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Case Report

Multimodality approach to imaging giant multilocular cystadenoma of the prostate: A rare entity

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ABSTRACT

Giant multilocular cystadenomas of the prostate or seminal vesicles are rarely reported in literature. We present a case of a 76-year-old male presenting with lower urinary tract symptoms initially perceived as symptoms of benign prostatic hyperplasia. The patient was investigated by employing a multimodality imaging approach of the prostate that included ultrasound, computed tomography, and magnetic resonance imaging, which resulted in an incidental finding of large multiloculated benign cysts originating from the prostate, confirmed by pathological study. This case report highlights the multimodality imaging approach in the detection and diagnosis of this rare disease.

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Introduction

Multilocular cystadenoma of the lower genitourinary tract are benign lesions that originate from the prostate, less frequently from the seminal vesicles [1] and Cowper's glands [2]. It is usually characterized as multi-locular cysts that vary in size and location, most commonly between the rectum and the bladder. The presence of these cysts clinically manifest as obstructive and irritative lower urinary tract symptoms such

as frequency, intermittency, urinary retention, infertility, and even constipation due to their mass effect on the rectum [3].

Albeit most reported cases describe complete surgical excision as a way to alleviate symptoms, alternatives have been described such as a minimally invasive transurethral resection of the prostatic cysts [3]. Here in we describe a case of multilocular cystadenoma of the prostate in a 76-year-old man, initially presenting with lower urinary tract symptoms. Our diagnosis was radiologically foreseen, and consequently confirmed pathologically following surgical resection.

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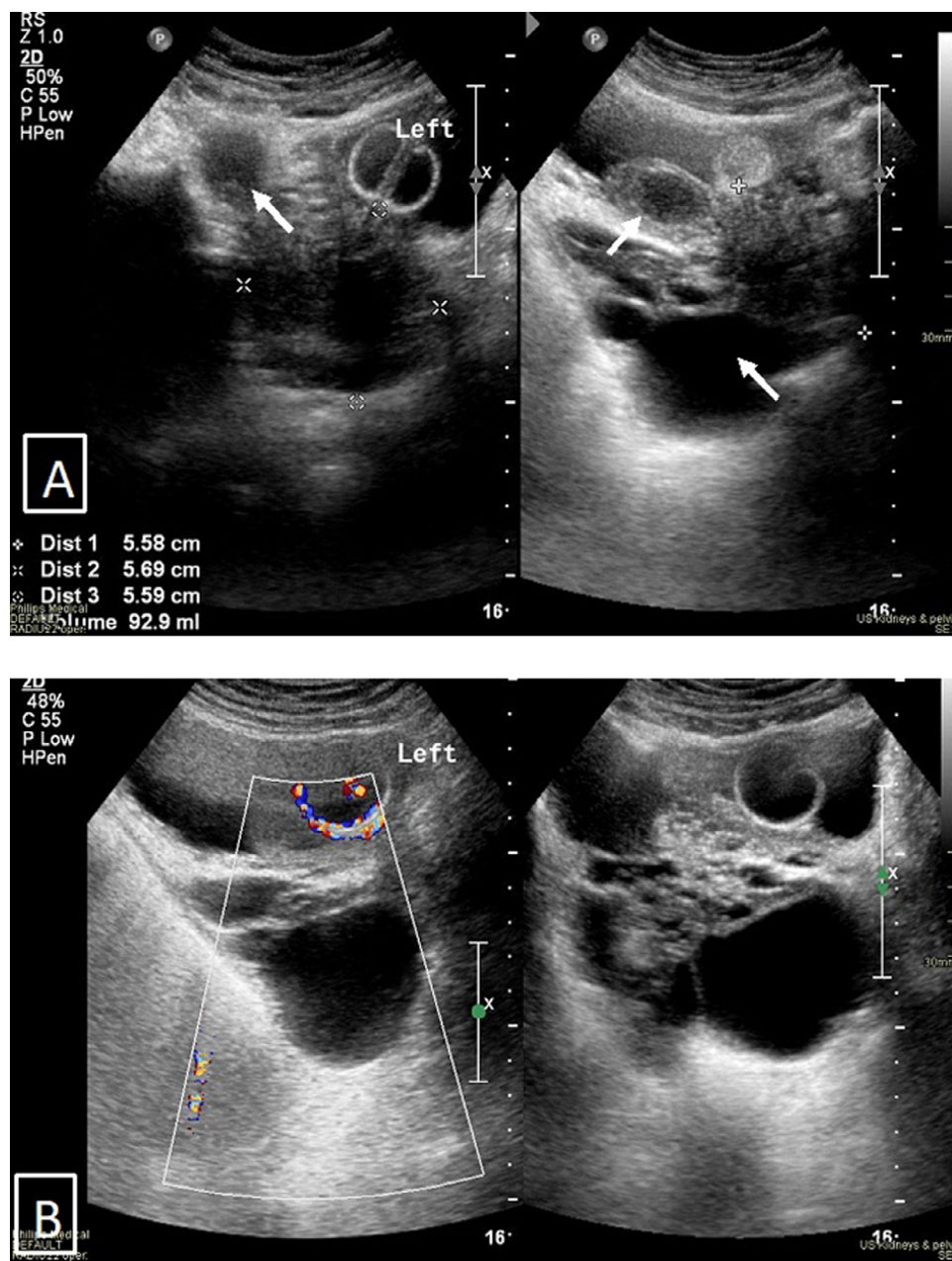


