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Primary adenocarcinoma of the seminal vesicles in Port Harcourt, Nigeria; Our experiences: Review of current diagnosis, treatment methods and outcome

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Abstract

Introduction: Primary tumors of the seminal vesicles are rare. The aims of this study are to present the case of a 32-year old man with advanced primary adenocarcinoma of the left seminal vesicle (PSVCA) that simulated features of prostatic neoplasm. Challenges encountered in its diagnosis are highlighted, and the literature reviewed to compare our experiences with current views of others on precise diagnosis of the tumor, its treatment methods and outcome.

Materials and Methods: Consecutive male urology patients seen at UPTH, Port Harcourt, Nigeria were evaluated clinically and with relevant investigations. Two patients who had provisional diagnosis of PSVCA had operations/ post-operative specimen histology. One had confirmed diagnosis of PSVCA, was further treated, followed up and reported. Data were collected simultaneously with patients' services.

The PubMed/Medline and PubMed Central databases were searched for articles on clinical, immune histochemical features, treatment and outcome of PSVCA. Data on these features were presented in tables.

Results: Of two presumptively diagnosed patients, one (32-year-old) had histological confirmation of primary adenocarcinoma of the left seminal vesicle.

Radical surgery with urinary diversion, and either neoadjuvant or adjuvant androgen deprivation therapy, or cytotoxic chemotherapy, or adjuvant radiotherapy were the common treatment options found on literature review.

Conclusion: The reported patient in this study had good post-operative performance but follow-up period was short. Currently, histopathologic and radiologic diagnostic methods are reinforced with immune histochemical techniques for precise diagnosis of PSVCA. Radical surgical therapy with neoadjuvant or adjuvant therapy are currently favored. Immune histochemical facilities should be provided at our center.

Keywords: Primary Adenocarcinoma; Seminal Vesicles; Port Harcourt; Nigeria; Treatment; Outcome

1 0 Introduction

Primary adenocarcinoma of the seminal vesicles (PSVCA) is a rare tumor. Only 60 cases of it have been reported in the world literature [1]. Due to the retro vesical location of the seminal vesicles, and their close anatomical relationship with the prostate gland, urinary bladder and the rectum, early clinical manifestations of primary malignant lesions of the seminal vesicles simulate, and may be concealed by features of primary malignancies of the prostate, urinary bladder and the rectum, or their secondary metastases in the seminal vesicles [2]. Common malignant tumors of the prostate and seminal vesicles, which also arise in the prostate gland, urinary bladder and the rectum, are adenocarcinomas [3].

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Adenocarcinoma of the prostate gland, which often invades the seminal vesicles, or may coexist with primary adenocarcinoma of the seminal vesicles, is the most common malignancy in ageing and aged Nigerian men, and it is the most common cause of cancer mortality in this population of Nigerians [4]. It may be one of the most commonly investigated malignancies in Nigeria. In clinical practice, for better definition of treatment approaches, and because primary adenocarcinoma of the seminal vesicles has very poor prognosis, and requires early diagnosis and early treatment [5], it is usually necessary to differentiate primary adenocarcinomas of the seminal vesicles from those arising primarily from these contiguous organs. We decided to carry out this study because of challenges we encountered in the diagnosis and treatment of primary adenocarcinoma of the seminal vesicles, which we believe may actually be more common than current findings. We aim to present our findings in the patient with adenocarcinoma of the seminal vesicle we managed, and to compare same with the views and recorded experiences of other clinicians on the management of this malignancy worldwide.

