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Original Article

CT-Gastrography for Early Gastric Cancer Visualized by Wall-Carving Technique; Value of Portal Phase Contrast-Enhanced MDCT

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Abstract Objective : The wall-carving (WC) imaging technique is used to evaluate early gastric cancer using multidetector row computed tomography (MDCT) image data for only the arterial phase. Our purpose was to investigate if WC images derived from portal phase MDCT images can enhance the visualization of early gastric cancer.

Subjects and methods : Fourteen consecutive patients (average age/age range (years)= 75.8/61 to 86 ; male/female = 9/5) were enrolled. They were diagnosed with early gastric cancer and underwent contrast-enhanced MDCT before treatment. WC images of the arterial and portal phases were created from images scanned by 64-detector-row MDCT 40 and 60 seconds after the initiation of the contrast material injection, respectively. The correlation between the detection rates of lesions in the WC images and pathological findings was investigated.

Results : Totals of 71.4% (10/14) of arterial phase WC images and 71.4% (10/14) of portal phase WC images showed lesions. The imaging ability improved to 85.7% (12/14) when the two sets of images were combined. Well-differentiated adenocarcinomas tended to be visualized better in WC images of any phases.

Conclusion : WC is an excellent image analysis technique for visualizing early gastric cancer lesions. The depiction rates were improved by using a combination of arterial and portal WC images. The scan timing after the contrast material injection should be carefully investigated to improve the detection rate of lesions.

Key words : Gastric cancer · Multidetector row CT · CT gastrography · Wall-carving technique · portal phase

Introduction

Multidetector row computed tomography (MDCT) is a highly efficient scanning technology that can take images of the body over a wide area in a short time and create not only high-quality thin-slice images but also advanced reconstruc-

tion images such as 3D computer graphics. In recent years, MDCT technology has become widespread throughout Japan, which has made it possible to image any part of the body, gather a much larger amount of data for a wide variety of organs, and generate new knowledge regarding images. Its clinical usefulness has therefore seen