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CASE REPORT **Open Access**

Is Effective Treatment Approach Hypofraction Radiation of The Unresectabl Sarcomatoid Carcinoma Of Prostate: A Case Report And Review Of Literature

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INTRODUCTION

Sarcomatoid carcinoma (SC), also called carcinosarcoma (CS), is a rare variant of prostate adenocarcinoma. SC has an incidence approximately 0.1% of all prostatic neoplasm and is considered an extremely high-grade lesion with a poorer prognosis. Interestingly, half of the patients have a history of prostatic adenocarcinoma that includes malignant epithelial and sarcomatoid elements and these pathology have represented whether a “collision” of epithelial and mesenchymal elements (carcinosarcoma) or an evolution of an underlying adenocarcinoma into a lesion with associated sarcomatoid features and occasional heterologous elements (sarcomatoid carcinoma) (1,2). SC behaviors not only being locally aggressive, but also show widespread metastases, occasionally to lymph nodes, lungs, liver and bone (3,4).We report herein a case of this rare tumor that was successfully treated with hypofraction radiation therapy (RT), adjuvant chemotherapy (CT) and post-treatment showed approximately complete response by magnetic resonance imaging (MRI) and dynamic contrast-enhanced MRI, but the patient died nineteen months after diagnosis of the carcinosarcoma due to distant metastases.

CASE REPORT

A 73-year-old man presented with a several-month history of urinary retention and macroscopic hematuria. A history of painless hematuria attack for 2-month, increasing in last few days duration was also present. There was no family history of genitourinary cancer. His serum prostate-specific antigen level was 1.6 ng/mL, all the other serum tumor markers and blood chemistry were detected to be normal limits except for severe anemia with a hemoglobin level of 8.3 g/dL. A urinary ultrasonography demonstrated a large, including cystic component, predominantly prostatic mass, extending the bladder and causing mass effect. Dynamic contrast-enhanced magnetic resonance imaging of extracapsular extension and tumors

infiltrating the adipose tissue of the tumor was seen. In addition the prostate gland revealed heterogen and irregular demarcated tumor arising from indistinguishable border with the bladder wall 43×30mm of the tumor mass. No other adjacent organ-invading or enlarged lymph node could be identified. Positron emission tomography imaging was demonstrated centre of a-metabolic mass infiltrating of bladder wall and extension inside bladder and compressed anterior wall of rectum (SUV 28.87). After TUR-P application these tumors were composed of widely necroses with high grade cellular atypia, and spindle cells and epihteloid cells were scattered within the tumor. Histopathological findings revealed a high grade sarcomatoid carcinoma of prostate. According to the pathology report specimen contained a biphasic tumor consisted of mainly tissue of undifferentiated spindled and pleomorphic shape cells demonstrating malign features including hyperchromatic nuclei and high grade multinuclear acinar type, while it contained also large areas of necrosis. Immunohistochemistry verified the diagnosis of SC of the prostate, which was stained prominently with vimentin, and with pancitokeratin, but PSAP, PSA was negative in tissue.

Due to age and low performance of the patients, we were treated with 39 Gy (300cGy/fx) of hypo fraction external beam RT to the pelvic mass, pelvic lymph nodes, prostate, and seminal vesicles with a intensity modulated RT technique and adjuvant gemcitabine (2000mg), docetaxel (80 mg) CT regime until progression. The obstructive symptoms were dramatically relieved and MR images demonstrated that mass were observed partial response 3 months after completion of RT. MRI imaging taken 8 months after completion of RT showed that disappeared invasion neighborhood organ and markedly regression size of the mass especially solid component compared with time of diagnosis. Moreover, according to combination of T2-weighting imaging, diffusion weighting imaging and dynamic contrast enhanced imaging demonstrated lower diffusion signal intensity almost improved on the residue mass. After the contrast administration, the lesion demonstrated strong necrotic compatible on the central region. In addition there was no any distant metastasis, therefore we were treated additional re-irradiation 24Gy (300cGy/fx) boost dose to the mass localization, for total dose 68.25Gy (BED_{10}) equal of conventional fraction with IMRT technique. Our patients presented with Radiation Therapy Oncology Group grade II gastrointestinal system toxicity diarrhea' which eliminated shortly after medication. The patient received adjuvant single-agent of gemcitabine (2000mg) during 6 months after re-irradiation. Six months after re-irradiation, which was detected disseminated metastasis with bone and bilaterally lung, but locally lesion was not appear progression. He received single agent paclitaxel, but the patient was died about metastases after nineteen months after diagnosis.

