Case report

Double Primary Tumors: Synchronous of Prostate cancer and Rectum cancer. A case report

ABSTRACT

Multiple primary tumors (MPT) defined as development of 2 or more tumors with different histology characteristic which arise from difference organ and metastasis must be excluded. MPT can divide to synchronous or metachronous. Prostate cancer with synchronous rectal cancer are rarer compare to metachronous. Synchronous prostate cancer are commonly found in either renal or urinary bladder. We are reporting a case of 66 years old gentlemen who diagnosed of prostate cancer with synchronous rectum cancer. Decision making in managing are rather be challenging as there are two separate entities and have different approach for both surgical and oncology treatment.

Keywords: Synchronous; prostate; rectum; multiple primary tumors; neoplasm.

1. INTRODUCTION

Prostate cancer and colorectal cancer are top two commonest cancer in the world (14.8% and 9.2% respectively).1 Both prostate and colorectal cancer may co-exist either synchronous or metachronous. However, the incidence multiple primary tumors (MPT) are low between 5% to 8% of all cancer.2 Prostate cancer and synchronous rectal cancer are uncommon. Metachronous are more common as number of cancer survivors are increase by 2% in a year. The cancer survivors are reported to have 10-30% increase risk of developing another cancer.3

MPT tend to be older age group than those with a single primary tumor. 4,5 The effectiveness of cancer therapy together with aging population have increase the challenge on managing MPT. The validity of treating both primary tumors must be questioned on an individual patient basis.

2. CASE PRESENTATION

A 66 years old gentleman with underlying hypertension, dyslipidemia and chronic kidney disease (CKD) was diagnosed with double primary tumors; T1cN0M0 prostatic adenocarcinoma (Gleason Score 3+4, intermediate risk group) and T3N0M0 rectal adenocarcinoma.

He initially presented with lower urinary tract symptoms for 1 years and was diagnosed for benign prostatic hypertrophy with IPSS 29 and QOL 3. His symptoms improved and well controlled with single therapy. During follow up, noted his prostate specific antigen (PSA) was high, 7. However, he has no red flag symptoms and signs of prostate cancer. Trans-rectal ultrasound (TRUS) guided biopsy of the

prostate gland was done on Jan 2018 and HPE shown no malignancy seen in all 6 cores of biopsy. Since then, he was on 6 monthly follow up.

On Oct 2019, during his subsequent follow up, noted his PSA was increasing in trend from 7 to 12.8 and his digital rectal examination (DRE) was T1c. TRUS biopsy, bone scan and magnetic resonance imaging (MRI) of prostate were arrange to confirm the diagnosis. TRUS biopsy taken with total of 15 cores ; 4 cores out of 6 cores on left side were confirm prostate adenocarcinoma with Gleason score 7 (3+4) while 9 cores on right side no malignant seen. No evidence metastasis on bone scan. MRI prostate shown segmental T2 hypointensity on the left apex peripheral zone with capsular breach (PIRADS 5) and moderate hypointensity on left mid gland transition zone (PIRADS 4). On right lobe, segmental T2 moderate hypointensity on right apex peripheral zone (PIRADS 4) and right mid-gland transition zone (PIRADS 5). No extraprostatic extension to neurovascular bundle , seminal vesicles, lymph node and bone. However, noted incidental findings of mid and lower rectal mass with clear plane to prostate and seminal vesicles.

Colorectal workup ensued. Further history taking revealed, he was having on and off per rectal bleeding with tenesmus for 6 months. DRE revealed mass 4cm from anal verge. Laboratory investigation shown carcinoembryonic antigen (CEA) not elevated at 5.9ng/mL. Colonoscopy with biopsy was done shown fungating mass 4cm from anal verge and HPE confirm rectal adenocarcinoma with local invasion beyond muscularis propria (T3).

