Transrectal Ultrasound in the Evaluation of Stromal Sarcoma of the Prostate

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Sarcoma of prostate origin is rare. The most common histologic type is leiomyosarcoma, followed by rhabdomyosarcoma and liposarcoma. Stromal sarcoma arising from the prostate is another very unusual type. Here, we report a case of prostatic stromal sarcoma and describe its features from transrectal ultrasound and magnetic resonance imaging studies. Related literature is also reviewed in our report.

KEY WORDS — prostate, stromal sarcoma, transrectal ultrasound

Introduction

The incidence of prostatic carcinoma in Taiwan has increased annually in the last 10 years, partially due to prostate-specific antigen (PSA) screening [1]. The common acinar prostate adenocarcinoma constitutes 95% of all malignant prostatic neoplasms and has a high rate of elevated PSA. However, patients with sarcomas of the prostate usually present with normal PSA level, and they may be diagnosed with the aid of imaging studies such as transrectal ultrasound (TRUS), magnetic resonance imaging (MRI) and TRUS-guided biopsy [2]. We present this case of prostatic stromal sarcoma (PSS), describing its imaging features before and after surgical intervention.

Case Report

A 43-year-old man was admitted for acute urinary retention. Digital rectal examination revealed a large prostatic mass with a rough uneven surface and stony hard nature. Serum PSA was 1.2 ng/mL and TRUS showed a large mass arising from the prostate, which contained multiple nodules with heterogeneous pattern on transverse view (Fig. 1A). A large nodule near the perirectal area could be identified in the sagittal section (Fig. 1B); the perirectal tissue plane between the nodule and rectum was poorly defined. TRUS-guided biopsy was performed; pathologic examination revealed diffuse infiltration of spindle cell, highly suspicious of stromal sarcoma. Further transurethral resection of the prostate was performed and the pathologic report of the specimen proved stromal sarcoma. MRI of the pelvis demonstrated a huge prostatic mass with heterogeneous pattern in the midsagittal view and a prominent nodule located near the perirectal area. The margin between the prostatic tumor and rectum was irregular and could not be clearly delineated (Fig. 2). Pelvic exenteration was suggested, but the patient refused to undergo colo-urinary diversion. He underwent...
radical prostatectomy, and the pathologic specimen showed a large prostatic mass (size, 9 × 6 × 4.5 cm) and a protruding nodule (size, 5 × 5 × 4 cm) located at the peripheral zone, close to the perirectal junction, as compatible with the ultrasonic picture (Fig. 1B). On the cut surface, diffuse prostatic tumor infiltration with necrosis was noted. Microscopically, there was a picture of stromal sarcoma with diffuse infiltrating nodules composed of overgrown neoplastic spindle cells (Fig. 3). On immunohistochemistry, these spindle cells were diffusely stained by vimentin, there was partial staining of CD34, and it was negative for CD117, cytokeratin, actin, desmin and S-100. Although there was no invasion of the urethra and seminal vesicles, the surgical margin between the rectum and tumor was not free as it correlated to the TRUS picture that demonstrated an ill-defined margin between the prostate and perirectal tissue (Fig. 1B). The patient developed dysuria and hematuria 1 month after surgery. TRUS showed recurrence of the tumor lesion around the bladder neck (Fig. 4), and further chemotherapy was arranged.

Discussion

Soft tissue sarcomas arising from the urinary tract and male genital tract are rare (2.7%) [3]. The most
common site of tumor origin is paratesticular, followed by the prostate/semenal vesicle, bladder and kidney. The most common histologic type is leiomyosarcoma, followed by rhabdomyosarcoma and liposarcoma. Other histologic sarcomas (angiosarcoma, synovial sarcoma, stromal sarcoma) are very unusual [3,4]. Gaudin et al [5] described a series of 22 tumors of sarcomatous origin, consisting of 18 cases which they described as prostatic stromal proliferation of uncertain malignant potential and four cases described as PSS, which are characterized by expansion of the prostatic stroma. TRUS is the screening study of choice in these patients with pelvic mass [2]. TRUS can also define the relationship of the mass to adjacent normal structure and provide more detailed information of possible local extent [6]. Unlike prostatic adenocarcinoma or transitional cell carcinoma involving the prostate which are predominantly hypoechoic, the echogenicity of prostatic rhabdomyosarcoma is similar to that of normal prostate [7] and heteroechoigenous appearance in other sarcoma of the prostate [8]. They might contain sonoluent foci representing hemorrhage or necrosis. In general, these prostate sarcomas are usually characterized by a bulky irregular prostatic mass [8,9]. The treatment of patients with poor prognostic prostatic sarcoma (high grade, > 5 cm) is with multimodality therapy, including surgery and chemotherapy [3]. However, multiple local recurrence is not uncommon, and TRUS is useful in evaluation of local invasion as well as response to treatment [7].

References