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Case report

Pelvic hematoma following transrectal ultrasound-guided prostate needle biopsy: A case report and literature review

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ABSTRACT

Transrectal ultrasound-guided prostate (TRUS-P) needle biopsy is a common procedure for detection of prostate cancer. Complications associated with TRUS-P biopsy are almost always minor and do not require hospitalization. Pelvic hematoma following TRUS-P biopsy is an extremely rare complication. Only a few cases have been reported in the past. Here we report the case of a 67-year-old man diagnosed with pelvic hematoma following TRUS-P biopsy who presented with tenderness in the lower abdomen and ecchymosis in the paraumbilical region, lower abdomen, and scrotum. To our knowledge, no other case has been reported in Taiwan. Therefore, we discuss this case report and review the literature associated with complication of TRUS-P biopsies.

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1. Introduction

Prostate cancer is common in geriatric populations. Since 1995, approximately 2,600,000 men in the United States have been diagnosed with prostate cancer, and nearly 375,000 of them have lost their lives to this disease.¹ Prostate cancer is also the seventh leading cause of cancer mortality in Taiwan. The overall incidence of prostate cancer in Taiwan increased by almost 50% from 1998 to 2007.² Also, the widespread use of prostate-specific antigen (PSA) measurement for screening in general population has led to a dramatic increase in the number of prostate biopsies performed in Taiwan. Consequently, complications associated with transrectal ultrasound-guided prostate (TRUS-P) needle biopsy need to be monitored carefully.

2. Case report

A 67-year-old Taiwanese man was diagnosed with benign prostate hyperplasia. Follow-up was conducted on an outpatient basis. A tumor marker screening test showed elevated PSA levels (7.114 ng/mL), the free-form PSA levels (0.624 ng/mL), and a decreased free-to-total PSA ratio (8.8%). Digital rectal examination revealed that the consistency of the prostate was firm and a hard

nodule was palpable in the left lateral prostate lobe. The prostate gland visualized using the transrectal ultrasound (TRUS) was 4.5 cm × 3.5 cm × 5.6 cm (width × height × length) with an estimated mass of 46.2 g. The patient had no medical history of antiplatelet or anticoagulant drug therapy. Under intravenous general anesthesia, standard 12-core biopsy was performed using TRUS-guided. Three cores each of prostate tissue were obtained from the left lateral, left paramedial, right paramedial, and right lateral prostate lobes. In addition, three cores were obtained from the hard nodule on the left lateral prostate lobe using digitally directed transrectal needle biopsy. Pathological analysis of the biopsies revealed benign prostate tissue.

The patient presented with lower abdominal tenderness and ecchymosis in the paraumbilical region, the lower abdomen, and the scrotum to the outpatient department 2 weeks after TRUS-P biopsy (Fig. 1). Physical examination revealed no peritoneal signs. Digital rectal examination revealed the same as prebiopsy findings. Computed tomography (CT) revealed a 5.34 cm × 9.75 cm × 9.95 cm (length × width × height) pelvic hematoma (Figs. 2 and 3) with an estimated volume of 269.38 mL. Laboratory examination showed a decrease in hemoglobin concentration from 17.2 g/dL to 12.9 g/dL since TRUS-P biopsy. Coagulopathy or bleeding tendency was not evident. Prophylactic antibiotics were not prescribed as the patient showed no signs of fever or infection during hospitalization. The patient's clinical condition was stable, so he was discharged and followed up on an outpatient basis. At 1-year follow-up, there were no symptoms of the hematoma recurrence, or presence of infection. The patient fit the normal life.

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Fig. 1. Ecchymosis in the paraumbilical area and the lower abdomen (arrows).

