学位論文抄録

Colorectal cancer screening at multidetector-row computed tomography: detection of flat- and polypoid lesions with a dedicated workstation
（大腸がんスクリーニングにおけるマルチスライスCT：ワークステーションを用いた平坦型及び隆起型病変の検出）

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Abstract of the Thesis

Background and Purpose: In recent years, CT colonography (CTC) has been clinically applied to screen for colorectal cancers, and perceived as highly diagnostic, because of the widespread use of Multidetector-row Computed Tomography (MDCT) and increased accuracy of analysis software. The purposes of this study are: 1) to compare the detectability of colorectal lesions among 3 different colon cleansing techniques; 2) to evaluate the effect of the use of antispasmodics on colonic dilatation; and 3) to evaluate the detection capability and usefulness of CTC in the screening of flat- and polypoid lesions by comparing CTC- and optic colonoscopy findings.

Materials and Methods: In the first step, three preprocessing methods were compared: polyethylene glycol (PEG) on the previous day, PEG on the same day, and a bowel-cleansing tablet on the previous day. In the second step, the degree of colonic distention was compared between 2 groups (antispasmodics- [n=40] vs. non-antispasmodics [n=40] groups). In the third step, the CTC detection capability for flat-surface polyps was compared to conventional polypoid lesions according to the polyp diameter.
Four types of reconstruction images including multiplanar reconstruction-, volume rendering-, virtual gross pathology-, and virtual endoscopic images were used for visual analysis.

Results: Performing PEG on the previous day provided the highest visual evaluation score and reduced blind areas. In the second study, colonic dilatation was significantly greater with antispasmodics than without ($p<0.05$). In the third clinical study, the detection sensitivity for flat polyps was 31.3%, 44.4%, 87.5% for lesions measuring 2-3 mm, 4-5 mm, and ≥6 mm, respectively; the corresponding sensitivity for polypoid lesions was 47.6%, 79.0%, 91.7%. Virtual endoscopic imaging showed best visualization among the 4 reconstructions.

Conclusion: CTC using 64-row MDCT is useful for colon cancer screening to detect the lesions measuring 6 mm or more, although the detection of flat lesions is still challenging.