2 Material and methods

This study was carried out at University of Port Harcourt Teaching Hospital (UPTH), Port Harcourt, Nigeria from 01/01/2017 to 30/9/2022. Consecutive male patients that presented to the Urology Unit of the hospital for routine or emergency urological services were evaluated clinically and with relevant laboratory tests as part of their routine clinical services. Those that presented with lower urinary tract symptoms, features of prostatic and seminal vesicle diseases, hematuria, infertility, haematospermia, pelvic pains and swellings, and features of lower urinary diseases were further studied. Age and other socio-demographic data, presenting complaints, duration of symptoms, previous treatments and past medical and surgical histories were noted. Each patient had detailed general and systemic physical examinations. Abdominopelvic examination, including digital rectal examination (DRE) were done to examine the prostate, seminal vesicles, sacrum, pelvic side walls and the rectum.

Each patient had the following tests: - Full blood count, renal function tests (serum electrolytes, urea and creatinine assays), serum prostate-specific antigen test, urine microscopy, culture and antibiotic susceptibility testing, urine cytology and HIV 1and 2 serological tests. Abdominopelvic ultrasound scan with trans-rectal ultrasonography of the prostate and seminal vesicles were done. Intravenous urography (IVU), MRI and CT scan of the pelvis and abdomen were done on patients that presented with intraabdominal or pelvic lesions or tumors. Trans-rectal prostate biopsy was done on every patient that presented with features of prostate cancer. Trans-rectal biopsy of the seminal vesicle tumor was carried out.

2.1 Literature search

We used search terms ‘Primary Cancer of the seminal vesicles’, ‘premalignant lesions of the seminal vesicles’, ‘adenocarcinoma of the seminal vesicles’ and ‘primary tumors of the seminal vesicles’ to search the PubMed/ Medline and PubMed Central databases for publications made on the subject during the study period. Related articles and full texts of the publications were studied and cited as references. Other relevant texts in the English Language were also consulted. Data obtained were gleaned and presented in tables.

3 Results

Two patients had features of adenocarcinoma of the seminal vesicles during the period of this study but only the one presented here had histological confirmation. The literature search produced mainly case reports and heterogeneous reports. Because of the heterogeneous nature of the reports we sifted out original studies that we considered relevant to parts of this study and categorized them as (i) studies on clinical features of primary adenocarcinoma of the seminal vesicles (ii) studies on immune histochemical phenotype of primary adenocarcinoma of the seminal vesicles, and (iii) studies on treatment and outcome. Few studies gave combinations of reports. These reports are presented with their references as tables 1, 2 and 3.

3.1 Case report: Patient 3.1

A 32-year old Army Sergeant presented with history of painless hematuria of 8months duration, and storage lower urinary tract symptoms of about 2 months. He also had severe deep pelvic pain, and difficulty in walking. There was supra pubic tenderness but no masses were palpated per abdomen. Digital rectal examination revealed a huge, firm mass protruding into the rectum from the anterior rectal wall. A provisional diagnosis of bleeding benign prostatic hyperplasia (BPH) was made.

Serum PSA was 0.8ng/ml. Cystoscopy revealed no evidence of bladder cancer. Barium enema showed no synchronous rectal lesions. Intravenous urography showed evidence of bilateral obstructive uropathy with urinary bladder displaced to the right but no features suggestive of upper tract malignancies (figures 1-2). Abdominopelvic ultrasound scan (USS) was done which showed an echo complex mass measuring 82mm by 90mm visualized below the urinary bladder. The shadow of the urethral catheter was not seen traversing the mass but was rather displaced to the right of the patient. The mass equally displaced the urinary bladder anteriorly and to the right. This raised a doubt whether it was a prostate mass. Abdominopelvic CT scan showed a heterogeneously enhancing mass of weight 789 g (Figure 3). Differential diagnoses of benign prostatic enlargement, rhabdomyosarcoma, and pelvic abscess were made.

He had pelvic exploration through a midline sub umbilical incision. Local circumstances favored removal of almost all the mass except about 0.5 g of it which was adherent to the prostate gland and the rectal wall. The patient did not give consent for pelvic exenteration and urinary diversion which we considered would have offered the best chance of achieving tumor-free margins. The patient had uneventful postoperative recovery. He passed clear urine after removal of the urethral catheter. Histology showed adenocarcinoma of the seminal vesicle. He was booked for adjuvant radiotherapy but was lost to follow up 6 months after discharge.

