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Portal vein thrombosis and splenic collection after transrectal prostate biopsy in Janus Kinase 2 positive myeloproliferative disorder

F. A. Maqboul, S. Tadtayev

ABSTRACT

Introduction: Transrectal ultrasound guided biopsy prostate biopsy has its infective complications especially in immunocompromised patients; portal vein thrombosis is a severe form of its complications. Case Report: A 66-year-old male, with background of myeloproliferative disorder (JAK2 positive). Underwent TRUS biopsy, later developed intra-abdominal sepsis with portal vein thrombosis and splenic collection. Multi-disciplinary team approach agreed on conservative management with intravenous antibiotics and full anti-coagulation and ultrasound guided aspiration of the splenic collection. Patient had full investigations including Computed Tomography scans at presentation, an ultrasound-guided aspiration of spleen and full septic and viral study. Patient had full recovery with spleen salvage. Follow up ultrasound study revealed partial recanalization of the portal vein. From the urology perspective, prostate biopsy histology showed microacinar adenocarcinoma and patient enlisted on active surveillance programme. In addition, Hydroxycarbamide recommended by hematologist for the essential thrombocytosis management.We discuss our case as a rare complication of TRUS prostate biopsy, precipitated with background of Janus Kinase 2 positive myeloproliferative disorder. Strategies to minimize the risk of sepsis after prostate biopsy include targeted prophylaxis with a prior rectal swab and transperineal biopsy route. We discuss also the immunocompromised and thrombogenicity state of our case with the challenges in the management choice between conservative management and splenectomy with its complications. Conclusion: The immune compromised patients requiring evaluation with a prostate biopsy, would benefit from a transperineal rather than transrectal prostate biopsy. Furthermore, an individual antibiotic prophylaxis strategy should be discussed with a microbiologist.

Keywords: Myeloproliferative disorder, Portal vein thrombosis, Prostate biopsy

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INTRODUCTION

Ttransrectal ultrasound guided biopsy prostate biopsy, despite its limitations, remains is the standard procedure to confirm the diagnosis of prostate cancer [1]. Infective complications of TRUS biopsy are well recognized, ranging from bacteriuria, UTI and epididymitis to septic shock, with 1.3% admission rate for sepsis in the UK [2]. Immunocompromised patients are considered to be

at a higher than average risk of infection. Septic portal vein thrombosis (pylephlebitis) is rarely associated with intra-abdominal sepsis, including appendicitis and diverticulitis [3]. On literature review, only one case report of pylephlebitis after TRUS biopsy was identified [4].

CASE REPORT

A 66-year-old non-smoker with a background of myeloproliferative disorder and asthma on long-term oral steroids was admitted with symptoms of intraabdominal sepsis. Contrast CT and splenic ultrasound revealed enlarged and congested spleen due to thrombus in the distal splenic vein (Figure 1), an occluded portal vein with thrombus extending to the distal splenic vein and two splenic fluid collections measuring 7.1x6.8 cm and 2.8x2.7 cm (Figure 2).

History revealed that patient has not been well since he underwent TRUS prostate biopsy for an elevated prostate specific antigen (PSA) six weeks earlier. Pre-procedure MRI demonstrated no overt signs of malignancy (PI-RADs score of II). He received standard antibiotic prophylaxis for prostate biopsy, consisting of ciprofloxacin, metronidazole and gentamicin.

Following the biopsy, patient developed a number of non-specific symptoms, including malaise, lethargy, bilateral leg oedema and vague abdominal pain. He thought emergency medical help three times in the previous six weeks. Firstly, he was treated for what was thought to be bilateral leg cellulitis with three different courses of antibiotics. Then he re-presented with abdominal pain owing to presumed ureteric colic and was reassured after normal non-contrast CT KUB. Soon after, he came back with worsening abdominal pain and obvious symptoms of int abdominal sepsis.

