Recurrent infectious subcapsular renal hematoma accompanied by microaneurysm

Toshikazu Ozeki^{1,2} · Junichiro Yamamoto¹ · Shigeki Yamamoto³ · Chisato Shigematsu¹ · Masashi Tsuji¹

Received: 7 December 2017 / Accepted: 11 January 2018 / Published online: 17 January 2018
© Japanese Society of Nephrology 2018

Abstract

An 80-year-old woman was admitted to the hospital complaining of loss of appetite. 10 days earlier, her oral intake gradually decreased with no other specific symptoms, such as abdominal pain, nausea, vomiting, headache, or low back pain. Abdominal computed tomography (CT) scan revealed a left subcapsular renal hematoma. We suspected infective subcapsular renal hematoma, so percutaneous needle aspiration and drainage were performed. Intravenous sulbactam–ampicillin was started immediately. On day 9 after admission, repeat CT scan revealed the subcapsular hematoma had reduced in size. The drain was removed, and intravenous antibiotics were discontinued. Follow-up CT scan on day 21 revealed increased subcapsular renal hematoma size. The patient also had high fever. Suspecting recurrence of infective subcapsular renal hematoma, we repeated the drainage of the hematoma and restarted intravenous antibiotics. Renal arteriography showed a renal artery microaneurysm and her condition improved with renal artery embolization. Renal arteriography was useful for detecting renal artery microaneurysm in infective subcapsular renal hematoma that did not resolve after antibiotic treatment and drainage.

Keywords Hematoma · Kidney diseases · Renal · Embolization

Introduction

Spontaneous subcapsular renal hematoma is an uncommon in clinical practice. The causes of this condition include tumors, vascular disease, and infections. The most common treatment for subcapsular renal hematoma is nephrectomy, but conservative therapy and renal artery embolization have also been reported [1].

We report a rare case of subcapsular renal hematoma complicated by infection, and successfully treated with renal artery embolization.

Case report

An 80-year-old woman was admitted to the hospital complaining of appetite loss. 10 days earlier, her oral intake gradually decreased with no specific symptoms, such as abdominal pain, nausea, vomiting, headache, or low back pain. There was no history of trauma. Past medical history included cervical spondylosis, hypertension, and dyslipidemia. Her routine medications were fenofibrate 160 mg/day, famotidine 20 mg/day, pregabalin 150 mg/day, olmesartan 20 mg/day, and azelnidipine 16 mg/day.

Her height was 155 cm and her weight was 54.1 kg. On arrival, she had a blood pressure of 103/63 mmHg, heart rate of 91 beats per min, temperature of 37.6 °C, oxygen saturation of 98% on room air, and respiratory rate of 20 breaths per min; her sensorium was clear. Findings on physical examination were unremarkable. Initial laboratory test showed the presence of leukocytosis and elevated CRP level that suggested a possible inflammatory disorder.

Computed tomography (CT) scan revealed a left subcapsular renal hematoma and no tumor (Fig. 1). We suspected infective subcapsular renal hematoma, so percutaneous needle aspiration and drainage were performed. Percutaneous drainage revealed bloody fluid and drainage fluid culture

✉ Toshikazu Ozeki
ozeki.0312@gmail.com

¹ Department of Nephrology, Tsushima City Hospital, 3-73 Tachibana, Tsushima, Aichi, Japan

² Department of Nephrology, Nagoya University Graduate School of Medicine, Nagoya, Japan

³ Department of Urology, Tsushima City Hospital, Tsushima, Japan

Fig. 1 CT scan showing left subcapsular hematoma (asterisk)

yielded *E. coli*. Urinary culture also yielded *E. coli*, but blood culture yielded no growth. Cytologic examination of the drainage fluid showed no malignant cells. Intravenous subactam–ampicillin was started immediately.

On day 9 of admission, repeat CT scan revealed reduced subcapsular hematoma size and the patient's appetite improved. We removed the drain on day 10 and intravenous antibiotics were discontinued on day 15.

On day 21, follow-up CT scan revealed increased subcapsular renal hematoma size. She also had a high fever. Suspecting a recurrence of the infectious subcapsular renal hematoma, we repeated the drainage of the hematoma and restarted intravenous antibiotics.