Figures 1A, 1B and 1C are two intravenous urographs and a transverse section of contrast-enhanced CT scan graph, respectively of the patient.

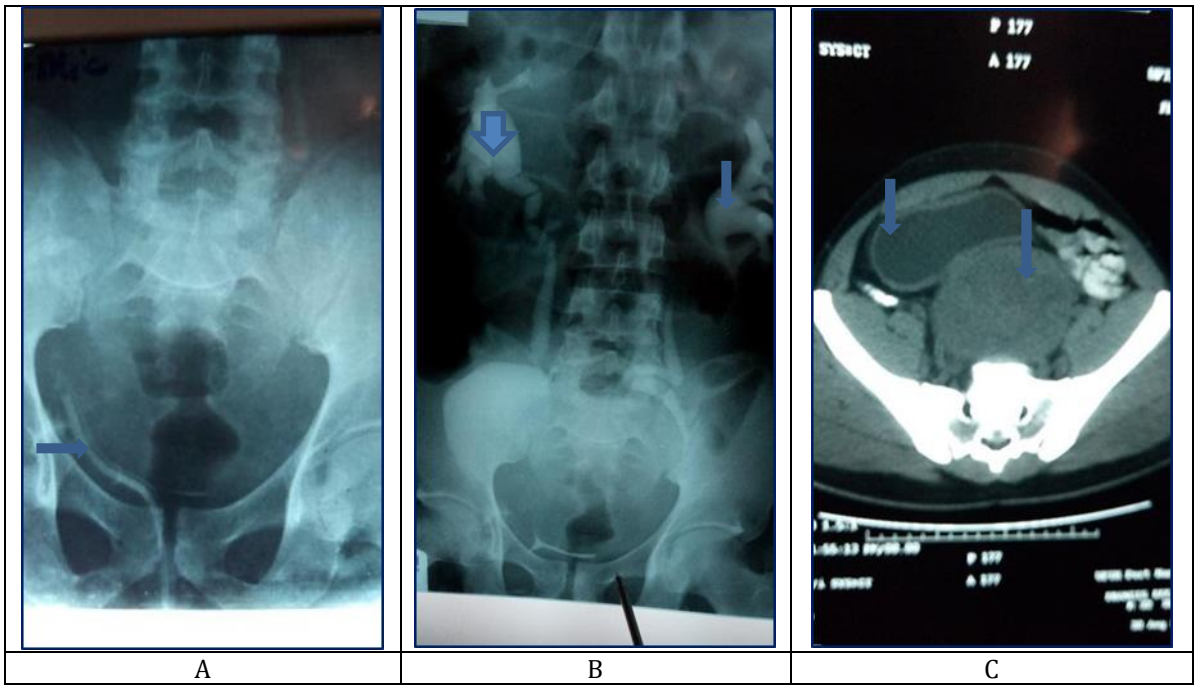

Figure 1 A and B are intravenous urographs of Patient 3.1, C is a transverse pelvic CT scan graph of the same patient: A, This shows the post micturition phase of intravenous urography (IVU). The constrast-opacified urethral catheter (marked with the arrow) is deviated to the right. B, bilateral hydroureteronephrosis resulting from the huge pelvic mass (distended renal pelvis arrowed on each side); C, Contrast-opacified CT scan graph of the pelvis showing a pelvic mass that typically resembles a prostate mass. Urine-filled urinary bladder is compressed by the mass and displaced to the right of the patient (arrow)

3.2 Tables: The tabulated results of literature search are presented as Tables 1, 2 and 3 to show features, immune histochemical phenotype, treatment and outcome respectively of primary adenocarcinoma of the seminal vesicles.

