IJMPR 2020, 4(5), 80-84

International Journal of Modern Pharmaceutical Research
www.ijmpronline.com

ISSN: 2319-5878
IJMPR
Case Report
SJIF Impact Factor: 5.273

RARE COLLISION TUMORS IN THE PROSTATE

Dr. Spasimir T. Shopov*

Department of Pathology, MBAL Uni Hospital Ltd, Panagyurishte, Bulgaria (Pathologist in the Department of Pathology.

Received on: 23/08/2020
Revised on: 13/09/2020
Accepted on: 03/10/2020

***Corresponding Author**
Dr. Spasimir T. Shopov
Department of Pathology, MBAL Uni Hospital Ltd, Panagyurishte, Bulgaria (Pathologist in the Department of Pathology.

ABSTRACT

Collision tumors are rare, consisting of two or more distinct neoplasms that develop adjacent to one another and coexist with no or minimal intermingling between them. Their diagnosis is often incidental and their behavior remains widely unknown. Several theories have been proposed regarding their pathogenesis. I report a 75-year-old man with a mictional disturbances for several years. Ultrasound examination of organs in a small pelvis: enlarged prostate, and stagnant urine in the bladder. Paraclinical: PSA 19,7 ng/ml. Histologically: a collision between two tumors in the prostate.

KEYWORDS: Adenocarcinoma; Acinar; Ductal; Collision; Tumor.

INTRODUCTION

Collision tumors are rare neoplasms characterized by histologically different tumors developing in close proximity in an organ from two divergent lineages.[1] Prostate cancer is the second most common malignancy in men globally, especially in developed countries.[2] The majority of prostate cancer is acinar type adenocarcinoma (AAC), although several rare histologic variants coexist.[3,4] Ductal type adenocarcinoma (DAC) is the most frequent of the rare histologic subtypes, accounting for 5% of total prostate carcinoma cases and meets in old age.[4] DAC mainly arises from primary periurethral prostatic ducts whereas acinar tumors arise from other periurethral prostatic ducts.[5] Hematuria and urinary obstruction are the primary complaints at prostate adenocarcinomas. Both tumors present with elevated serum prostate-specific antigen (PSA) levels.[5] The majority of DAC are found in association with an acinar component. Pure DAC is extremely rare.[4] The diagnosis of ductal and acinar adenocarcinoma generally depends on histopathologic and immunohistochemical examination.[6,7] Histologically, ductal adenocarcinomas are composed of columnar cells arranged in either a papillary or cribriform pattern, whereas acinar adenocarcinomas exhibit cuboidal cells arranged in acini. The papillary pattern of ductal tumors consists of true papillary fronds lined by columnar cells exhibiting a variable degree of nuclear pleomorphism and hyperchromasia. The other pattern consists of proliferating large, back-to-back cribriform glands with central necrosis. In both patterns, the surrounding stroma is fibrotic or altered.[4] Based on the morphological features the grading of the acinar component varies; however, the ductal component is usually graded as four on the Gleason scoring system.[8] Adenocarcinoma of the prostate mainly expresses immunohistochemical markers of prostatic tissue, PSA, prostatic acid phosphatase (PAP), alpha-methyl acyl-coenzyme A (CoA)-reductase (AMACR), androgen receptor (AR), and cytokeratin 7 (CK7). Basal cell markers, proto-oncogene (p63), high-molecular-weight CK (clone 34βE12), and CK5/6, are usually negative.[5,6] The presence of a ductal component should be associated with the aggressive flow, although the effect of the ductal component on overall Gleason and PSA levels remains controversial.[9]

I report a rare clash between two malignant tumors in a prostate gland.

CASE REPORT

A 75-year-old man came to our hospital with hematuria complaints from 3 months and frequent urination mostly at night for years. Referred to the urology department where the clinical examination was done including a digital rectal examination which revealed an enlarged prostate. Hematological investigations without abnormal findings aside from PSA which was raised - 19,7 ng/ml. On ultrasonography, the patient was diagnosed with chronic cystitis with significant post-void urine and increased volume of the prostate which measured approximately (64)cc: grade-III prostatomegaly. Previous needle prostate biopsies: AAC, Gleason 4+5=9. Computed tomography (CT) of the chest, abdomen, and pelvis were negative for metastasis. The patient underwent open radical retropubic prostatectomy. A 9 cm incision was made in the skin between the umbilicus and the top of the pubic bone. The pelvis was then explored and the important structures such as the urinary bladder, prostate, urethra, blood vessels, and nerves were identified. The prostate was removed from the urethra

below and the bladder above, and the bladder and urethra were reconnected. The blood vessels leading to and from the prostate were divided and tied off. A catheter running through the penis into the bladder was typically required for at least a week after surgery. A surgical drain was left in the pelvis to allow drainage of blood and other fluid. Additional components of the operation include - Lymphadenectomy: Left-sided internal iliac lymph nodes were removed.