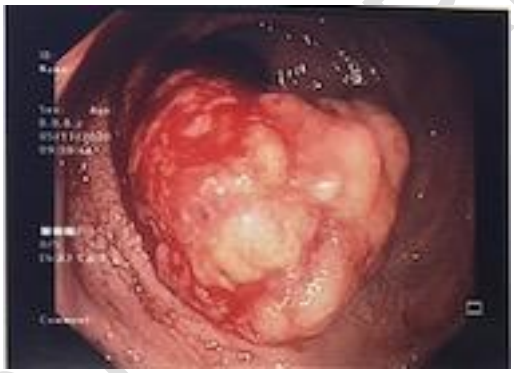

Fig. 1. Fungating rectal tumor findings on colonoscopy

He was seen by urologist, colorectal surgeon and oncologist and multidisciplinary team discussion was done. Few options were discussed ; 1) total neoadjuvant therapy for rectal cancer followed by robotic assisted radical prostatectomy (RARP) and ultra low anterior resection with defunctioning ileostomy (ULAR) 2) Long course CRRT(45 Gy/25 F for 5 week with 5-fluorouracil and capecitabine) for rectal followed by surgery (RARP + ULAR) 3) ULAR + RARP. The oncology recommended for option 2 in view of underlying CKD. He was then underwent combined surgery 6 weeks post CCRT. Post-surgery was uneventful. Histopathology examination (HPE) of prostate gland shown left prostatic adenocarcinoma which confined within prostatic capsule with involvement of half of the lobe (T2a). While HPE of colon (anterior resection) shown complete resection of rectal adenocarcinoma with local invasion beyond the muscularis propria and no lymphovascular invasion (T3N0, Duke B). The malignant tumor positive towards CK20, CDX 2 and negative for CK7 and PSA.

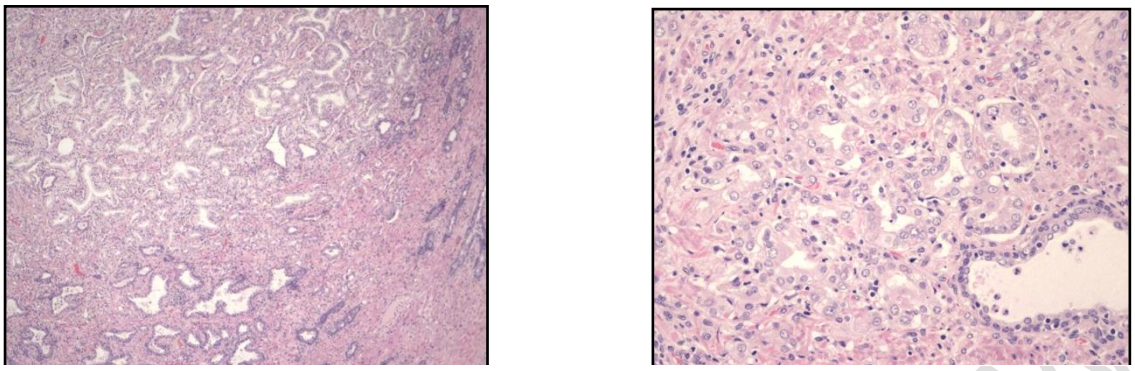

Fig 2 : Histopathology of Adenocarcinoma of prostate.

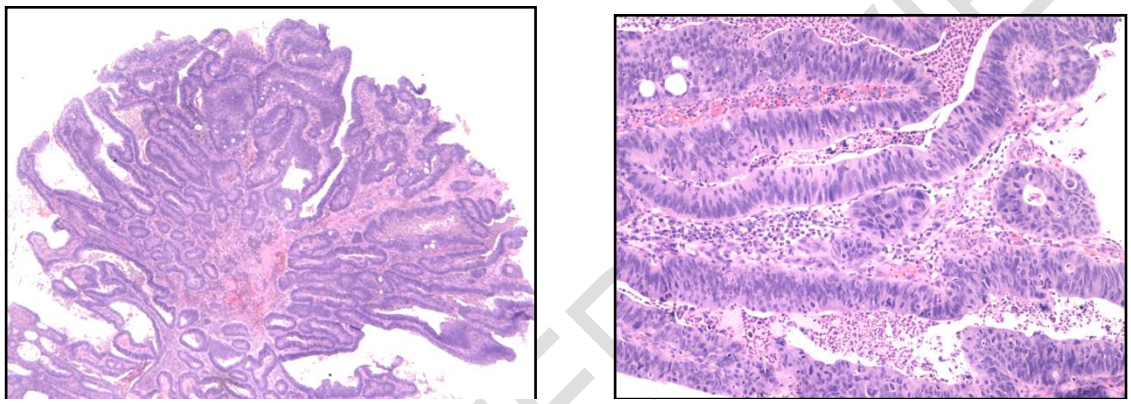

Fig 3: Histopathology of Adenocarcinoma of rectum.

3. DISCUSSION

Prostate and colorectal cancer are two common cancers in male. Multiple primary tumors are rare but the incidence detection of multiple primary tumors (MPT) are increasing. This is the consequence of improved clinical awareness, increase cancer survivor, advances in diagnostic technology, a change of lifestyle with a diet and an increase of life span that allow patients to develop more than one primary cancer.