Fig. 1 – (A) A transabdominal ultrasound examination of the pelvis revealing the approximate contour of the prostate, measuring 5.58 x 5.69 x 5.59 cm, corresponding to a size of 93 mL. The prostate shows heterogeneous echotexture with multiple medium to large cystic components (arrows). The indwelling catheter balloon is noted within the bladder. **(B)** Color flow Doppler of the prostate and surrounding cystic lesion showing no blood flow in them consistent with being cystic in nature.

Case presentation

A 76-year-old male patient with a previous medical history of coronary artery disease and chronic kidney disease with a baseline creatinine of 2.6 mg/dL and glomerular filtration rate (GFR) value of 21 mL/min/1.73 m² presented with obstructive lower urinary tract symptoms of incomplete voiding and hesitancy. On digital rectal exam, the prostate was enlarged and smooth. He was initially diagnosed with benign prostatic

hyperplasia and started on dual therapy with Alfuzosin and Finasteride.

At 3 months follow-up, he reported only a mild improvement of symptoms; hence, further investigations were warranted. A transabdominal ultrasound of the abdomen and pelvis with color flow Doppler was performed as the initial line of investigation. A large prostate was noted measuring approximately 92 mL, with heterogeneous architecture and multiple small to large cystic lesions, with absent flow on Doppler (Fig. 1). Consequently, in order to delineate the pelvic mass, an

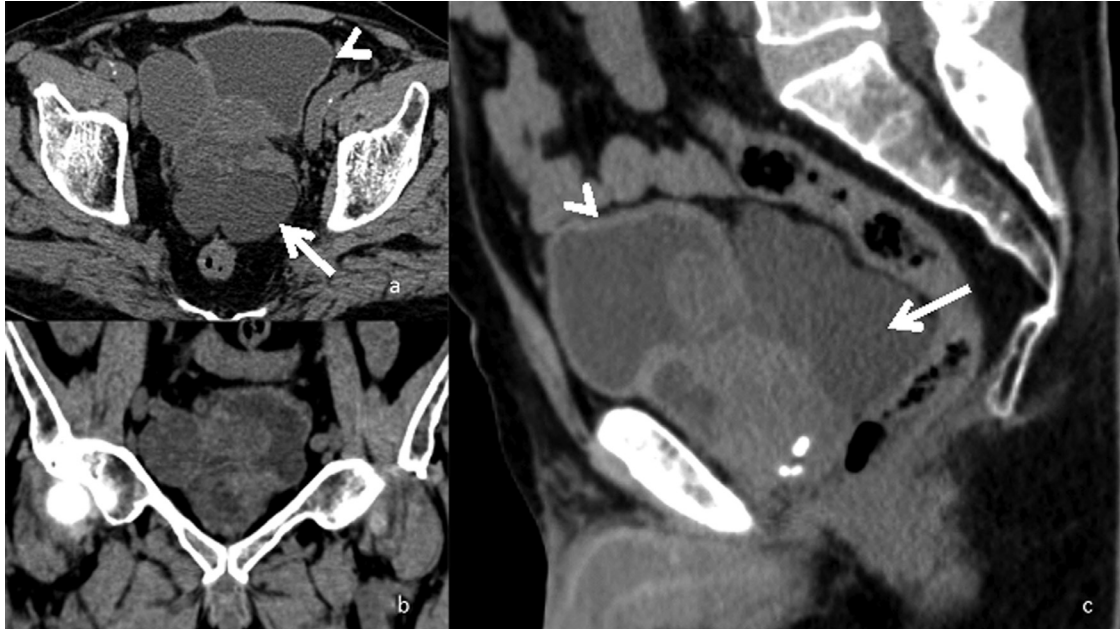


Fig. 2 – An unenhanced Computed Tomography (CT) scan of the abdomen and pelvis (A: axial; B: coronal; C: sagittal) showing a large multiloculated mass (*arrow*) arising from the prostate gland and measuring around 12 × 6.7 × 5.2 cm in its AP, transverse and craniocaudal dimensions respectively. The seminal vesicles are entrapped within this multilocular cystic lesion. The mass is seen extending anterior toward the abdominal wall and pushing the bladder (*arrowhead*) laterally. Posteriorly, the mass is seen almost abutting on the rectum.