Macroscopic (Figure 1): A right lobe of the prostate. From the cut surfaces, one can see a clear distinction between DAC in brown color and the pale yellow color of AAC. An invasion of the capsule of the gland by DAC is seen. DAC itself is more fragile.

Histology (H & E) (Figure 2): In Figures 2a, b, it is visible a tumor represented by glands and papillary structures upholstered by pseudostratified cylindrical cells with amphophilic cytoplasm. In places scarce comedo necrosis among the ductal component. Figure 2c Adjacent to the DAC, AAC Gleason scores 4 + 5=9. Figure. 2d AAC Gleason patterns 5 with perineural and perivasal invasion. Figure. 2e A collision between AAC Gleason patterns 5, and DAC but without visible mixing between them. Figure. 2f Presence of Tumor cell embolus from DAC in a blood vessel in the other lobe of the prostate gland.

Diagnosis: Collision tumors - acinar and ductal type adenocarcinoma of the prostate.

The postoperative period runs without complications. Radiation therapy was not required but continued with androgen therapy with bicalutamide and goserelin for six months. The serum PSA level was within the normal range of 5 ng/ml and at follow-up.

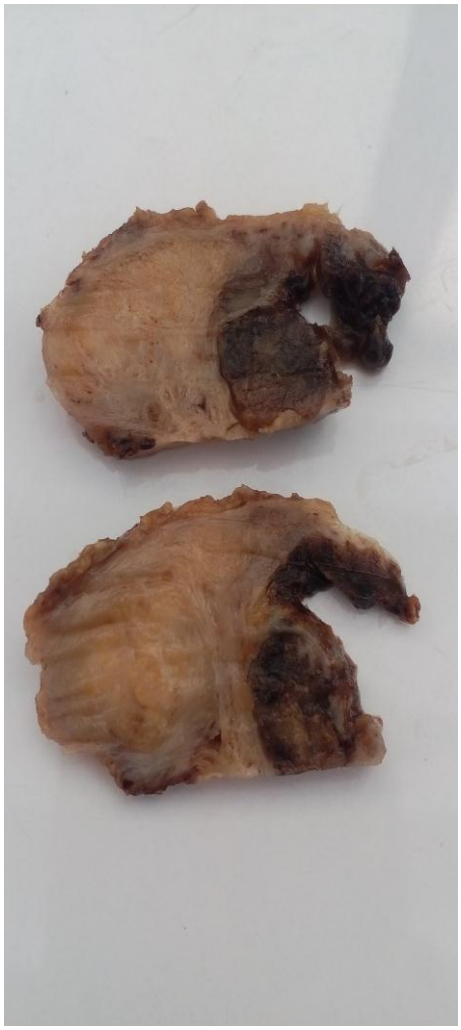
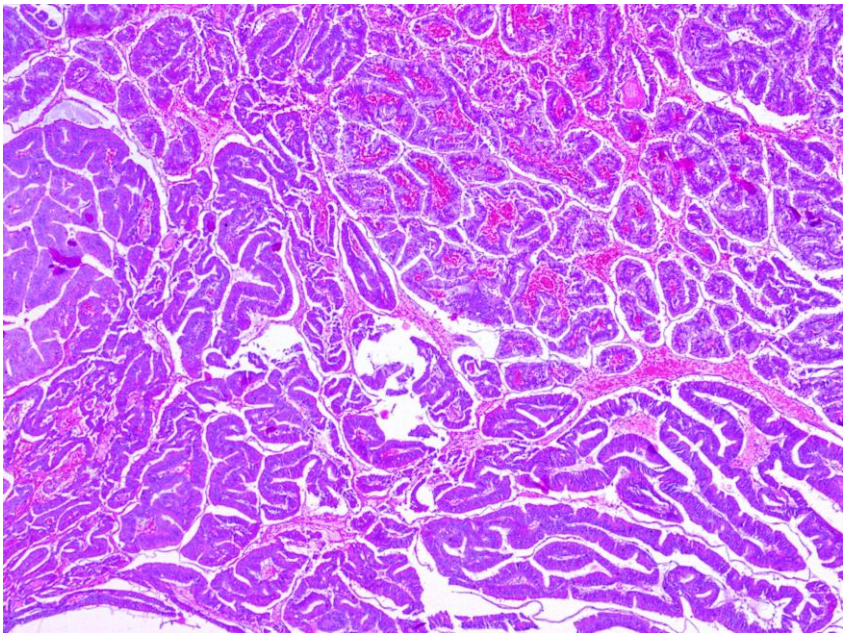
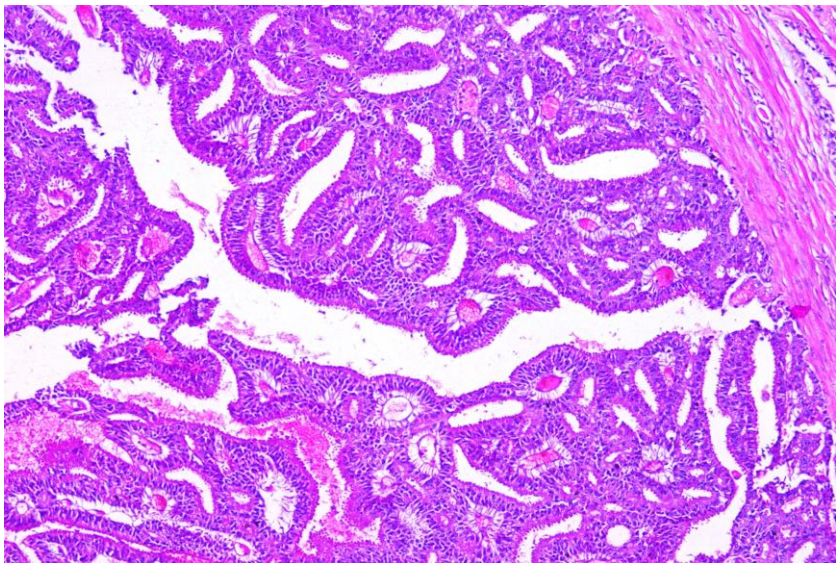
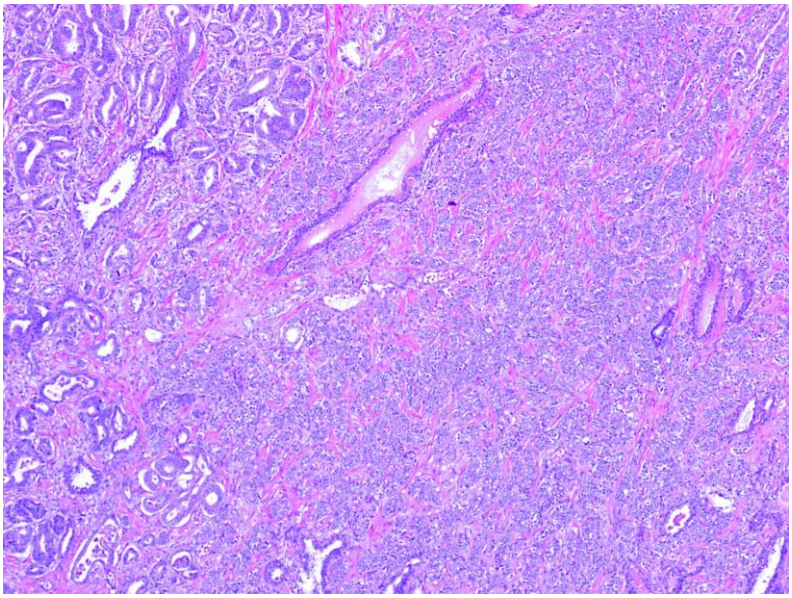


Figure 1: Macroscopic picture: the cut surface of the prostate gland. DAC is clearly visible in brown in color on the right, while AAC can be suspected on the left.







