ello es necesaria una excelente preparación y distensión, la insuflación moderada del balón y una navegación cuidadosa en 2D y 3D con conocimiento del espectro de la patología rectal y su semiología en CTC.

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Table 1 Contraindications of the optical colonoscopy procedure.

Absolute contraindications
• Severe pulmonary or heart disease
• Diathesis, bleeding, or treatment with anticoagulants
• Risks due to sedation
• Patient refusing to undergo the procedure
Relative contraindications
• Prior history of incomplete optical colonoscopy
• Advanced age
• Weak patient and with mobility issues

Introduction

Rectal pathology is varied and prevalent and, although the most serious lesion is the carcinoma, in most cases the lesion is usually benign. The optical colonoscopy (OC) is the standard imaging modality for its study since it entirely evaluates the rectum in most cases. Nonetheless, the OC procedure is an invasive imaging modality with associated risks such as perforation, bleeding, and complications following sedation.[1] Whenever the OC is contraindicated (Table 1) or is incomplete (10–15% of the times[2]), the computed tomography-colonography (CTC).[1,2] is indicated. In other occasions, the CTC is conducted as the first imaging modality for the screening of colorectal cancer.[3–7]

The CTC is a quick, non-invasive emerging imaging modality developed for the screening of colorectal cancer and approved by the American Cancer Society back in 2008.[8] It is usually implemented as an alternative to the incomplete or contraindicated OC and is considered the most suitable radiological imaging modality for the screening of colorectal cancer and polyps. Its diagnostic performance for the detection of cancer is similar to that of the OC, and clearly superior to the barium enema.[2]

The CTC allows us to perform easy, well-tolerated, and almost risk-free[2] 2D and 3D examinations of the colon, and it is also capable of showing extracolonic findings[9,10] using low doses and no IV contrast. The CTC has different indications (Table 2),[3,11] and very few contraindications (Table 3).[12]

Table 2 Indications of the CT-colonography.

• Contraindicated optical colonoscopy
• Incomplete optical colonoscopy
• Patient refusal to undergo the optical colonoscopy procedure
• Assessment of diverticular disease (after the acute phase)
• Assessment of patients with colonic stoma
• Other indications:
◦ Screening of colorectal cancer
◦ Controls after colorectal cancer surgery or polypectomy

Table 3 Contraindications of the CT-colonography.

• Acute bowel inflammatory disease
• Acute diverticulitis
• Recent surgery (<3 months)
• Inguinal hernia with colonic content

Table 4 Colonic preparation for the CT-colonography.

• Diet without fiber three (3) days prior to the examination
• Complete diet with liquid food supplement (Isosource®) one (1) day prior to the examination
• Oral iodinated contrast (diatriazoate): 3 doses of 7 cc diluted in water two (2) days prior to the examination, and 5 doses of 7 cc diluted in water one (1) day prior to the examination
• Microenema of local action (Micralax®) first time in the morning of the examination day; immediately prior to the CTC, evacuation of the rectal ampulla
• Take 2 l of water a day as a complement to the whole preparation
• Optional: prescription of intramuscular bowel muscle relaxants (Buscopan®) one (1) hour prior to the test; they are contraindicated in cases of glaucoma, prostatic hypertrophy, heart disease, severe myasthenia gravis, or porphyria

The assessment of the anorectal region using the CTC is especially problematic due to a wide range of unique pathologies in this area, the presence of a rectal balloon catheter, the possible artifacts, and the particular funicular morphology of the anal canal, which all may lead to false positive findings or conceal serious pathologies.[13–15] The rectum is the most common location of hidden cancers in the CTC.[16]

The goal of this article is to get to know the rectal pathology, its semiology in the CTC and its management.

Technical considerations

Conducting one CTC requires one 8-row multidetector CT machine,[17] the adequate preparation and distension of the colon, and specific software.[1]

The preparation of the colon (Table 4) is essential here, since the residual fecal matter can simulate or hide lesions, and an inadequate distension won't let us assess the colonic wall or surface.[3,15,17,18]

One moderately inflated balloon catheter is inserted into the rectum after an optional, although recommended, digital examination. Distension can be manual, using ambient air, or preferably automatic with CO_2. The whole process starts in the right lateral decubitus position and different series are acquired both in the supine decubitus and prone positions[12–17] without IV contrast. It is advisable to partially deflate the balloon in its helix in the prone position so that no adjacent lesions are blocked.[12] If a segment is found that remains persistently collapsed, then a third helix should be acquired in the lateral decubitus position.[17,18]

If available, protocols with a low-dose of radiation[17] and iterative reconstruction are used.

In the presence of a known tumor, the staging process with the use of contrast in one of the series is optional.

The analysis of the images obtained allows 2D (axial images and multiplanar reconstructions) and 3D endoluminal views with anterograde and retrograde navigation visualizations.[16] Post-processing tools are virtual