

Iatrogenic perirenal urinary extravasation following percutaneous coronary intervention

Maciej Sałagaj¹, Artur Dębski¹, Paweł Tyczyński¹, Tomasz Oleksiuk², Adam Witkowski¹

¹Department of Interventional Cardiology and Angiology, National Institute of Cardiology, Warszawa, Poland

²Department of Radiology, Mazovian Brodnowski Hospital, Warszawa, Poland

Correspondence to:

Paweł Tyczyński, MD, PhD,
Department of
Interventional Cardiology
and Angiology,
Institute of Cardiology,
Alpejska 42,
04-628 Warszawa, Poland,
phone: +48 22 3434272,
e-mail: medykpol@wp.pl

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Urinary extravasation is a rarely diagnosed phenomenon, the most frequent cause of which is ureteral stone obstruction and malignant tumors. However, it can also be an iatrogenic complication of medical procedures. Increasing urinary pressure inside the pelvicalyceal system due to a prolonged procedure may lead to spontaneous rupture of the renal fornix, which is the most susceptible part of the renal collecting system to extravasation. Proper differentiation and management are difficult due to the absence of characteristic symptoms. Herein, we report on a 45-year-old male patient with multi-vessel coronary artery disease, who was admitted for percutaneous coronary intervention (PCI) due to chronic total occlusion of the marginal branch of the left coronary artery, and significant stenosis of the right coronary artery. Intravenous fluids (0.9% Natrium Chloratum, total amount of 1000 ml) were administered pre- and intra-procedure to minimize the risk of contrast-induced nephropathy. A successful PCI with drug-eluting stent implantation in two coronary arteries was performed. The

total amount of contrast agent (Iomeron 300[®], Bracco Imaging, Konstanz, Germany) used was 200 ml. Thirty minutes after the intervention the patient experienced intense pain along the right side of the body resembling renal colic. An emergency abdominal ultrasound showed dilation of the pelvicalyceal system of the right kidney (pelvis 17 mm, calyces 14 mm). No obstruction of the urinary tract was visible. An abdominal scan using delayed phase computed tomography (CT) revealed the presence of a small volume of contrasted urine in the upper part of the right renal hilum, upper-medial perirenal fat, and along the proximal right ureter and inferior retrorenal fascia (Figure 1). Urological consultation led to the diagnosis of perirenal urinary extravasation. A Foley catheter was inserted into the bladder, and prophylactic therapy with ciprofloxacin was initiated with a good outcome.

The presented case illustrates a rare iatrogenic complication during an unrelated procedure. To our knowledge, no such urinary extravasation following PCI has been reported



Figure 1. Computed tomography of the abdomen in delayed phase scan. **A.** A small volume of contrasted urine in the upper part of the right renal hilum. **B.** Magnification 2.6 × of the image with a focus on contrasted urine pointed by the arrow

previously. Intensive, intravenous fluid administration during prolonged PCI and urine retention were the clear causes of this complication. There are two types of urine extravasation beyond the pelvicalyceal system: subcapsular and perirenal (as in our case), both of which may be uni- or bilateral [1]. Increased renal pressure up to 35–40 cm H₂O [2] may cause ruptures of the fornices of the renal calyces with subsequent perirenal extravasation of urine which collects between the renal capsule and fascia [3]. The main clinical symptom is sudden, severe pain in the lumbar region. No specific symptoms allow for early diagnosis of urine leakage out of the urinary collecting system. Once urinary extravasation is suspected, three main diagnostic methods can be used: conventional ultrasound, urography, or CT [4], although these are complimentary; ultrasound demonstrated the only dilation of the pelvicalyceal system without urine leakage, which was revealed with CT in our patient. Removal of any obstruction of the urinary tract and conservative treatment with antibiotic prophylaxis are usually sufficient to facilitate a positive outcome [5].

Article information

Conflict of interest: None declared.

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