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Metastatic Mucinous Adenocarcinoma of the Prostate: Case Report and a Review of the Literature

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Abstract **Case Report**

We report the case of a 47 years old man with a first-degree familial history of prostate cancer in the father and breast cancer in the sister. Our patient presented an irritative urinary syndrome for 7 months; the clinical examination revealed a stony prostate on rectal examination, initial PSA was 1ng /ml, pelvic MRI showed an enlarged prostate measuring 65*60*45mm, with irregular contours and a median lobe protruding into the bladder lumen. The tumor was globally responsible for a capsular effraction with infiltration of the posterior bladder wall in front and at the base of the seminal vesicles behind. The patient underwent a transurethral resection of the prostate (TURP) with anatomopathological and immuno-histochemical studies showing a profile in favor of a mucinous prostatic adenocarcinoma. The tumor markers angiotensin converting enzyme (ACE) and cancer antigen 19-9 (CA19.9) were normal at 9.71 ng/ml and 22.96 IU/ml respectively. The extension workup showed metastatic lesions in the lung and skin (positive skin biopsy). The total colonoscopy was normal. Clinically, the patient presented with a WHO performance status at 3 and could not receive chemotherapy. He was put under symptomatic treatment and passed away one month later. The series reported in the literature are few; nevertheless, it seems that the prognosis of mucinous adenocarcinoma is considered to be comparable if not favorable to conventional adenocarcinoma even though it has been believed to be more aggressive in the past.

Keywords: prostate cancer, urinary syndrome, bladder lumen, angiotensin converting enzyme.

INTRODUCTION

Mucinous adenocarcinoma (MC) is a variant of prostate cancer. It is defined as a rare subtype of acinar adenocarcinoma and characterized by the presence of more than 25% of the tumor composed of glandular tissue with extra luminal mucin [1]. The series reported in the literature are few and the epidemiological data are poor. In the present paper we report the case of a rare metastatic mucinous adenocarcinoma of the prostate with pejorative outcome. Our aim is to highlight this entity and to describe the different epidemiological, clinical, radiological and prognostic data based on the literature.

CASE REPORT

The current case report describes a 48-year old north African male with a family history of prostate cancer in his father and breast cancer in his sister. The patient presented for 7 months a pollakiuria and dysuria without hematuria. Digital rectal examination found an indurated prostate with no palpable nodule. The initial Prostate specific antigen was 1 ng/ml and the magnetic resonance imaging (MRI) showed a prostatic mass measuring 65*60*45mm with irregular contours and a median lobe protruding into the bladder lumen, it is globally heterogeneous in T1 and T2, delimiting areas of necrosis in T2, intensely and heterogeneously enhanced with diffusion restriction. The mass is responsible for a capsular effraction with infiltration of the posterior bladder wall, the base of the seminal vesicles and the neurovascular bands laterally. The MRI showed an enlarged lymph node of the right obturator chain measuring 12 mm of small axis. Prostate biopsy was performed and showed a morphological and immunohistochemical (IHC) profile of a high-grade Intraepithelial Neoplasia (IEN) lesion, with no clearly infiltrative component. The patient was referred to urology department where he had an endoscopic resection of the prostate, with an anatomopathological

study and immunohistochemical showing a profile in favor of a bladder localization of a prostatic mucinous adenocarcinoma. Tumor markers were found to be normal with an ACE at 9,71 ng /ml and CA19.9 at 22.96 UI/ml. The extension assessment had shown metastatic lesions in the lungs and skin (Positive skin biopsy), total colonoscopy revealed no abnormalities. Clinically, the patient was PS 3 unfit to receive any systemic treatment, therefor, the decision was to refer him to palliative care unit. Unfortunately, our patient past away one month later.

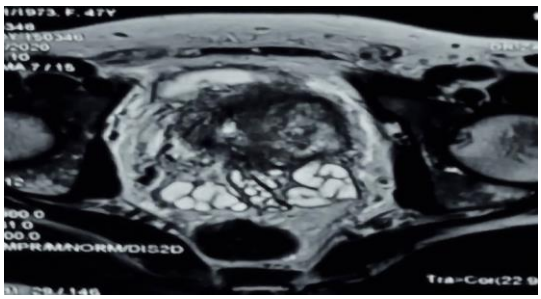

Figure 1: A transversal image of the mucinous adenocarcinoma of the prostate

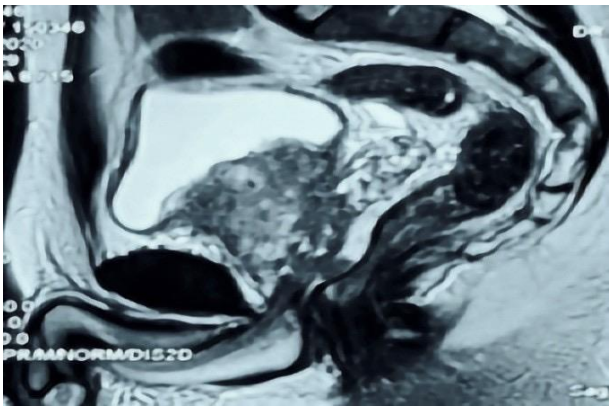

Figure 2: mucinous adenocarcinoma of the prostate

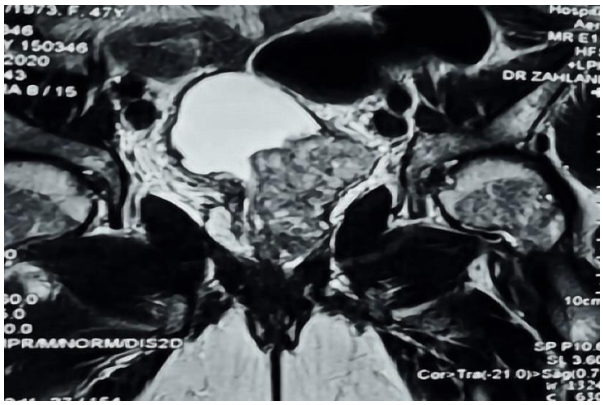

Figure 3: Mucinous prostatic adenocarcinoma infiltrates the trigone of urinary bladder