Table 1 Clinical and Laboratory Features of Primary Carcinoma of the Seminal Vesicles (S V), with References, from literature Search

Reference; Authors/Year of publication	**AGE (Years); No. of Patients**	**Type of carcinoma of seminal vesicle (SV) / or other organ**	**Clinical and laboratory features**
Itami Y et al [6] Hinyokika Kiyo2012 Jul	70 yrs.; 1	Primary PCa (low serum PSA 1.83ng/ml) + SV metastasis	Gross haematuria; haematospermia; MRI features of cystic formation of right SV; biopsy-proven PCa but immunostaining for PSA negative with core needle biopsy; bloody SV cyst fluid cytology revealed no cancer cells; urine cytology was class III; Finally, post total prostatectomy specimen immune-stained positive for PSA. Final diagnosis PCa (pT3b) with SV metastasis.
Lee H B et al [7]. Korean J Radiol 2007 May-Jun	41 yrs.; 1	Primary mucinous Adenocarcinoma of SV	Terminal gross hematuria
			History of previous prostatitis; normal serum markers for PCa; Normal CEA
Nowallas M et al[8] Clinical Imaging 2011 Nov-Dec Apr.	48 yrs.; 1	Primary Adenocarcinoma of SV	Diagnostic test, MRI for assessment of tumor and delineation of anatomical details of the lesion
Egevad L et al [9]. Urology 2007 Apr	1 patient.	Primary adenocarcinoma of SV	Findings suggestive of SV origin "Papillary histological type, sometimes with mucinous differentiation". Solid or cystic or a combination of both; Characteristic reactions to immune histochemical stain**.**
Kim Younghoon et al [10]. J Pathol Transl Med 2015 Jan	41 yrs.; 1	Squamous cell carcinoma (SCC) (Poorly differentiated) of SV	Zinner syndrome (Mullerian duct abnormality+ Unilateral renal agenesis + ipsilateral seminal vesicle cyst + ejaculatory duct obstruction)
			Gross haematuria x 2 and half months;
			History of TURP, SPC, and bougienage 12 yrs. previously
			SV cyst with multiple stones
			Enlarged prostate, hard prostate compressing wall of rectum
			Urine cytology negative for malignant cells
Tang K et al [11]. Mol Clin Oncol 2016 Mar	26 yrs.; 1	Primary SCC of SV, moderately differentiated	Difficulty in passing urine x 10 months
			Gross haematuria x 7 months. History of cryptorchidism + orchidopexy, hypospadias repair 3-9yrs previously.
Wang J, et al [12]. Int Urol Nephrol 2013 Feb	54 yrs.; 1	Primary SCC of SV	Intermittent painless gross hematuria for 6 months. Diagnostic tests- USS, CT-Scan MRI, trans rectal biopsy, Histology of post-surgery specimen. Trans rectal needle biopsy finding-"severe chronic inflammation"

CA-125, cancer antigen-125; PCa, prostate cancer (adenocarcinoma of the prostate); SV, seminal vesicle, SCC, squamous cell carcinoma; TURP, transurethral resection of the prostate; CEA, carcinoembryonic antigen; SPC, suprapubic cyst ostomy; USS, ultrasound scan; yrs., years; PSVCA, primary adenocarcinoma of the seminal vesicle

Table 2 Immune histochemical stain Characteristics of Primary Carcinoma of the Seminal Vesicles (SV) and other Adenocarcinomas that usually invade the Seminal Vesicles (with references) from Literature Search