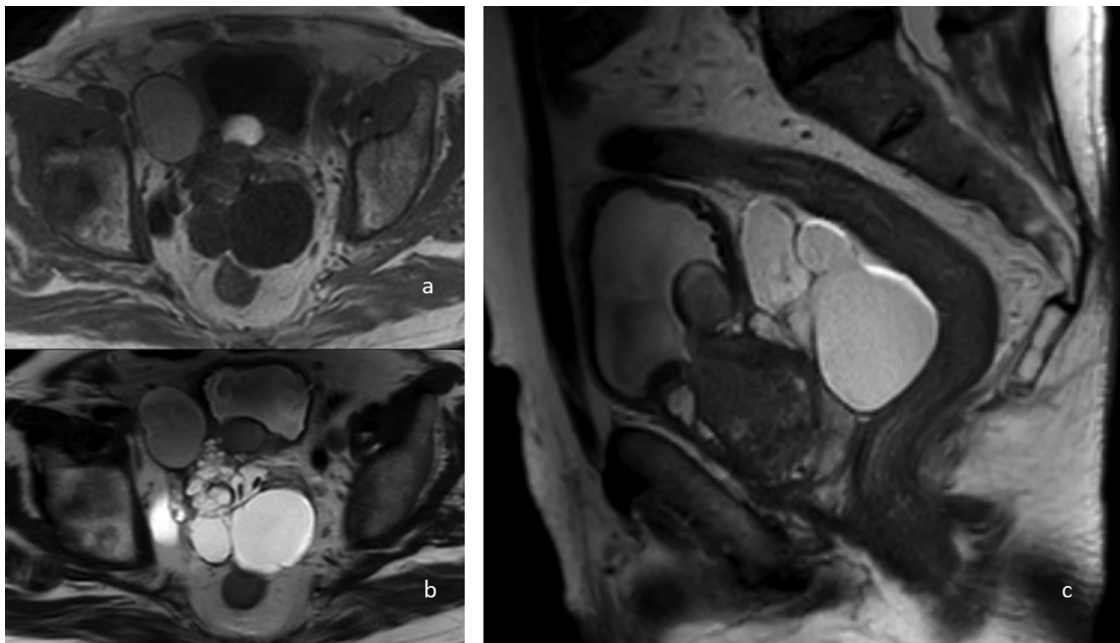


Fig. 3 – Multi-parametric Magnetic Resonance Imaging (mpMRI) of the pelvis (prostate protocol) of various sequences. (A) Axial view of a T1-weighted image showing innumerable number of homogenous and heterogeneous cysts arising from the prostate, the largest measuring 40 × 51 mm, just anterior to the rectal wall. The bladder is seen collapsed and pushed laterally. (B) Axial view of a T2-weighted image showing again nearness of the cysts to the rectum posteriorly. (C) Sagittal view of a T2-weighted image showing the mass abutting on the rectum posteriorly.