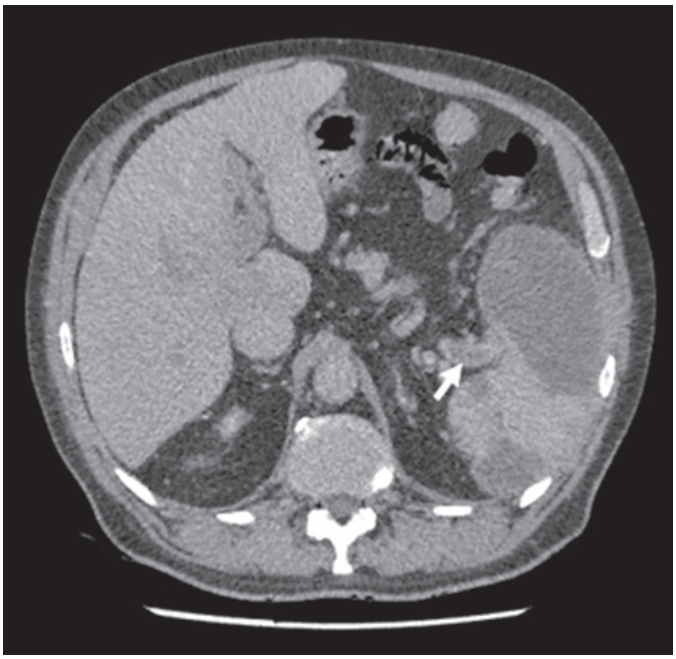

Figure 1: Computed tomography urinary tract with contrast, showing enlarged congested spleen with large areas of non-perfusion secondary to venous congestion due to thrombus in the distal splenic vein (white arrow).

Systemic sepsis raised concerns about the risk of splenic abscess from pylephlebitis and portal pyemia secondary to the prostate biopsy, taking into account that his immunocompromised state and being on long-term steroids may have been the predisposing factors. Multidisciplinary team managing the patient included the admitting surgical team, urology, microbiology, hematology and interventional radiology.

Conservative management strategy was chosen. Included intravenous antibiotics with 1.2 gm of Co-amoxiclav for 12 days and 350 mg of Gentamicin as stat dose on admission, followed by 625 mg of oral Co-amoxiclav on discharge for 9 days with full anticoagulation using heparin. Splenectomy was discussed, but this was left as a salvage option in case of failure to progress, taking into consideration splenectomy risks in the patient with myeloproliferative disorder. Patient underwent ultrasound-guided aspiration of splenic collections, which yielded some altered blood. Patient's symptoms had completely resolved and inflammatory markers normalized after 10 days of hospitalization. Oral anticoagulation (Rivaroxaban) prescribed on home discharge and follow up was arranged with the hematologist, vascular surgeon and the urologist.

Investigations

PSA (pre-prostate biopsy) was 6.75 µg/L. The laboratory blood results on admission were white cell count 25,9 10x9/L , Hb 141 g/L, Plt 909 10x9/L , Creat 133 µmol/L , CRP 79 mg/L , K 5.7 mmol/L, ALT 76 IU/L, ALP 135 IU/L and Bilirubin 14 µmol/L. In hospital, blood culture film results and viral screen were negative. Aspirated sample from the splenic collection showed white cells, no organisms and no growth.

Outcome and follow up

When the patient was reviewed in the clinic later, he had achieved the full recovery. Follow up ultrasound showed a small area of infarction within the spleen, partial recanalization of the main portal vein with a total recanalization of the intrahepatic veins and recanalization of the splenic vein (Figures 3 and 4). Hydroxycarbamide was discussed with patient as a future option for the essential thrombocytosis. From the urology perspective, prostate biopsy histology showed microacinar adenocarcinoma in 1 of 16 cores (Gleason pattern 3 + 4); patient was enlisted on active surveillance programme.

DISCUSSION

Infective complications of TRUS biopsy are well recognized. The presumed mechanism is the direct

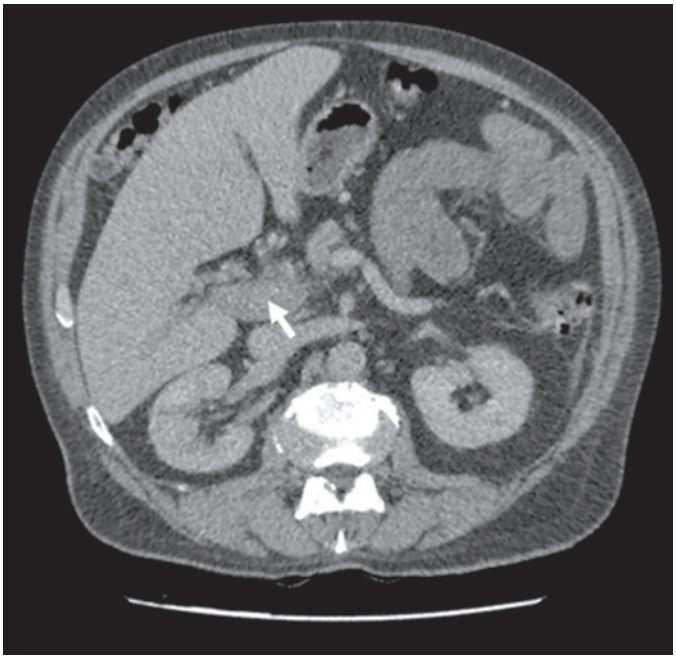

Figure 2: Follow up computed tomography abdomen-pelvis with contrast, showing extension of thrombosis up to the portal vein (white arrow).