Reference; Authors/ Journal/ year of publication	**Type of seminal vesicle carcinoma**	**PSA**	**CA-125**	**CK 7**	**CK 20**	**CEA**	**AFP**	**p63**	**ßHcg**	**Vimentin (Vim)/ Others**
Dell' Atti L [13] Rare Tumors 2016 Mar	Primary adenocarcinoma of the seminal of SV	[-]	[+]	[+]	[-]	[+]	[-]		[-]	
Lal H et al [14] BMJ Case Rep 2017	Primary adenocarcinoma of the seminal vesicle	[-]	[+]	[+]	[-]	[-]		[+]		PAP [-]
Ormsby AH et al [15]. Mod Pathol 2000 Jan	Primary adenocarcinoma of SV	[-]	[+]	[+]	[-}					PAP [-]
	Mullerian duct cyst adenocarcinoma		[-]							
	Urinary bladder transitional cell carcinoma		[-]		[+]					
	Rectal adenocarcinoma		[-]		[+]					
	Urinary bladder adenocarcinoma		[-]							
	Prostatic adenocarcinoma	[+]	[-]							PAP [+]
Yin T et al, [16] Medicine (Baltimore) 2018 Oct	Primary adenocarcinoma of SV	[-]	[+]	[+]	[-]	[-]				PAP [-]
	Prostate cancer	[+]	[-]	[-]	[-]	[-]				PAP [+]
	Colorectal cancer	[-]	[-]	[-]	[+]	[+]				PAP [-]
	Urinary bladder cancer	[-]	[-]	[+]	[+]	[+]				PAP [-]

PSA, prostate-specific antigen; SCC, squamous cell carcinoma; CA-125, cancer antigen 125; CK 20, cytokeratin 20; CK7, cytokeratin 7; p63, protein 63; P504S, protein 504S marker; PAP, prostatic acid phosphatase; AFP, alpha-fetoprotein; MVAC, methotrexate, vinblastine, doxorubicin (Adriamycin), cisplatin; ADT, androgen deprivation therapy; TRUS, trans rectal ultrasonography; [-], Negative; [+], Positive.

Reports with treatment modalities were reviewed. Outcome of treatment and methods were summarized in Table 3 with references.

Table 3 Treatment Methods, Features and Outcome of Treatment of Patients with Carcinoma of the Seminal Vesicle (SV) (with References) from Literature Search.

Reference: Author/Journal/ Year of publication	Type of Carcinoma/ Features	Adjuvant/ Neoadjuvant treatment	Definitive treatment / outcome
Deptala A et al [17] Onco Target	Primary adenocarcinoma of the seminal vesicles, Features:-		Androgen deprivation therapy using flutamide.

Ther 2016 Jul (Online)	ipsilateral renal agenesis, low back pain x 4 months, anorexia, weight loss, constipation, frequent micturition, late presentation		Died a few weeks of treatment
Eken A et al [18], Can Urol Assoc J 2012 Dec	Primary adenocarcinoma of the seminal vesicles:- haematospermia- 3 episodes x 3 months; large pelvic mass obstructing the rectal lumen; History of TURBT.		Simple excision of the tumor, rupture of cystic components intra-operatively; Outcome- 24 months survival after surgery.
Bhat A et al [19] BMJ Case Rep 2019 Dec (Online)	Moderately-to-poorly differentiated adenocarcinoma of the seminal vesicle; Features:- patient 28yrs old, haematospermia + hematuria, dysuria, pain on defecation, pain at perineum; Zinner's syndrome; CT scan, huge pelvic mass, DRE- supra prostatic mass was felt	6 cycles of adjuvant carboplatin + paclitaxel. Active surveillance with PET scan+ MRI	Robotic assisted Laparoscopic SV cyst resection; right ureterectomy. Outcome: Well x 6 years post-surgery; prostatic urethral recurrence after then; Trans urethral excision of recurrent nodule; Repeat of carboplatin+ paclitaxel therapy; survival till report.
4 Thiel R et al [20]. J Urol 2002 Nov Thiel R et al. J Urol 2002 Nov	Primary adenocarcinoma of SV; 2 local cases + 49 cases from the literature		Radical surgery + androgen deprivation therapy or radical surgery +adjuvant radiotherapy suggested. Long term remission achieved.
5 Lee H B et al [7]. Korean J Radiol 2007 May-Jun	Primary mucinous adenocarcinoma of SV cyst.		Surgery: Left nephrectomy indicated by renal dysgenesis + left ureterectomy, removal of SV cyst+ partial cystectomy; No evidence of recurrence at 5 years of CT scan monitoring.
6 Thyavihally YB et al [21]. Urology 2007 Apr	Primary adenocarcinoma with isolated penile metastasis. Tumor was mucin-secreting, was cytokeratin20 positive and serum PSA negative.	6 cycles of neo-adjuvant cytotoxic chemotherapy with 5-fluorouracil, leucovorin and oxaliplatin	Surgery: Bilateral orchidectomy; Outcome- improvement subjective, regression of SV lesion was partial; Penile lesion regression was considerable. Patient developed lung metastasis and died.
7 Terrisse Safae et al [22]. Rare Tumors 2019 May	Primary adenocarcinoma of The seminal vesicle with pulmonary/prostate metastases; Features- azoospermia, perineal insensitivity, lumbar and rectal pains. Serum PSA-1.52 ng/ml.	Neoadjuvant cytotoxic chemotherapy with methotrexate, cisplatin, vinblastine and doxorubicin	Surgery:" cysto-prostatectomy + extended pelvic lymphadenectomy + enterocystoplasty; this surgery was performed one month after the neoadjuvant chemotherapy." Final diagnosis of SV origin of tumor was based on histology + negative staining with CK7, CK20, PSA, p63, and P504S. OUTCOME: Response of pulmonary nodules to MVAC=complete but recurred. Patient survived and had no