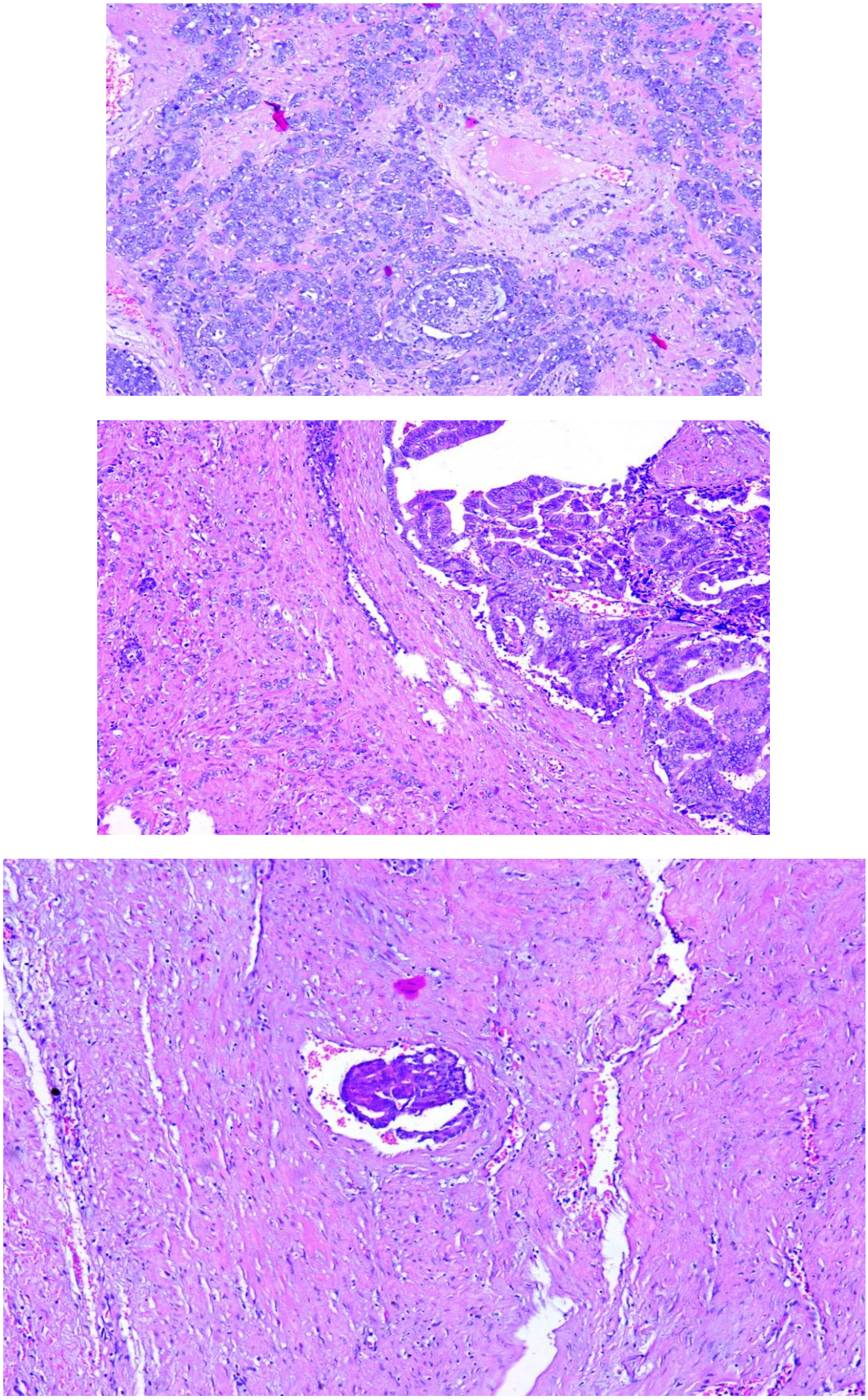


Figure 2: Histology (H&E): a. Papillae and glands composed of tall columnar cells with amphophilic cytoplasm (enlargement ×50); b. Papillae composed of tall columnar cells with amphophilic cytoplasm (enlargement ×100); c. Visible are small round cribriform glands and poorly formed glands with peripherally arranged nuclei. As well as small poorly formed glands to small nests. AAC Gleason scores 4 + 5=9 (enlargement ×50); d. Single small poorly formed glands. Rosette formation and small nests and Individual cells with scattered clear vacuoles

with vesicular to hyperchromic atypical nuclei, visible nucleoli, and mitoses with perineural and perivasal invasion (enlargement ×100); e. A collision between AAC Gleason patterns 5, and DAC but without visible mixing between them (enlargement ×100); f. Tumor cell embolus in a blood vessel in the other lobe of the prostate gland (enlargement ×200)