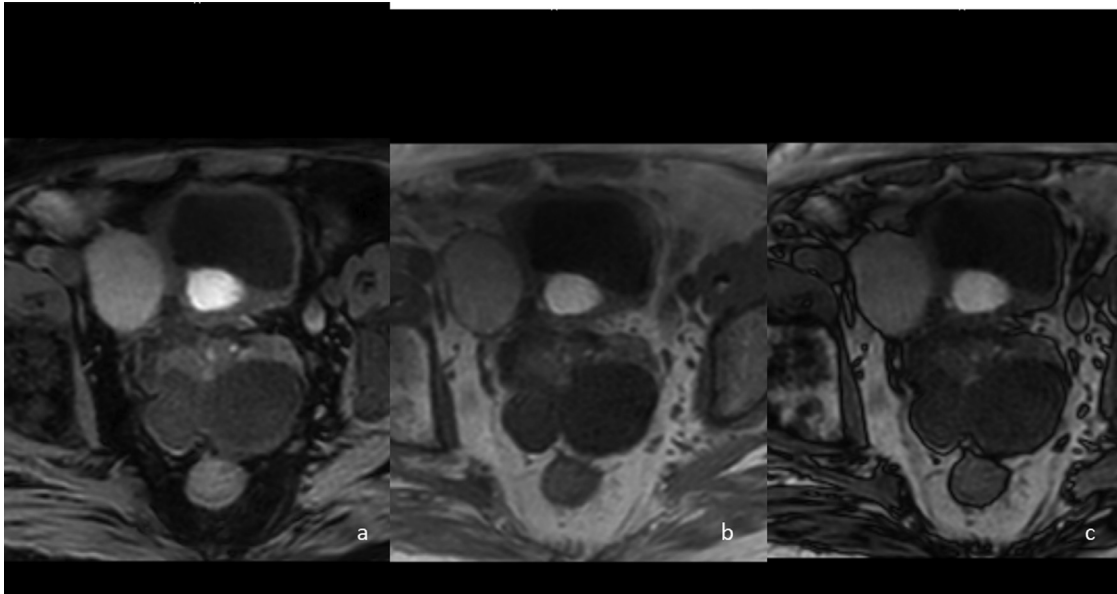


Fig. 4 – Multi-parametric Magnetic Resonance Imaging (mpMRI) of the pelvis (prostate protocol) of various post contrast sequences. A 4.5 cm locule, adjacent to the right bladder wall, contains hemorrhagic or proteinaceous fluid (A) gradient echo sequence image. (B) in phase water sequence. (C) out of phase lipid phase.

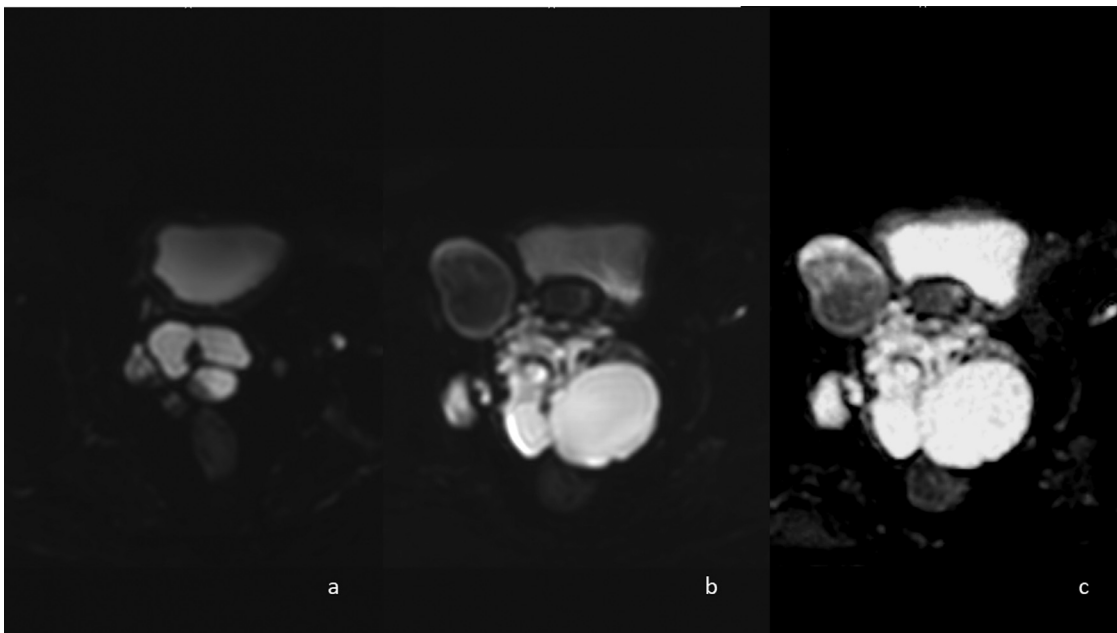


Fig. 5 – Diffusion-weighted (DW) magnetic resonance imaging with various gradient strength (b-value). (A) $b = 0$. (B) $b = 100$. (C) Apparent Diffusion Co-efficient (ADC) image with no reduced signal appearing on high b value (1000 s/mm^2).

enhanced Computed Tomography (CT) scan of the abdomen and pelvis was attained demonstrating a large multiloculated mass arising from the prostate gland and measuring around $12 \times 6.7 \times 5.2 \text{ cm}$ (Fig. 2). The seminal vesicles were entrapped within this multilocular cystic lesion. The mass was extending anteriorly and shifting the bladder laterally.