Billroth (1889) defined MPT as development of 2 or more tumors in the same person with different histological characteristics, arising from different organs, and presenting with their own metastatic deposits.6 In 1932, the definition was modified by Warren and Gates as 2 or more malignancies have different histological characteristics, and metastasis must be exclude.7 MPTs are divided into 2; synchronous and metachronous. Synchronous MPTs are present of 2 or more tumors diagnosed within 6 months, while metachronous MPTs are present 2 or more tumors diagnosed with a time interval >6 months. In this case, synchronous rectal tumor detected same time during investigation of diagnosing prostate cancer on MRI of prostate.

Older age group being a higher risk of developing second primary tumor. Spratt and Hoag7 reported that person living to extreme age expected to have multiple cancer with greater frequency. Several review reported that more than 75% with MPT more than 50 years old age and most neoplasm with MPTS involve respiratory, gastrointestinal and genitourinary system. 4,5,8.9.10

Synchronous disease is rarer than metachronous rectal and prostate cancer. Elmi et al reported 5.9 % synchronous tumor detected during initial staging workout and most common second primary tumor is

kidney(1.97%) followed with lymphoma (1.13%) 11. Similar to Ozsoy et al,12 they found that only 1.2% of patients with prostate cancer detected synchronous tumor and most secondary primary tumor are kidney and bladder. The incidence of synchronous rectal tumor is less than 1%.12 In synchronous disease, accurate CT and MRI staging is crucial to evaluate of both malignancies to reduce the chance of unnecessary radical surgery. In this case report, MRI showed there are separate entities as there are clear plane between the rectal mass and prostate and rectal mass does not extend to muscularis propria. HPE of both tumor also confirmed two primary tumors ; prostate adenocarcinoma (T2a) and rectal adenocarcinoma (T3No, Duke B).

The treatment of synchronous tumors depend on each primary tumor staging. There were no issue in managing early staging of synchronous tumors as neoadjuvant are not indicated. The difficulties in treatment are greatest when both tumors are locally advanced and particularly when the rectal cancer lies in the mid or lower rectum. In this case, patient diagnosed with locally advanced rectal carcinoma stage III (T3N0M0) and stage

Prostate cancer is a complex disease in which disease characteristic, age, comorbidities and individual preference will impact treatment of choice. Patient should be stratified by PSA, clinical stage, Gleason score, volume of disease on biopsy and radiological stage. Options include active surveillance, intervention with curative intent, androgen deprivation therapy (ADT) and brachytherapy. As stated previously, EAU recommends that radical prostatectomy (RP) with curative intent should be offered to all men with intermediate risk disease: PSA 10-20ng/ml, Gleason score 7, clinical stage T2b. Extended pelvic lymph node dissection (ePLND) should be performed if estimated risk of positive lymph nodes exceed 5%. Low-dose-rate (LDR) brachytherapy or external beam radiation therapy (EBRT) are strongly recommended for patient with localised disease with intermediate risk.

The role of neoadjuvant chemoradiotherapy in the treatment of locally advanced rectal cancer (LARC) is well established and results in reduced local recurrence compared to surgery alone. Traditionally, LARC patient will offer for long course CCRT followed with surgery and adjuvant therapy 13. However, latest trial by Van der Valk et al (RAPIDO trial) suggest for short-course radiotherapy followed by chemotherapy and delayed surgery with the aim to reduce distant metastases without compromising locoregional control.14

The differing dosage regimens and irradiation fields used in the treatment of rectal and prostate cancer pose a particular challenge as the lower dose used in rectal cancer would be considered subtherapeutic for prostate cancer, while the higher dose used in the definitive treatment of prostate cancer could increase the technical difficulty of low anterior resection and the risks of anastomotic failure. Besides that, comorbidities and functional status of patient also need be consider prior commencing chemoradiotherapy due to the toxicities.15,16 In this case, total neoadjuvant therapy not suitable in view of underlying renal impairment.

4. CONCLUSION

Synchronous detection of prostate cancer associated with rectum cancer is uncommon, but likely to increase with rigorous preoperative staging of prostate cancer and increased awareness of the potential for synchronous disease. The existence management of the first cancer did not influence the treatment or outcome of the second cancer. Treatment must be individualized taking into account a patient's symptoms and the stage of the individual cancers.

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