DISCUSSION

The pathogenesis of a collision tumor has remained controversial. A collision tumor is defined by the coexistence of two adjacent, but histologically distinct tumor components. This tumor is considered multiple synchronous tumors in a single organ because these components are separated from each other by a stroma without histological admixture. The collision tumor of the prostate is quite rare. Although there is no satisfactory explanation for the occurrence of such collision tumors, theories relating to the occurrence of such collision tumors include Common origin from a pluripotent precursor stem cell that differentiates into two components and/or the simultaneous proliferation of two different cell lines.[1] Here we present a collision between two prostate tumors such as DAC of the prostate is an uncommon variant of prostate cancer that rarely is purely ductal, and is more frequently seen admixed with acinar prostatic carcinoma. As prostatic DAC typically coexists with higher grade acinar prostate cancer (Gleason score 7 and higher), the convention is to report the ductal component as Gleason pattern 4.[9] What is special and new in the case presented by us is that unlike the published case of collision of primary prostate cancer with metastases, which in our opinion is not exactly a collision, but mixing or invasion of one cancer with another, we present two types of prostate cancer: ductal and acinar, which sharply differ from each other visibly both in the macroscopic picture and histologically. Macroscopically, it can be seen that the ductal component is represented by over 50%. From the publications we reviewed on the subject, we do not find a macroscopic image with such a clear demarcation between the two tumors, which, even at the macroscopic level, indicates that these are two separate tumors in one organ: in the case of the prostate gland. What is special about the reported case is the presentation of a clear invasion (tumor cell embolus) of the ductal type in a blood vessel, which supports Epstein's conclusion that ductal carcinoma is more invasive and has a worse prognosis.[9] Except for the presence of a tumor cell embolus into a blood vessel in our case, there is no invasion in the seminal vesicles and lymph nodes from both components. The report shows that from the serum level of PSA, the subtype of prostate cancer cannot be judged, nor the level of their differentiation. We also made a distinction between cribriform pattern high-grade prostatic intraepithelial neoplasia and DAC according to[9], where our case is a clear representation of a mixed papillary and cribriform model of DAC. Despite the high percentage of Ductal type adenocarcinoma, it was indicated that the case we reported, a needle biopsy was able to prove only the acinar component.

CONCLUSION

Despite the high incidence of prostate cancer, we present an interesting, rare, and well-illustrated example of a collision tumor in the prostate. The case would expand the knowledge of pathologists, urologists, and oncologists about prostate tumors and the possibility of their coexistence, including in collision with each other.

REFERENCES

1. Shopov S. A collision between fibroma and serous ovarian cystadenoma mimicking carcinoma. Folia Med (Plovdiv), 2019; 61(4): 630-4. doi: 10.3897/folmed.61.e47956.
2. Ferlay J, Soerjomataram I, Dikshit R, Eser S, Mathers C, et al. Cancer incidence and mortality worldwide: Sources, methods and major patterns in GLOBOCAN 2012. International Journal of Cancer, 2014; 136(5): E359–E386. doi: 10.1002/ijc.29210.
3. Humphrey PA. Histological variants of prostatic carcinoma and their significance. Histopathology, 2012. Jan; 60(1): 59-74. 10.1111/j.1365-2559.2011.04039.
4. Huang H, Chen F. Prostatic ductal adenocarcinoma exhibits more advanced histopathological features than acinar adenocarcinoma. N. J Med Sci., 2012. Oct; 5: 208-211.
5. Sha J, Bo J, Pan J, Zhang L, Xuan H, Chen W, et al. Ductal adenocarcinoma of the prostate: immunohistochemical findings and clinical significance. Onco Targets Ther, 2013; 6: 1501-1506.
6. Jardel P, Debiais C, Godet J, Irani J, Fromont G. Ductal carcinoma of the prostate shows a different immunophenotype from high grade acinar cancer. Histopathology, 2013; 63: 57–63. doi: 10.1111/his.12129.
7. Morais CL, et al. PTEN loss and ERG protein expression are infrequent in prostatic ductal adenocarcinomas and concurrent acinar carcinomas. Prostate, 2015; 75: 1610–1619. doi: 10.1002/pros.23042.
8. Epstein JI, et al. The 2014 International Society of Urological Pathology (ISUP) Consensus Conference on Gleason Grading of Prostatic Carcinoma: Definition of Grading Patterns and Proposal for a New Grading System. Am. J. Surg. Pathol, 2016; 40: 244–252.
9. Amin A, Epstein JI. Pathologic stage of prostatic ductal adenocarcinoma at radical prostatectomy: effect of percentage of the ductal component and associated grade of acinar adenocarcinoma. Am J Surg Pathol, 2011 Apr; 35(4): 615-619. 10.1097/PAS.0b013e31820eb25b.