A prostate specific antigen level was taken showing an elevated value of 11.6 ng/mL , upon which a multiparametric

magnetic resonance imaging (MRI) of the pelvis (prostate protocol) was then requested (Fig. 3). Again, noted was a large multi-loculated cystic lesion centered along the superior aspect of the prostate, between the prostate gland and seminal vesicles, and splaying the seminal vesicles. The lesion measured at least $7.3 \times 6 \times 8.8 \text{ cm}$. Some of the locules contained simple appearing fluid while others contained hemorrhagic or proteinaceous fluid. Soft tissue nodules were absent from any

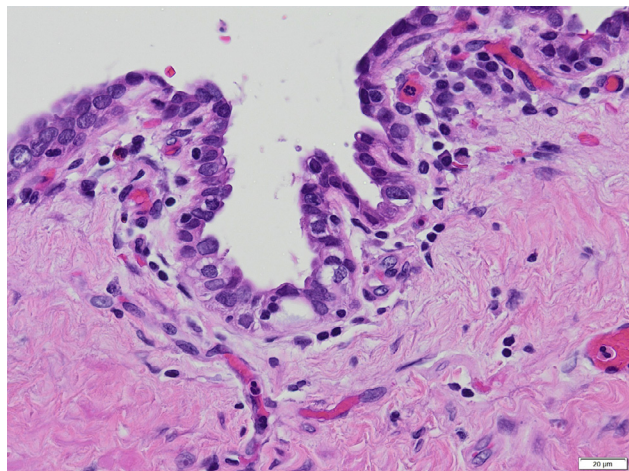


Fig. 6 – Microscopic examination using the Hematoxylin & Eosin (H&E) stain, 100x magnification) showing epithelial layer formed of cuboidal cells.

of the locules. There was no lymphadenopathy noted in the abdomen or pelvis.

Based on the multimodality radiological findings, a tentative diagnosis of prostate multiloculated cystadenoma was reported pending histological and pathological confirmation. Furthermore, the patient underwent laparotomy where the large cystic mass, along with the prostate and seminal vesicles, were identified and completely resected with minimal blood loss during the procedure. Histological findings were in congruence with our radiological evaluation of the disease (Fig. 4).

Discussion

Multilocular prostatic cystadenoma is a benign cystic lesion that is rarely reported in literature. It is usually a challenging radiological diagnosis often entailing a histopathological confirmation [4]. There have been only a few reported cases so far, making the diagnosis as well as the therapeutic modality, a challenge to both the radiologists and urologists alike. It is usually a retrovesical mass that compresses on pelvic organs leading to obstructive voiding difficulties or in some cases lower abdominal discomfort [5]. Similar to our case, most patients are initially misdiagnosed with benign prostatic hyperplasia and so, these lesions are accurately diagnosed upon further investigation for the above symptoms either by CT and/or MRI.

Radiological findings consist of a retrovesical or retroperitoneal multicystic mass, which is either attached to the prostate by a pedicle or completely separated from it [6,7]. Several differentials need to be taken into consideration prior to surgical excision including prostatic, mullerian, seminal vesicle cysts, diverticulum of the ejaculatory duct or the ampulla of the vas deferens, teratoma, lymphangioma [4], as well as prostatic sarcoma, leiomyoma, or a phyllode-type of hyperplasia [8]. The absence of a unilateral renal agenesis rules out

Zinner's syndrome, which is a constellation of congenital abnormalities secondary to embryological arrest involving the Mullerian duct [9]. In our study, we demonstrated that both CT and MRI adequately visualized the seminal vesicles and prostate gland which tapered our differential diagnosis.

After recognizing the imaging patterns, treatment of this rare entity is by complete surgical excision after which the diagnosis of multilocular cystadenoma of the prostate can be confirmed. It usually consists of prostate gland cysts aligned by 2 layers of columnar and cuboid cells along with a basally situated nuclei and a pale cytoplasm, as well as epithelial cells that stain positive for prostate specific antigen without any evidence of malignancy [6].

Authors' contributions

Degheili J.A. and El-Asmar J.M. carried out the literature review and wrote the initial draft of the manuscript, incorporating all changes and revisions advised, thereafter, by the authors, to achieve the final version of the manuscript. Saade C. and Dergham M.Y. assisted with the literature review, acquisition of the radiological images, and initial drafting of the manuscript. All authors have agreed on the final version of the manuscript prior to submission.

Consent

A written informed consent was obtained from the patient himself for the publication of this case report, along with all corresponding figures. A copy of the written consent is available for review by the Editor-in-Chief of this journal, upon his request.

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