Life-Threatening Hypovolemic Shock after Transrectal Ultrasonography Guided Prostate Biopsy: Treatment with Selective Arterial Embolization

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= Abstract =

Rectal bleeding is a frequent finding in patients after transrectal ultrasonography (TRUS)-guided prostate biopsy but is usually mild and stops spontaneously. We report herein a case of life-threatening hypovolemic shock due to rectal bleeding after TRUS-guided prostate biopsy that was successfully treated by selective arterial embolization. The aim of this report is to share our experiences of the management of massive rectal bleeding after prostate biopsy.

Key Words: Prostate, Biopsy, Shock, Therapeutic embolization

Transrectal ultrasonography (TRUS)-guided prostate needle biopsy has become the standard for the diagnosis of prostate cancer.1 Although TRUS-guided prostate needle biopsy is generally considered to be a safe and easy procedure, complications are occasionally encountered. Minor complications such as hematuria, hematospermia, or rectal hemorrhage, and rarely major complications such as sepsis, urinary tract infection with fever, and urinary retention, have been observed.1-4 Most complications are resolved with traditional conservative therapy.

Severe rectal bleeding is traditionally managed by the urologist, with a rectum tamponade as the initial and simplest conservative method, or when necessary, balloon compression by means of a transrectal balloon catheter.3

In this paper we report a case of life-threatening hypovolemic shock due to rectal hemorrhage following TRUS-guided prostate biopsy which was treated successfully by selective arterial embolization.

Case Report

A 55-year-old male was admitted to the emergency room with persistent rectal bleeding. Prostatic specific antigen (PSA) was 7.11 ng/ml and prostate volume was estimated at 30 ml during a screening test for prostate cancer. He had a 4-year history of hypertension, for which he was receiving antihypertensive medication, but he was not taking oral anticoagulants or aspirin. He had undergone uneventful TRUS-guided 12-core prostate biopsy 8 hours before at a local medical clinic. The procedure was well tolerated but because of rectal bleeding immediately afterwards, digital compression of the prostate was performed with cessation of bleeding. He returned home and at 6 hours after his biopsies he developed bright red hematochezia and immediately went to the emergency room.

In the emergency room, a marked pallor associated with unstable blood pressure (80/40 mmHg) was noted
and his initial hemoglobin and hematocrit were 8.9 g/dl and 25.6%, respectively, and severe rectal bleeding continued. Digital compression and intravenous fluid resuscitation were initiated. Despite aggressive fluid resuscitation, the patient’s hemodynamic status remained unstable, and 2 h later, the hemoglobin level fell to 6.2 g/dl. Massive transfusions (5 units of packed red blood cells, 3 units of fresh frozen plasma) were administered to the patient to normalize and maintain a mean blood pressure greater than 80/40 mmHg. His vital signs were stabilized after fluid resuscitation and transfusion. But as severe rectal bleeding continued, an emergency colonoscopy was performed, but because of sustained rectal bleeding, flexible sigmoidoscopy and rigid rectosigmoidoscopy failed to identify the precise location and failed to control the arterial bleeding. Thus, we decided to treat the patient with emergency arteriography. Emergency angiography of both internal iliac arteries and the inferior mesenteric artery was performed. Superselective arteriography revealed a small pseudoaneurysm of a branch of the left superior rectal artery and fistula-like lesion of the left middle rectal artery was noted on the internal iliac arteriogram (Fig. 1A). A mixture of histoacryl with lipiodol was administrated to a superselected aneurysmal branch of the left superior rectal artery. There was no more aneurysm in the branch of the left superior rectal artery after embolization. Additionally, gelform slurry was administrated to the fistula-like lesion via the left middle rectal artery. There was no more fistula of middle rectal artery after embolization (Fig. 1B). The rectal bleeding stopped within 1 hour after the embolization. Subsequently, the blood pressure remained stable and no additional transfusion was necessary.

The patient’s postembolization course was uneventful, and he was discharged from the hospital on day 5. The pathology of his prostate biopsy showed nodular hyperplasia.

