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ORIGINAL ARTICLE

Local staging of rectal cancer: Diagnostic potential of endorectal contrast agent and MPRs with 64-MDCT compared with the pathologic staging

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KEYWORDS

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Abstract *Purpose:* To assess the diagnostic potential of endorectal contrast agent and multiplanar reconstructed images (MPRs) with MDCT in local staging of rectal cancer compared with the pathologic staging.

Patients and methods: This study included 30 patients with biopsy-proven rectal cancer (age range 18–84 years, mean 46.7 ± 19). Preoperative MDCT examinations were performed to all patients using a 64-row multidetector scanner. The examination was carried out in two steps, firstly using oral contrast agent only, secondly using endorectal contrast agent. Images were reconstructed in axial, coronal, and sagittal planes. MDCT staging was compared with pathologic staging.

Results: For T-staging, MDCT using endorectal contrast was more sensitive (75.8%), specific (90%) and accurate (86.7%) than using oral contrast only (43.3%, 88.1%, 74.4%) respectively ($p = 0.001$). The sagittal and coronal MPRs were more sensitive, specific and accurate than the axial images with diagnostic accuracy 64.4% for axial, 75.5% for coronal, and 81.1% for sagittal MPRs. There were statistically significant differences between axial and coronal MPRs ($p = 0.02$), and between axial and sagittal MPRs ($p = 0.002$). Diagnostic accuracy for N-staging was 80%.

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Conclusion: 64-MDCT with endorectal contrast agent and MPRs, mainly sagittal images is a reliable accurate technique for the preoperative local staging of rectal cancer.

1. Introduction

Worldwide, incidence of colorectal cancer ranks fourth in men (after lung, prostate and stomach) and third in women (after breast and cervix uteri) with over 1 million new cases occurring every year worldwide. The majority of cancers occurring in the colon and rectum are adenocarcinomas, which account for more than 90% of all large bowel tumors (1). In Egypt, they represented 6.53% of all incident cancers, accounting for 4.00% and 2.55% of male and female cancers respectively according to National Cancer Institute (NCI) registry.

The prognostic factors of rectal cancer are several, such as depth of tumor invasion, the percentage of the circumference of rectal involvement by the tumor, regional lymph node metastasis, blood or lymphatic vessel invasion, residual tumor following surgery with curative intent, tumor grade, histologic type, tumor border configuration, tumor size and gross tumor configuration (2).

Optimal management of rectal cancer requires accurate preoperative staging that includes assessment of the tumor extent, depth of cancer invasion (T-stage), tumor location, size, configuration and lymph node involvement (N-stage) with subsequent improvement of survival and reduction of the frequency of local recurrence (3).

A variety of examinations have been used for the preoperative planning of rectal cancer management (4), including digital rectal examination, endorectal sonography, CT, and MRI (5). The current role of CT in patients with rectal cancer is controversial. Accuracy rates for pre-operative staging of rectal cancer with CT were less satisfactory with accuracy rates ranging between 41% and 82% (6–8) for helical CT staging, however the accuracy rate obtained for local staging of rectal cancer is improved with the use of multidetector CT (3,9).

The aim of this study was to evaluate the benefits of adding endorectal contrast as well as reconstructed images to MDCT examination in improving the diagnostic accuracy of local staging of rectal cancer.

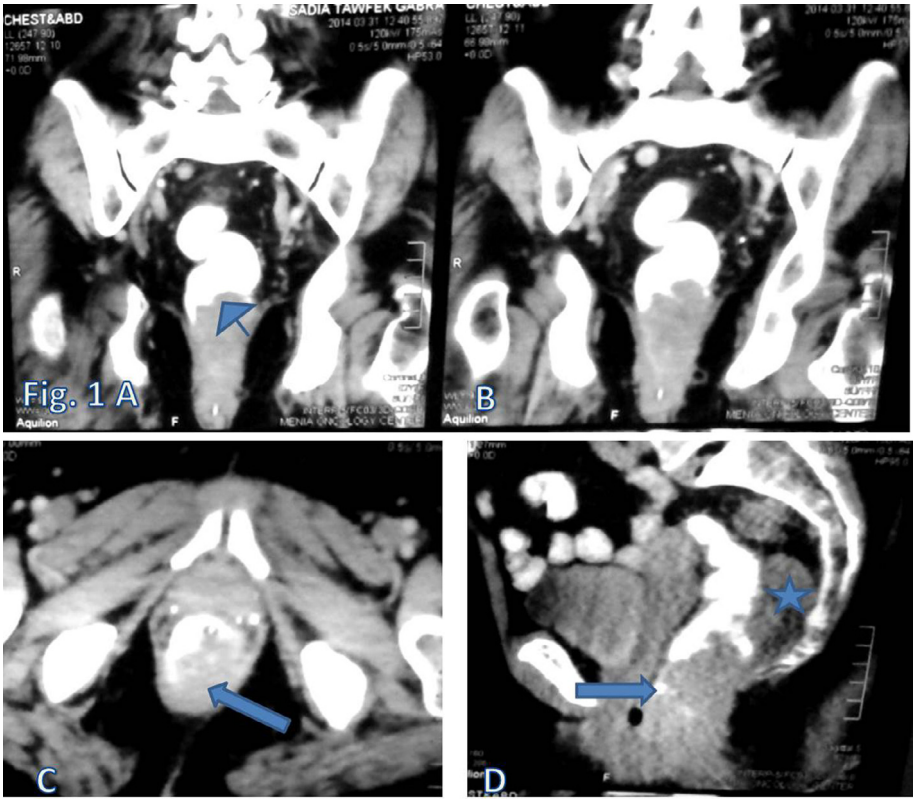

Fig. 1 82 year old female patient: MDCT with endorectal contrast coronal MPR (A & B) revealed a large irregular soft tissue rectal mass lesion eccentric and markedly attenuating rectal lumen, proximal shouldering is seen (arrow on A). (C) Axial CT MDCT (MPR images) with endorectal contrast, the eccentric mass lesion is noted at the Lt. postero-lateral aspect (arrow). (D) Sagittal CT MPR images, here the lesion and mucosal destruction were noted with haziness of the peri-rectal fat planes, enlarged peri-rectal LNs were seen (asterisk on D), and the lesion was inseparable from the uterus anteriorly (arrow on D).