			recurrence 4 years after resection of pulmonary nodule.
8 Tochigi Kosuke et al [23]. Aktuelle Urol, 2021 Feb	Mucinous adenocarcinoma; Main symptom=haematospermia. MRI diagnosis=SV tumor infiltrating urinary bladder, prostate gland +the rectum; TRUS- guided core biopsy=adenocarcinoma; Lung CT scan=Pulmonary metastases found; Serum CA-125 concentration= high	Neoadjuvant ADT + cytotoxic chemotherapy using docetaxel, up to 12 courses.	Laparoscopic pelvic exenteration + creation of a neobladder. Outcome: Tumor free survival 19 months post-surgery.

PSA, prostate-specific antigen; SCC, squamous cell carcinoma; CA-125, cancer antigen 125; CK 20, cytokeratin 20; CK7, cytokeratin 7; p63, protein 63; P504S, protein 504S marker; PAP, prostatic acid phosphatase; AFP, alpha fetoprotein; MVAC, methotrexate, vinblastine, doxorubicin (Adriamycin), cisplatin; ADT, androgen deprivation therapy; TRUS, trans rectal ultrasonography.

4 Discussion

Although primary tumors of the seminal vesicles are currently considered rare, it appears such rarity may be within the context of current difficulties in localization of tumors of the glands. Better methods of localization of these tumors may latter prove this finding otherwise. Secondary tumors of the seminal vesicles on the other hand are commoner, and commonly arise from primaries in contiguous organs such as the prostate gland, urinary bladder or the rectum [15]. We undertook this study because of the challenges we encountered in the diagnosis and treatment of primary adenocarcinoma of the seminal vesicles.

The non-specific nature of the clinical features of adenocarcinoma of the seminal vesicles observed in this study, and the simulation of symptoms and signs of the bladder outlet obstruction due to other causes agree with findings of others (Table1). As seen in our patient in this study, our literature search has indicated that most of the cases presented with intermittent gross haematuria, haematospermia, pelvic pain or storage lower urinary tract symptoms. These symptoms, in urologic practice, are common indications for patients' evaluation for urinary bladder outlet pathologies, including prostatic diseases. [Table 1]. It is therefore important to routinely include differential diagnosis of seminal vesicle tumors in patients that present with lower urinary tract symptoms and/ or other features of bladder outlet obstruction. This practice may improve the index of suspicion for tumors of these vesicles among clinicians and improve management of the tumors. This conclusion cannot be made from this observational study. It requires further studies, but will agree with findings and opinions of others on this subject [20, 24, and 25]. As reported in previous studies by others, primary squamous cell carcinoma of the seminal vesicles, rather than adenocarcinoma of the organs, occurred due to chronic irritation of the seminal vesicle in Zinner's syndrome and chronic prostatitis, Kim Younghoon et al [Table 1]. Histopathology shall continue to play a prominent role in the differential diagnosis of these two primary tumors of the seminal vesicles because clinical and radiological features observed in different studies are similar (Table 1)

