

MR colonography vs. optical colonoscopy: comparison of patient acceptance in a screening population

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Introduction: Colorectal cancer, which arises mostly from preexisting adenomatous polyps, continues to be the second most common cancer (1). The impact of existing colonic screening techniques strongly depends on the according patients' acceptance (2). MR-colonography (MRC), based on the acquisition of 3D magnetic resonance data sets, permits accurate detection of colonic polyps with a diameter >7mm (3). Recently developed MRC techniques based on the tagging of fecal material allow for the visualization of colorectal lesions without prior bowel cleansing. Aim of this study was to compare virtual MR colonography (MRC) to optical colonoscopy (OC) regarding patients' acceptance in a screening population.

Materials and Methods: 284 asymptomatic patients (150 female, 134 male, average age 59 years) underwent MRC. Preparation for MRC included the ingestion of 200ml of a contrast solution containing 5% gastrografin, 1% barium and 0.2% locust bean gum with every main meal starting two days before the MR examination. MRC was performed on a 1.5 T MR system (Magnetom Sonata, Siemens Medical Solutions, Erlangen, Germany) in patients' prone position. For spasmolysis, 40mg of scopolamine (Buscopan; Boehringer Ingelheim, Germany) was intravenously administered to minimize bowel peristalsis and to reduce colonic spasms. After the placement of a rectal tube, the colon was filled with approximately 2500ml of warm tap water. A T1w 3D GRE sequence was acquired before and 75s after i.v. gadolinium administration. Optical colonoscopy was performed with a maximum time lag of 4 weeks between both examinations. For OC, patients had to undergo bowel purgation with a polyethylene glycol solution. In contrast to MRC, all patients received both sedatives and analgetics prior to the examination. Each 24 hours following MRC and OC, respectively, patient acceptance was assessed based on a standardized questionnaire. To that, the overall acceptance as well as specific aspects of each modality (e.g. placement of the rectal tube or the endoscope) was evaluated using a 10-point scale (1=excellent, 10=poor acceptance). Differences between MRC and OC as well as between single aspects of the examinations were assessed using a Wilcoxon signed rank test. Furthermore, it was evaluated whether there were differences between different age groups. A p-value < .05 was considered to prove statistically significant differences. Finally, patients were asked which examinations they would choose for future screening procedures.

Results: No significant difference was detected between the overall rating for MRC (mean value: 3.4) and colonoscopy (mean value: 3.0). A significant difference was found concerning the agents for examination preparation: Patients rated the ingestion of the polyethylene glycol electrolyte solution more unpleasant (mean value: 4.8) compared to the ingestion of the barium based tagging agent for MRC (mean value: 3.4). Most unpleasant aspects of both examinations were bowel cleansing for OC and the placement of the rectal tube and administration of water enema for MRC. Patients aged 55 years and older perceived most aspects less unpleasant than younger patients. All dedicated ratings are shown in figure 2. No significant difference was found as for the preference of future examinations: 46% of the patients would choose MRC, while 43% preferred colonoscopy.

Conclusion: Both MRC and OC have comparable general acceptance levels in a screening population. As fecal tagging performed better than bowel cleansing for endoscopy the major problem for MRC appears to be the placement of the rectal tube and the administration of the rectal enema. However, there might be a different perception of inconveniences due to the administration of sedatives or analgetics for OC.

References:

1. Jemal A, Murray T, Ward et al. Cancer statistics, 2005. *CA Cancer J Clin.* 2005; 55:10-30.
2. Thomeer M et al. Patient acceptance for CT colonography: what is the real issue? *Eur Radiol.* 2002; 12:1410-5.
3. Ajaj et al. Dark lumen magnetic resonance colonography: comparison with conventional colonoscopy for the detection of colorectal pathology. *Gut.* 2003; 52:1738-43.

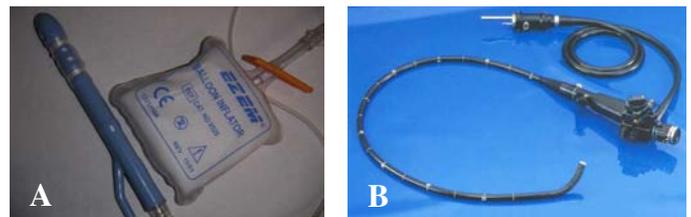


Fig.1 Display of the rectal tube for MR colonography (A) and the fiberoptic endoscope for optical colonoscopy (B). Patients' acceptance of the placement of both devices was assessed as well as the overall acceptance for MRC and OC.

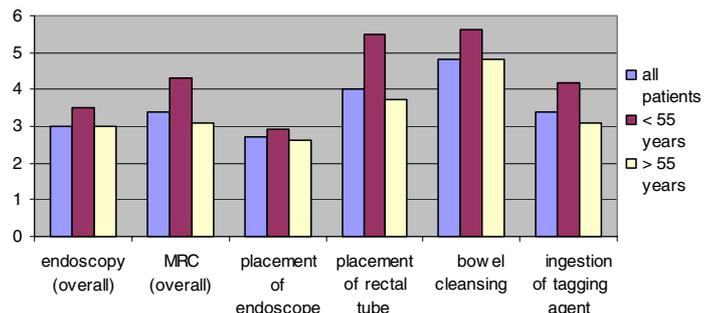


Fig.2 Ratings of patients' experience: Differences in perception between patients in different age groups.