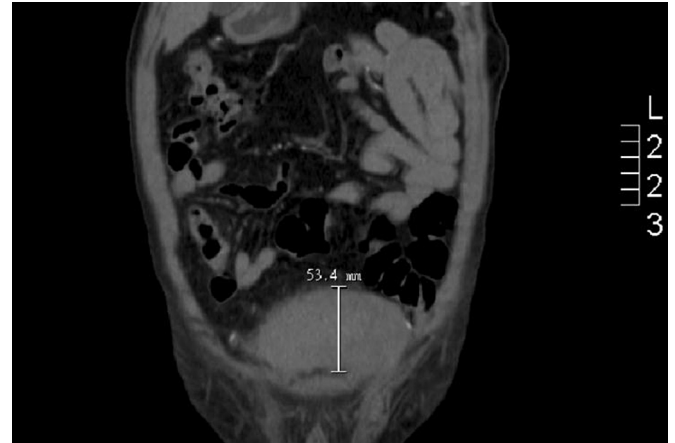


Fig. 3. Pelvic hematoma anterior to the urinary bladder (length).

3. Discussion

Prostate cancer is common in geriatric populations. Although serum PSA testing is the most reliable method of early detection, TRUS-P biopsy is still the gold standard technique to confirm the diagnosis of prostate cancer. TRUS-P biopsy enables sampling from palpable or nonpalpable lesions, including hypoechoic masses visualized using ultrasound. Some clinicians may perform staging biopsies to identify extraprostatic invasion, which helps in the selection of treatment options.³ TRUS-P biopsy may be associated with several complications, most of which are minor and do not require hospitalization.

Table 1^{4–9} lists the recent studies reporting complications related to bleeding after TRUS-P biopsy.^{4–9} In these studies, the incidence of hematuria varied due to differences in the definition of hematuria and timing of interview. Berger et al⁴ recorded the incidence of complications via personal or telephonic interviews 2 weeks after biopsy, and this incidence was much lower than that recorded in the study by Raaijmakers et al,⁵ wherein data on complications were collected 2–3 weeks after biopsy via questionnaires. Rietbergen et al⁶ also used a questionnaire to collect data regarding complications similar to that used by Raaijmakers et al⁵; therefore, the incidence of hematuria and hematospermia was similar in both studies. Djavan et al⁷ collected data regarding complications on the basis of a personal interview 7 days after biopsy. This shorter interval may account for the lower incidence of hematospermia (9.8%) in their study. A shorter follow-up period

may lower the incidence of hematospermia because many patients may not have had a chance to ejaculate. In another recent study, Kakehi and Naito⁸ reported a large review of medical records of 212,065 biopsies performed in Japan. Unfortunately, hematuria, hematospermia, and rectal bleeding were not defined in that study. Finally, Ghani et al⁹ reported a high incidence of bleeding complications in the first 7 days after TRUS-P biopsy, as assessed by questionnaire. Early assessment may be the reason for a higher incidence in their study compared with that in other studies.

Although bleeding complications are common, pelvic hematoma following TRUS-P biopsy is extremely rare. Wendel and Evans¹⁰ were the first to report this complication following TRUS-P biopsy in 1967. Limited case reports of patients with this complication have been published after the initial report. Most hematomas develop in the perivesical space, caused by injury to the periprostatic venous plexus, inferior vesical artery, and middle rectal artery.¹¹ These vascular structures can be injured during needle biopsy. The most common presentations include lower abdominal tenderness, ecchymosis, constipation, and difficulty in voiding, possibly because of compression from the hematoma on adjacent organs. In other cases, antiplatelet or anticoagulant drugs have been associated with pelvic hematoma following TRUS-P biopsy. Seymour and Oesterling¹¹ reported the case of a 79-year-old man with a history of hypertension and atherosclerosis on regular aspirin (325 mg qd) therapy. The patient withheld this information from the medical personnel prior to the TRUS-P biopsy.¹¹ The patient presented with an inability to void and defecate after the biopsy. CT scan showed a hematoma measuring 8 cm × 7 cm × 9 cm in the anterior rectal wall. Conservative treatment was followed. Six months later, the hematoma had shrunk and the symptoms had resolved. Hematomas have a risk of getting infected. Infectious



Fig. 2. Pelvic hematoma anterior to the urinary bladder (width × height).