Renal arteriography was performed to identify the cause of the subcapsular renal hematoma and revealed a renal artery microaneurysm (Fig. 2). Renal artery embolization was performed on day 36 (Fig. 3). We removed the drain on day 38. Repeat CT scan showed resolution of the subcapsular renal hematoma.

Discussion

Spontaneous subcapsular renal hematoma, first described in 1856 [2], is an uncommon condition in clinical practice. It can present with abdominal (flank) pain, a palpable tender mass, and gross hematuria (Lenk's triad). The most common cause is tumor, followed by vascular disease [1]. The most common vascular condition causing subcapsular renal hematoma is polyarteritis nodosa, and sporadic arterial aneurysm is a rare cause. In this regard, it can be said that our case was unusual.

In this present case, the patient experienced a recurrence of infectious subcapsular renal hematoma. Because urine and drain fluid culture both yielded *E. coli*, we suspected that the infection may have developed as the pathogens ascended to the kidneys via the ureters. Some reports have described

Fig. 2 Renal arteriography showing microaneurysm of the left kidney (arrow)

infectious causes of subcapsular renal hematoma [1, 3–5], but there are few reports of subcapsular renal hematoma due to renal artery aneurysm and repeated retrograde infection.

Major factors predispose elderly women to recurrent urinary tract infections including institutionalization, catheterization, incontinence, antimicrobial exposure, and poor

Fig. 3 Coil embolization procedure (arrow)

functional status [6]. Because our patient did not have any of these risk factors, and she was not particularly prone to recurrent urinary tract infection.

It has been reported that mean hematoma volume due to infective causes was 143 mm³, and was less than that caused by other diseases [5]. Because the volume of hematoma in our case was obviously larger than this, infection could not have been the cause, and therefore, we should have investigated for another cause of hematoma earlier. If we did, we could have shortened her hospitalization.

In the past, nephrectomy was performed to treat subcapsular renal hematoma. Recently, the number of cases treated with renal artery embolization is increasing [7]. Transarterial embolization is a safer and less invasive method compared with nephrectomy. In this case, we were able to detect renal artery aneurysm by renal arteriography and the patient was successfully treated with coil embolization.

Conclusion

Here, we reported a case of recurrent infective subcapsular renal hematoma caused by a renal artery microaneurysm. Renal arteriography was useful to detect renal artery aneurysm when infective subcapsular renal hematoma did not resolve after antibiotic treatment and drainage.

Funding None.

Compliance with ethical standards

Conflict of interest All the authors have declared no competing interests.

Ethical approval This article does not contain any studies with human participants or animals performed by any of the authors.

Informed consent Informed consent was obtained from the patient.

References

1. Zhang JQ, Fielding JR, Zou KH. Etiology of spontaneous subcapsular renal hemorrhage: a meta-analysis. *J Urol*. 2002;167:1593–6.
2. WuÈ nderlich CRA. *Handbuch der pathologie und therapie*. Stuttgart: Ebner & Seubert; 1976.
3. Gallardo X, Castañer E, Donoso L, et al. CT diagnosis of renal subcapsular hematoma associated with emphysematous pyelonephritis. *J Comput Assist Tomogr*. 1994;18:505–6.
4. Kim HJ, Kim SW, Jang WY, et al. Subcapsular hematoma as a complication of acute pyelonephritis: a case report. *J Korean Med Sci*. 1998;13:551–3.
5. Mao Y, De Oliveira IS, Hedgire S, et al. Aetiology, imaging features, and evolution of spontaneous subcapsular renal haemorrhage. *Clin Radiol*. 2017;72:175.
6. Stamm WE, Raz R. Factors contributing to susceptibility of postmenopausal women to recurrent urinary tract infections. *Clin Infect Dis*. 1999;28:723–5.
7. Ahn T, Roberts MJ, Navaratnam A. Changing etiology and management patterns for spontaneous renal hemorrhage: a systematic review of contemporary series. *Int Urol Nephrol*. 2017;49:1897–905.