Discussion

Prostate cancer is the most common cancer in men in the United States and the incidence of this disease is rapidly increasing and is now the fifth most common cancer in men in Korea.5 TRUS-guided prostate needle biopsy has proven to be one of the most efficient and reliable methods of detecting or confirming prostate cancer and is becoming a very common procedure. It is usually performed as an outpatient procedure and is well tolerated by patients; 70~92% of patients report no significant pain or discomfort during the procedure.6,7

However, complications have been reported. Berger et al.2 investigated 5957 prostate biopsies performed from 1993 to 2002 in Austria, retrospectively. Minor complications included hematospermia (36.3%), hematuria (14.5%), and rectal bleeding that persisted for up to 2 days (2.3%). Major complications included fever (0.8%), rectal bleeding requiring surgical intervention or persisting for more than 2 days (0.6%), and urinary

Fig. 1. (A) Superselective arteriography revealed a small pseudoaneurysm of a branch of the left superior rectal artery (arrow) and fistula like lesion of the left middle rectal artery (arrow head) in an internal iliac arteriogram. (B) There were no more pseudoaneurysms of the branch of the left superior rectal artery or fistula-like lesions of left middle rectal artery after embolization.
Djavan et al. reviewed previous reports of complications after TRUS prostate needle biopsy. Immediate and delayed complications were reported, including urinary tract infection (1.2~11.3%), fever (1.4~4.5%), sepsis (0.1~0.3%), hematuria (12.5~58.4%), hematospemria (5.1~45.3%), rectal bleeding (2.1~37.1%), urinary retention (0.2~2.6%), and voiding difficulty (6.7~13.7%). Chiang et al. reported on 1875 prostate biopsies performed from 2002 to 2005 in Taiwan, retrospectively. There were 124 patients (6.6%) with major complications. These major complications were categorized as acute prostatitis (3.8%), acute urinary retention (2.1%), hematuria (1.9%), rectal bleeding (0.2%), epididymitis (0.2%), sepsis (0.05%), and vasovagal syncope (0.05%).

At the Department of Urology of Daegu Catholic University Hospital, between January 2008 and December 2010, among 519 prostate biopsies that were performed, five patients were treated for rectal bleeding following prostate biopsy, indicating an incidence rate of 0.96%. Two patients required blood transfusion needed a blood transfusion, as reported herein.

Risk factors for postbiopsy rectal bleeding have not been identified in specifically designed studies. Rodriguez and Terris found that the amount of rectal bleeding was only associated with the total number of biopsies performed, and Rietbergen et al. reported a slightly increasing trend with increasing age, which was not significant. Although minor rectal bleeding usually requires only symptomatic treatment, the presence of sustained arterial bleeding with hemorrhagic shock requires both rapid diagnosis and treatment in the emergency department. Flexible or rigid rectosigmoidoscopy is the usual method of investigation performed to identify and treat active intrarectal bleeding. In hospitals where endoscopy fails to locate the origin of the bleeding or to control the active hemorrhage and where continued hemorrhage can not be investigated by angiography, emergency surgery is an option. However these surgical procedures may be complicated by significant morbidity (sphincter lesion, fistula, abscess, local infection or septicemia) or even mortality in patients sustaining hemorrhagic shock.

Arterial embolization, for both rapid diagnosis and treatment, is an effective procedure in life-threatening superior rectal arterial bleeding, especially when endoscopic treatment fails. Rectal arteries are accessible for selective catheterization and subsequent arterial embolization. Due to the anatomy of rectal vascularization, arteriography of both the internal iliac arteries and inferior mesenteric artery must be performed. The embolization technique uses calibrated particles of hemostatic absorbable gelatin sponge mixed with contrast medium to form a slurry, rather than torpedoes of gelatin sponge. After selective successful embolization, study of the other hemorrhoidal branches by both left and right arterial angiography must be performed to rule out persistent bleeding from other potential feeding vessels.

Re-bleeding after unilateral embolization is probably related to the rich collateral blood supply to the internal iliac artery from the contralateral internal iliac, inferior mesenteric, external iliac, and femoral arteries. To prevent re-bleeding from these collaterals, the anterior division of the internal iliac artery should probably be embolized bilaterally regardless of whether the bleeding site is detectable on angiogram.

In our patient, selective arterial embolization allowed hemodynamic stabilization and re-bleeding did not occur after embolization. Our experience indicates that selective arterial embolization controls the immediate problem of life threatening hemorrhagic shock and provides sustained bleeding control, contributing to improving palliative care and quality of life by decreasing the need for blood transfusion and a hospital stay.

REFERENCES