Mucin lakes or perforation?

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ABSTRACT

We are reporting two cases with similar appearances on post chemo radiotherapy MRI scan of the mucinous adenocarcinoma. There was high signal on T2-weighted sequences of the mucin pools within and beyond the rectal wall. Does this imply that wall tissues become less resistant to cancer pools intrusion after chemo radiation? Does the high intramural pressure have an impact on the protrusion of the cancer pools beyond the muscularis propria? Final histology reports differ from predicted MRI staging. It highlights the difficulty of the final MRI staging and outcome for mucinous adenocarcinomas. The presence of acellular mesothelial reaction, acellular mucin pools and inflammation extending to the serosal surface causes considerable confusion and may result in over staging or under staging of mucinous adenocarcinoma. Pathogenesis and prediction of the mucin lakes behaviour prior and post chemoradiotherapy is unclear and requires future study but may impact surgical management.

INTRODUCTION

Mucinous adenocarcinomas account for about 10-15% of all adenocarcinomas. They are comprised of at least 60% mucus (1). The findings suggest that it represents a genetically distinct variant of colorectal adenocarcinoma and has implications for the development of targeted therapies and their clinico-pathologic features (3). It is thought that the presence of mucin allows cancer cells to spread faster. As a result, it is considered more aggressive than regular adenocarcinomas (1). Conflicting results are found in the published literature regarding the relationship between mucinous colorectal cancer and survival (4). Some studies report a 5-year survival of 11% for mucinous carcinomas. The appearance of high signal T2W sequences of mucinous rectal tumours on MRI help to stage disease pre and post radiotherapy period. It is reported that MRI is not useful for gauging disease activity of persistent abnormalities in mucinous tumours that often represented inactive mucin lakes(4).

CASE PRESENTATION 1

A 67 year old patient presented to the colorectal clinic with a history of diarrhoea and bleeding. He underwent colonoscopy, CT and MRI scanning. Colonoscopy revealed a tumour 6 cm from the anal verge and biopsy confirmed intestinal poorly differentiated adenocarcinoma with mucinous component. CT scan showed no evidence of distant metastases. MRI has shown a T3 N1 mucinous type rectal carcinoma 9cm from the anal verge with negative circumferential resection margin (CRM). Patient had been offered neo-adjuvant chemo/radiation after MDT discussion. Restaging MRI revealed reduction in tumour size with areas within the mesorectum consistent with perforation/infection that lies

close to anterior circumferential resection margin. A Laparoscopic low anterior resection and loop ileostomy formation was done and histology showed recto-sigmoid mucinous adenocarcinoma pT3pN1pMXR0, Duke's C1 completely excised at all margins.. No extramural venous invasion, no perforation and no growth on the mucosal site on macroscopic examination. There were mucin deposits 14mm beyond muscularis propria and 3mm from the non peritonealised circumferential margin containing very occasional viable tumour cells. Several lymph nodes contained acellular mucin and a single node contained small viable tumor deposits. The patient recovered successfully after surgery and had been offered adjuvant chemotherapy.

CASE PRESENTATION 2

A 75 year lady was referred by her community doctor with a history of rectal bleeding and palpable tumour on rectal digital examination. She was referred for urgent colonoscopy, CT and MRI. Biopsies showed an adenocarcinoma arising in a tubulovillous adenoma. The patient received a colostomy due to obstructive symptoms. CT showed no evidence of distant metastases. MRI showed bulky polypoid tumour and a lot of high signal change within the rectal lumen suggesting a mucinous nature of the polypoid mass. Predicted MRI staging was T2N1 with threatened resection margin due its low position and unclear separation from levator ani muscles. The patient started neoadjuvant chemo-radiotherapy. Final MRI scans were preformed 4 weeks post chemo-radiation. Though the intraluminal mass had reduced a few small high signals out-pouchings through the anterior rectal wall into thin mesorectal space. This iprodcued a predicted final MRI staging of no more than T2N0. These changes of uncertain nature could be due to perforation or mucinous lakes protruding through invaded rectal wall. Subsequently the patient was offered and received a laparoscopic abdominoperineal resection. Histology revealed two polypoid lesions with residual tubulovillous adenoma with low and high grade dysplasia, with no residual invasive carcinoma identified. Mucin pools were present in the submucosa, muscularis propria and subserosa. All this was interpreted as a single large adenomatous lesion giving rise to an invasive adenocarcinoma, which had regressed with therapy. Differentiation was not assessable; there was no extramural venous invasion. Mucin pools extended to