The various diagnostic armamentaria available in our center for diagnosis and localization of adenocarcinoma of the seminal vesicle are each not confirmatory of the primary source of seminal vesicle tumors. This scenario constitutes a limitation of this study. These diagnostic tests include the following: -

4.1.1 Digital Rectal Examination

Digital rectal examination as a diagnostic tool is an important aspect of pelvic examination. It may not reveal very early primary tumors of the seminal vesicle, especially in uncooperative patients with huge gluteal muscles, but a sufficiently enlarged pathological seminal vesicle may be felt as a mass protruding from the anterior rectal wall and usually needs to be differentiated from a prostate mass, rectal mass, or secondary tumors from other neoplasms. Digital rectal examination findings are therefore only suggestive of the absolute primary source(s) of palpated tumors.

4.1.2 Serum PSA

Serum PSA assay is an important diagnostic tool in evaluation of patients suspected to have adenocarcinoma of the seminal vesicles. Low PSA value in this patient is an important diagnostic clue. This is because seminal vesicle adenocarcinoma does not express PSA and prostate-specific acid phosphatase, (PAP) [15] However, it is known that serum PSA as a tumor marker for prostate cancer has low sensitivity for the tumor at its low values. Thus a patient may

have prostate cancer occurring with primary or secondary adenocarcinoma of the seminal vesicle at PSA levels within the normal reference levels of 0-4 ng/ml. This was the situation with the observations of Itami et al (Table 1). Furthermore, normal reference ranges of serum PSA are age-related [26]. What seems more plausible is to combine low serum PSA value in a patient with lack of immune staining for PSA to rule out the possibility of a prostate secondary in the affected patient as was done by these clinicians. This will not however exclude stromal prostatic tumors and anaplastic prostate tumors which are usually PSA negative[6].

Our literature search shows that current trend is the use of immune histochemical stains to differentiate between primary adenocarcinoma of the seminal vesicles and tumors originating from other organs (Table 2). There is convergence of opinions on the immune histochemical phenotype of primary adenocarcinoma of the seminal vesicles. For instance, the lesion stains negative for prostate-specific antigen, negative for prostate-specific acid phosphatase but stains positive for cancer antigen-125 (CA-125) and cytokeratin 7 (CK-7) (Table 2) . Neoplasms that commonly invade the seminal vesicle such as adenocarcinoma of prostate, all bladder adenocarcinomas, bladder transitional cell carcinoma, rectal carcinoma, and the very rare Mullerian duct cyst adenocarcinoma are all known to be CA 125 negative[5]. Thus negative staining for PSA/PAP and positive staining for CA125 could differentiate primary adenocarcinoma of the seminal vesicles from all other differential diagnoses enumerated above. The most consistent immune histochemical characteristic of the tumor is the positive staining for CA-125 and negative for PSA and PAP (Table 2).