DISCUSSION

Mucinous adenocarcinoma is a rare variant of prostatic cancer, it represents 0, 2 - 0,5% of malignant prostatic tumors, it is characterized by the presence of extra-acinar mucin and defined by the presence of 25% or more of mucinous component [2]. The most popular series published in 2008 and 2013 reported an average age at diagnosis of 56 and 61 years respectively [8].

Mucinous adenocarcinoma can present with urinary obstruction (70.2%), hematuria (25.5%), and vesical irritability (17.0%) [5], of the patients with Mucinous adenocarcinoma, 77.8% have elevated prostate-specific antigen levels, with a similar percentage (77.8%) responding to hormonal therapy [5]. Epstein and Lieberman suggested that elevated levels of acid phosphatase may be found only in advanced stages of the disease [4]. The diagnosis of Mucinous adenocarcinoma requires determining the source of the carcinoma. Positive immunohistochemically reactivity of prostate-specific antigen with positive acid phosphatase and negative carcinoembryonic antigen scan can confirm the diagnosis of prostate adenocarcinoma [5]. The 2014 ISUP recommendation for grading mucinous cancers is to grade based on the underlying architecture [7]. According to these recommendations, extravagated mucin, with neoplastic cells that can form a variety of architectural patterns, is the essential criteria for the diagnosis of mucinous adenocarcinoma [2]. Furthermore, the presence of signet ring cells in the specimen may indicate an even worse prognosis than just mucinous carcinoma alone [5]. The 2016 WHO (world health organization) recommendations are to grade the mucinous character and to consider only the architecture of the glandular structures floating in the mucus [8]. The tumors are then most often Gleason score 7, more rarely 8, group 2 to 4 according to WHO 2016 [8]. In the study by Johnson *et al.*, mucinous adenocarcinomas were Gleason 7 (3 + 4), 54% were Gleason 7 (4 + 3) and only 8% were Gleason 8(4 + 4) [8].

Regarding radiological features, there have been only a very few reports about MRI findings of mucinous adenocarcinoma of the prostate, some of them have stated that it poses more diagnostic difficulties on MRI than common adenocarcinoma [3]. Mucinous adenocarcinoma appears hyper intense on T2, reflecting its large extracellular mucin content, and lesions localized in the PZ tend to be isointense to the surrounding tissue [3, 6].

The differential diagnosis should rule out a possible mucinous adenocarcinoma of another origin, mainly colorectal, bladder or urethra [10]. The clinical context and imaging usually help to orient the diagnosis. In case of doubt, immunohistochemistry confirms the diagnosis of prostatic origin [11]. Prostatic mucinous adenocarcinomas usually express PSA and NKX3.1 and are negative for CDX-2 [10, 11].

In a recent study, the immunohistochemical expression of ERG, a protein detected in case of TMPRSS2-ERG gene fusion, was investigated [9]. ERG

expression was observed in 47% of mucinous adenocarcinoma cases without correlation with grade or stage [9]. This rate is similar to that observed in conventional adenocarcinoma and does not appear to be associated with prognosis [8, 9]. The work of Osunkoya *et al.*, shows that the mucinous character is associated with a diffuse expression of the mucin MUC2, which is not or only slightly expressed in conventional adenocarcinomas. MUC2 may therefore play a role in the histogenesis of this variant [8, 9].

Outcome and prognostic significance of mucinous adenocarcinoma are disputable and not fully understood. Although mucinous adenocarcinoma was previously accepted as an aggressive disease, a newly published series demonstrated that it had a comparable if not more favorable outcome [3]. Several investigators have reported that Mucinous adenocarcinoma has a worse prognosis than the typical acinar prostate adenocarcinoma, with early tumor progression and aggressive metastases [4]. In the most recent series, it seems that the prognosis is not unfavorable and is even better than that of conventional forms [8, 9]. In the series by Osunkaya *et al.*, Patient had a progression of the PSA level at 3 years and 97% of the patients had no biological recurrence at 5 years, whereas the biological recurrence-free rate in the group was 85.5%. In the study by Lane *et al.*, there was no statistical difference between mucinous and conventional adenocarcinoma with regard to survival and biological recurrence and no patient died of the disease at 6.4 years of follow-up [12]. However, this should be taken with caution due to the small numbers studied. Because of its rarity and conflicting reports regarding the behavior of the disease, the optimal treatment strategy is not clear. Unfortunately, our case was clinically, OMS score 3 and could not receive any treatment; he was put on palliative care and died one month later.

CONCLUSION

Mucinous adenocarcinoma of the prostate is a rare histopathologic entity series are reported in the literature, it seems that the prognosis is not unfavorable and is even better than the conventional forms. Also, it would seem reasonable in patients who are elderly and with additional medical comorbidities that conservative management is an acceptable strategy.

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