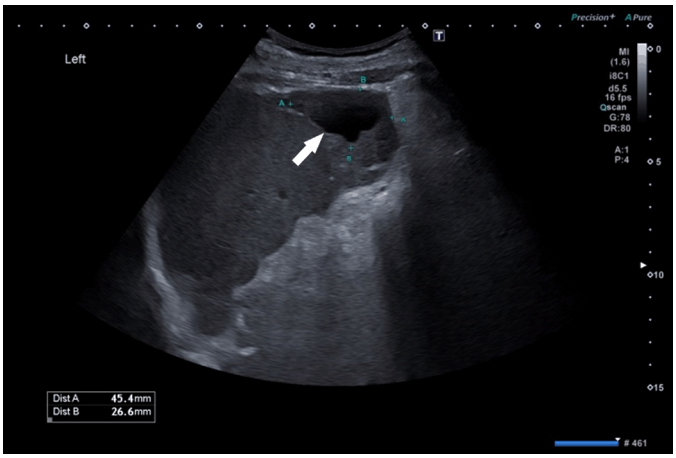

Figure 3: Ultrasound follow up post drainage, showing only a small area of subscapular infarction (white arrow).

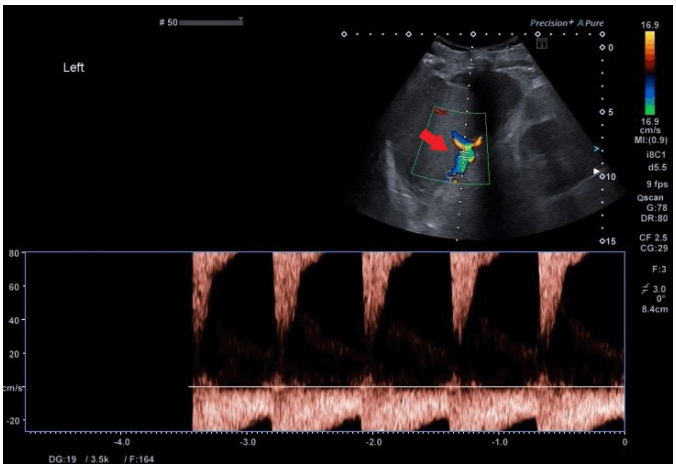

Figure 4: Ultrasound follow up post drainage, showing partial recanalization of portal vein respectively (red arrow).

inoculation of the prostatic tissue and blood by a needle traversing the rectal mucosa, with multi-resistant Escherichia coli as the pathogen most commonly associated. Antimicrobial prophylaxis is unanimously recommended for TRUS prostate biopsy. However, even with prophylaxis, sepsis after TRUS is increasingly becoming a significant burden worldwide [5].

A number of patient and procedure specific factors have an association with increased sepsis rates after TRUS biopsy: existence of multi-resistant bowel flora in patients with multiple previous courses of antibiotic treatment, healthcare exposure and/or history of frequent international travel, comorbidities and regular intake of non-steroidal anti-inflammatory medications [5].

Strategies to minimize the risk of sepsis after prostate biopsy include targeted prophylaxis with a prior rectal swab and transperineal biopsy route, which is associated with a much lower sepsis risk [5].

Immune compromised patients are at increased risk of sepsis after prostate biopsy, as in this patient a combination of JAK2 positive myeloproliferative disorder and being on oral long-term steroids for asthma have contributed to the development of this rare complication, which was reported only once previously [4].

Furthermore, essential thrombocytosis associated with JAK2 positive myeloproliferative disorder has been associated with portal and splenic vein thrombosis [6]. While splenectomy was considered in the early course of treatment, therapeutic splenectomy in a patient with myeloproliferative disorder can be complicated by thrombotic events and bone marrow dysplasia, also patient will need increased doses of drugs which may enhance leukemic transformation [7].

On the other hand, conservative treatment with antibiotics, anticoagulation and ultrasound-guided aspiration was an effective strategy, which led to a complete resolution of the infection and thrombosis.

CONCLUSION

The immune compromised patients requiring evaluation with a prostate biopsy, would benefit from a transperineal rather than transrectal prostate biopsy. Furthermore, an individual antibiotic prophylaxis strategy should be discussed with a microbiologist.

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Author Contributions

F. A. Maqboul – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published
S. Tadtayev – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor of Submission

The corresponding author is the guarantor of submission.

Source of Support

None.

Consent Statement

Written informed consent was obtained from the patient for publication of this case report.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.