DISCUSSION

Sarcomatoid carcinoma, also called carcinosarcoma and spindle-cell carcinoma, is an unusual biphasic malignancy in the prostate (5). The included two elements of SC are a malignant epithelial (carcinomatous) component and a malignant mesenchymal (sarcomatous) component with the presence or absence of heterogonous elements (6). SC is a rare of prostate carcinomas which is behaviors not only being locally aggressive, but also show widespread metastases.

Although, the origin of these tumors has been controvertible, World Health Organization classification of urinary tract tumors does not discriminate between SC and CS and use the term SC to define all of these lesions (7). SC generally on presentation large masses hemorrhage with necrosis and local extension into neighbor structure such as rectum and bladder (8). Microscopically, carcinomatous and sarcomatous components are contains a mixture of tumor, with blending of the two in some areas. The carcinomatous element is almost always of acinar type and typically of high grade. On the other hand, sarcomatoid component often has included large areas of undifferentiated spindled and pleomorphic cells. Areas of the necrosis are generally presents (6,8). Cytologically, nuclear pleomorphism is moderate to marked, with numerous mitotic figures, easily detected (8). By immono-histochemistry stains show epithelial elements marker with cytokeratins, PSA, PSAP while sarcomatoid elements marker with vimentin or specific markers identically to the mesenchymal differentiation, if present (8-10). In our cases like literature demonstrated that biphasic tumor consisted of mainly tissue of undifferentiated spindled and malign features pleomorphic shape cells, which included also large areas of necrosis. According to immune-histochemistry strain showed that stained prominently with vimentin, and with pancitokeratin, but PSAP, PSA was negative in our cases tissue.

The signs related larger mass of urinary retention is the most common presenting symptoms, which are nonspecific. The imaging presentations of SC in the prostate are nonspecific. However CT scans has demonstrated locally aggressive prostatic tumors, MRI could better demonstrate the presence of invasion of the pelvic organs and neighbor structure of the tumor (11). In our case, on MRI the mass effect of tumor was heterogeneous with invasion of the adjoining bladder, seminal vesicle, and extending capsule of prostate. The tumor appeared with the prostate gland placed within the mass that corresponded to the areas of necrotic or cystic components.

Patient with SC is rarely, a highly aggressive malignancy that spreads by adjacent organ direct invasion and distant metastasis, and limited data about treatment of SC of the prostate generally from case reports, with tumor related risk of death of 20% within one year of diagnosis. Therefore, there are no-standard treatment recommendations the management of SC of the prostate. Operable tumors are treated with surgery, which may be followed by radiation therapy and/or adjuvant chemotherapy, particularly in patients with positive margins or nodes[6]. Moreover, non-surgical therapy generally seems to be ineffective and 55.5% of patients are unresponsive to chemotherapy agents, and authors was no found correlation between the presence of treatment and either the time to progression to SC or patient survival (6). In the biggest published series in literature 41% and 14% survival, were 5 and 7 years retrospectively (1,6). These series reported by Dundure et al. and Hansel DE was treated 21 and 42 patients SC of the prostate, and both authors were used different treatment methods like surgery, RT (EBRT, ^{125}I, Co). Radiation therapy was the primary treatment modality in only seven cases and three patients respectively. But authors were not mentioned in the reports that were used RT dose, technique and difference methods effect on the survival times of these patients (1,6). Although, there is no proposal unresectabl SC of prostate due to rare

tumors, according to literature suggest that operable tumors are treated surgery, which may be followed by RT and/or adjuvan CT (1,6,8). Available data would not found applied curative intent RT, but show that unoperabl tumors were generally used palliative RT and/or adjuvan CT (12-14). Our patient received a combination of extended TURP and hypofraction RT before was CT, the response to the treatment was local and systemic successful for nineteen months. We detected disseminate systemic metastasis nineteen months after the diagnosis, but not detected locally progression of our patients.

Our case differs from previous reports in two ways. First, we used IMRT technique, which leads to better covering the target volume and sparing the normal tissues. Second, we preferred hypofraction RT, which means high daily fraction and short treatment time. Therefore, palliation was achieved in a short time and he could be referred to systemic therapy.

Primary SC of the prostate is a rare and highly aggressive malignant tumor. But our patients suggest both palliation and local control of the lesions advantages for whose treated hypofraction RT of unresectable SC prostate carcinoma. In literature, despite knowing the correct treatment approach, these fractionation methods may be potential improvement locally control in SC of prostate patients. Therefore, new aggressive chemotherapy agents should be investigated because of their protection against metastases. Multi-institutional randomized studies are needed to be better defined for optimal management of this SC of the prostate.

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