FREQUENCY OF CIRCUMFERENTIAL RESECTION MARGIN INVOLVEMENT ON MRI IN RECTAL CANCER

Zeenat Adil, Abdullah, Anisa Sundal

ABSTRACT

Objective: To determine the frequency of circumferential resection margin (CRM) involvement on MRI in patients of rectal carcinoma presenting to radiology department of a tertiary care hospital.

Material & Methods: This descriptive, cross-sectional study was conducted in radiology department of Lady Reading Hospital, Peshawar from April 2013 to April 2016.

Results: In this study the total number of patients was 95; with mean age of 47 years. 67% were males and 33% were females.

Conclusion: MRI has high accuracy in identifying CRM involvement in rectal cancer which is vital for proper therapeutic decision making.

Key Words: Circumferential resection margin, rectal cancer, MRI.

INTRODUCTION

Colorectal carcinoma is one of the leading cancers in both genders[1]. Rectal carcinoma constitute about 40% of colorectal cancers[2]. Until recently rectal cancer had a high recurrence rate of upto 30%[3]. But the introduction of total mesorectal excision (TME) and neoadjuvent chemoradiotherapy has significantly reduced the recurrence rate to less then 10%[4].

Accurate pre-operative staging is crucial in deciding about whether patient will undergo surgery upfront or will initially receive radiochemotherapy followed by re-staging[5]. MRI plays a critical role in this decision making by showing the involvement of circumferential resection margin (CRM)[6]. CRM involvement is the main prognostic factor in determining the rate of recurrence[7]. If the tumour/deposit/node margin is >1mm from mesorectal fascia on MRI then CRM is not involved and patient undergoes. TME[8]. In case of CRM involvement neoadjuvent radiochemotherapy is started. The current study is designed to determine the frequency of CRM involvement in patients of rectal carcinoma.

MATERIAL AND METHODS

This descriptive cross-sectional study was conducted in Radiology Department of Lady Reading Hospital, Peshawar. The duration of study was 4 years (from April 2013 to April 2016). The number of patients were 95 of either gender. All those patients with histological diagnosis of rectal carcinoma who were sent to the radiology department of the hospital for pre-operative staging MRI were included in the study. All the MRI were performed on 1.5 tesla Toshiba machine and reported by two consultant radiologists. The patients were then followed regarding their further management.

Department of Radiology, Postgraduate Medical Institute, Lady Reading Hospital, Peshawar

Address for correspondence:
Dr. Abdullah
Consultant Radiologist
Rehman Medical Institute, Peshawar
Cell: 0334-9060590
Email: abdullahsaafi151@gmail.com

RESULTS

Table 1 shows the percentage of patients with CRM involvement. The frequency of CRM involvement was 34% (32 patients). Among the 32 patients 9 were females and 23 were males. Among the total patients 58.3% were ≤ 50 years while 41.7% were above 50 years of age. Total number of female patients were 31 (33%) and males were 64 (67%).

DISCUSSION

Table 1:

Total patients	CRM Involved	Percentage
95	32	34%

Since the rate of recurrence after TME is significantly lower in CRM negative patients (10%) as compared to CRM positive patients (38%)[9], that's why high resolution MRI has become an integral part of therapeutic decision making in rectal cancer. High resolution T2 axial imaging is the cornerstone of rectal cancer staging, however coronal and saggital images are also important regarding anal sphincter and peritoneal involvement, both of which are important in deciding management options. Contrast is not indicated since it does not offer any additional advantage.

The frequency of CRM involvement in our study was 34% (32/95) which is higher than reported by Birbeck et al[9]. In their study it was 28%. The higher frequency in our study is probably due to relatively

late presentation of patients to tertiary care hospital. The accuracy of CRM involvement is 94% compared to histology of surgical specimens which is the gold standard[10]. Al-Sukhni et al[11] recently reported a meta-analysis of 21 studies where MRI with phased-array coil was found to have 94% specificity (range, 88%-97%) for predicting CRM involvement. In a more recent prospective multicenter study, tumor to CRM distance of ≥1 mm in high-resolution MRI was in agreement with the pathological examination in 94% of patients[8]. The specificity and sensitivity for MRI regarding T-staging is 84% and 97% respectively while the positive predictive value (PPV) and negative predictive value (NPV) is 91% and 94% respectively[12].

MRI is highly accurate for assessing the mesorectum and identifying CRM involvement in the pre-operative staging of rectal cancer, which is the main prognostic factor for local reccurence after total mesorectal excision.

CONCLUSION

MRI is highly accurate in detecting CRM involvement in rectal cancer which is crucial for proper therapeutic decision making.

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