4.1.3 Tissue histopathology

Tissue histopathology is important for diagnosis of PSVCA. Although a Tru-Cut biopsy will show the histologic pattern of an adenocarcinoma, it may not indicate the organ of origin. Specific immune stains as shown (Table2) will be required to exclude other organ as origin of tumors whenever Tru-Cut biopsy is used in the diagnosis of primary adenocarcinoma of the seminal vesicles [15]. However, using surgical specimens for diagnosis is easier. Dalgaard et al [27] provided 3 criteria that should be used whenever surgical specimen are evaluated for SVC. *These include:*

1. "A macro or microscopically verified carcinoma localized exclusively to the seminal vesicle,
2. Exclusion of primary carcinoma in any other part of the body, and
3. The tumor should preferably be a papillary adenocarcinoma that resembles the architecture of the non-neoplastic seminal vesicle".

In the case under review, Tru-Cut biopsy was deferred because of the degree of hematuria, but histopathology for the surgical specimen, and other ancillary investigations satisfied the first two criteria. Because of the stage of the disease in this patient however, evaluation for the third criteria was difficult. In this regard, immune staining would have been necessary for confirmation of the diagnosis. Immune histochemical stains were not available in our center at the time of this study. As part of diagnostic workup for hematuria, intravenous urography and CT scan were done for this patient not at the same time but at different times of clinic attendance by the patient. This revealed contra laterally displaced urinary bladder, the indwelling urethral catheter and its right shift from the midline, and the bilateral hydroureteronephrosis were important in differential diagnosis of the mass lesion (Table 1). A prostate mass usually elevates the base of the bladder on IVU, and a urethral catheter, if present should traverse the mass. Displacement of the bladder and the urethral catheter to the right suggests that a contra laterally placed pelvic mass may be responsible. Intravenous urography here played a vital indirect role in the diagnosis of the SV tumor.

Computed tomography scan, magnetic resonance imaging, and ultrasonography are useful in diagnosis and staging of seminal vesicle tumors, both at the early stage where they help to exclude carcinomas of adjacent organs like prostate, rectum and the urinary bladder, and at the advanced stages where they delineate the tumor focus [28]. In this patient, CT scan identified the mass as prostate mass because of the markedly increased size (789g) and the fact that the mass had extended to the midline (Figure 1C). However, USS (like the IVU) by showing the shadow of urinary bladder displaced laterally and the image of the urethral catheter not traversing the mass, clearly excluded a prostate mass.

Perhaps, because of the rarity of the tumor, no standard guidelines were seen in our literature search for the diagnosis, treatment and patients' follow up for primary adenocarcinoma of the seminal vesicles. Treatment methods seem to have been largely dictated by local circumstances at each center. However, most reports favored radical cysto-prostatectomy, bilateral seminal vesiculectomy with pelvic lymphadenectomy and urinary diversion for early disease. For the advanced tumor the choice of surgical treatment by some surgeons were neoadjuvant or adjuvant cytotoxic chemotherapy or androgen deprivation therapy (ADT) or adjuvant radiotherapy, in addition to varying degrees of radical surgery (Table 3).

The observed trend in the our diagnosis and treatment of primary adenocarcinoma of the seminal vesicles, which is similar to what we observed in the literature search, is that patients are exposed to too many tests for diagnosis, localization of the tumor and exclusion of synchronous primary tumors elsewhere in the body or their metastases, before definitive surgical management. Common experience shows that the current management the of the lesion may be associated with high cost of treatment, excessive exposure to radiation, inconveniences and frustration on the part of both patients and clinicians.

5 Conclusion

Primary adenocarcinoma of the seminal vesicle is rare. It has poor prognosis. Its clinical manifestations simulate, and may be concealed by features of more common primary and/or secondary lesions of the prostate gland, urinary bladder and/ or the rectum. Early diagnosis is difficult. Routine inclusion of immune histochemical stains when making histological diagnosis of tumors of the seminal vesicles or of organs contiguous with them may increase diagnostic rate of primary adenocarcinoma of the seminal vesicles, and increase clinical suspicion for the tumor among clinicians. The successful use of the immune histochemical phenotype of the tumor in its diagnosis has been amply reported in the literature.

Compliance with ethical standards

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Disclosure of conflict of interest

There is no conflict of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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