Table 1
Published studies reporting bleeding complication rates after TRUS-P biopsy.

Authors	Patient/ biopsy number	Biopsy cores	Hematuria (%)	Hematospermia (%)	Rectal bleeding (%)
Berger et al ⁴	4303	NA	14.5	36.3	2.3
Raaijmakers et al ⁵	5802	6	22.6	50.4	1.3
Rietbergen et al ⁶	1867	6–7	23.6	45.3	1.7
Djavan et al ⁷	1015	8	62	9.8	2.1
Kakehi and Naito ⁸	212,065	≥6	12	1.2	5.9
Ghani et al ⁹	760	6–12	41.5	14.2	22.6

NA = not available.

Table 2
Case reports associated with pelvic hematoma following TRUS-P biopsy.

Age (y)	Symptoms	Site	Size	Anticoagulant/ antiplatelet	Time to symptoms (after biopsy, d)	Treatment	Ref.
66	Abdominal pain/suprapubic mass	Perivesical space	NA	None	0.2	Conservative treatment	10
61	Suprapubic pain/suprapubic mass/ecchymosis	Prevesical space	NA	None	NA	Conservative treatment	10
79	Suprapubic discomfort/perineal pain	Anterior rectal wall hematoma	262 mL	Aspirin 325 mg P.O Q.D	0.5	Conservative treatment	11
52	Lower abdominal pain/palpable mass	Prevesical hematoma	NA	None	<1	Conservative treatment	12
57	Fever/palpable mass	Prevesical hematoma	NA	None	18	Open removal of hematoma	12
86	Suprapubic tenderness/shock	Periprostata/perivesical	>2500 mL	None	Immediately	Open removal of hematoma	13
70	Constipation	Pelvic hematoma	468 mL	None	10	8 French Pigtail inserted to hematoma	14
63	Perineal pain/perineal ecchymosis	Postvesical hematoma	NA	None	90	Conservative treatment	14
67	Lower abdominal pain/periumbilical ecchymosis	Prevesical/perivesical hematoma	269 mL	None	14	Conservative treatment	Our case

NA = not available.

hematomas requiring antibiotic therapy have been reported. Choyke et al¹² reported the case of a 57-year-old man with infected prevesical hematoma following TRUS-P biopsy.

Treatment of pelvic hematoma following TRUS-P biopsy is still controversial. Conservative treatment is followed in most cases. Nevertheless, Mobly et al¹³ suggested that hematoma >2500 mL in volume should be surgically removed. Some urologists recommend drainage as well. Sacak et al¹⁴ reported the case of a 70-year-old male presenting with constipation 10 days after TRUS-P biopsy. Digital rectal examination, revealed a well-defined mass in the rectum. Suprapubic ultrasound revealed a 10 cm × 10 cm × 9 cm cystic lesion in the pelvis. Pelvic hematoma was diagnosed on the basis of these examinations. Transrectal ultrasound-guided insertion of an 8F pigtail catheter was performed for drainage of the hematoma. The hematoma had totally disappeared by Day 10 of therapy. Case reports associated with pelvic hematoma following TRUS-P biopsy are listed in Table 2.

In the case reported here, a 67-year-old Taiwanese man with no history antiplatelet or anticoagulant drugs therapy underwent TRUS-P biopsy. He presented to the outpatient department with lower abdominal tenderness and ecchymosis in the paraumbilical region, lower abdomen, and scrotum. CT scan revealed a hematoma of an estimated volume of 269.38 mL in the prevesical and perivesical space. This pelvic hematoma may have been induced by digitally directed transrectal needle biopsy of the left lateral hard nodule when the needle punctured the prostate capsule to injure the periprostatic venous plexus. To our knowledge, this is the first case of hematoma associated with TRUS-P biopsy encountered and reported in Taiwan. We share this rare complication to emphasize the importance of the awareness of risks associated with TRUS-P biopsy.

Conflicts of interest

The authors declare that they have no financial or non-financial conflicts of interest related to the subject matter or materials discussed in the manuscript.

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