Acute Renal Failure and Ureteral Leak After Open Surgery Aortoiliac Aneurysm Repair

Senija Rasic¹, Alden Prcic², Damir Rebic¹, Damir Aganovic³, Nedzad Rustempasic², Vesna Sarajlic⁴, Ismar Rasic⁵
Clinic of Nephrology, Clinical Center University of Sarajevo, BiH¹
Clinic of Urology, Clinical Center University of Sarajevo, BiH²
Clinic of Vascular Surgery, Clinical Center University of Sarajevo, BiH³
Clinic of Radiology, Clinical Center University of Sarajevo, BiH⁴
Clinic of Urgent Medicine, Clinical Center University of Sarajevo, BiH⁵

CASE REPORT
SUMMARY
We present a case of 52 years old male with an acute renal failure that took place 4 days after open transabdominal surgery repair of infrarenal abdominal aortic aneurysm along with aneurysm of left common iliac artery and dilatation of left external iliac artery. Patient was subjected to 13 hemodialysis treatments that resulted in satisfactory recovery of renal function. One month after aneurysm repair he developed the right ureteral leak, consequently urinoma and acute renal failure once again. We suppose that ureteral leak was related to segmental ischemic necrosis of right ureter but not to traction or other iatrogenic ureteral injury. Percutaneous nephrostomy and insertion of ureteral stent was resulted in complete recovery of renal function.

Key words: renal failure, ureteral leak, abdominal vascular surgery

1. INTRODUCTION
Acute renal failure with right ureteral leak and issuing urinoma is a very rare complication after surgical repair of infrarenal abdominal aortic aneurysm and aneurysm of iliac artery through the transabdominal approach. In most vascular surgical series, direct ureteral injury occurs in less than 1% of cases, especially during retroperitoneal vascular surgery, while ureteral obstruction occurs from 2% to 14% of aortoiliac reconstructions (1). We report a case of repeated acute renal failure and symptomatic urinoma after transabdominal vascular surgical intervention emphasizing etiology, diagnostic and therapeutic aspects of this rare condition.

2. CASE REPORT
A 52 year-old male was treated by vascular surgeon through the transabdominal approach for infrarenal aneurysm of abdominal aorta along with aneurysm of common iliac and dilatation of external iliac artery. Right aorto iliac and left aorto femoral reconstruction with 18/9 mm bifurcation Dacron graft was performed. Preoperatively, it was verified presence of left hypoplastic kidney and compensatory hypertrophy of right kidney on computed tomography angiogram. His serum creatinine level was 118 µmol/l. On fifth postoperative day he presented with progressive oliguria, appearance of pleural and abdominal effusion, right flank pain that turned into acute renal failure (BUN 20,3 mmol/l, serum creatinine 1278 µmol/l). CT scan revealed the edema of the right kidney parenchyma. The patient was admitted to Clinic of Nephrology where 13 haemodialysis treatment sessions were performed which resulted by polyuric diuresis and rapidly decreasing serum creatinine to the value of 226 µmol/l.

One month after vascular surgery operation the patient became febrile with onset of severe right flank pain that was projecting into right testis, decrease of diuresis and elevation of serum creatinine once again. Ultrasound revealed compressive mass behind the lower pole of right kidney that increased between two consecutive examinations (from 5x5 cm to 14.1x10.2 cm). Computed tomography (CT) of the abdomen (Figure 1) revealed presence of a mass 15 x 15 cm in size, arising from the right kidney with a fluid level in the superior aspect, without signs of blood leakage from vascular anastomotic site. The diagnosis of urinoma was made.

Creatinine concentration in the fluid that was drained amounted to 4485 µmol/l while serum creatinine concentration was 425 µmol/l. Right percutaneous nephrostomy was done. Anterograde pyelography has been performed through right percutaneous nephrostomy and extravasation of urine from pyelouretheric segment of right kidney was confirmed. After anterograde pyelography ureteric stent was inserted. Fluid drainage via percutaneous catheter (first day 8150 ml) and application of ureteral stent resulted in the gradual resolution of the compressive mass (Figure 2) and full recovery of patient renal function (serum creatinine 106 µmol/l, BUN 6,9 mmol/l) during the period of one month. Percutaneous catheter was withdrawn 8 days later, while percutaneous nephrostomy was successfully withdrawn after 6 more weeks due to reestablished urine output through the right ureter.

3. DISCUSSION
There are numerous predictive factors that are included in etiology of acute renal failure after open surgical repair of aneurysm. Godet found that age above 50 years, preoperative renal dysfunction, duration of renal ischemia and amount of blood transfusion are significant predictors of this complication (2). Regional hypothermic perfusion and minimal clamping time are important elements in the prevention of renal failure after aortic vascular surgery (3). Use of injectable contrast media may lead to development of vasoconstriction and medullar ischemia (4), with subsequent reduction of glomerular filtration rate (5). It is therefore necessary to adopt special care and adequate prophylactic measures for high risk patients that require an application of contrast media preoperatively.

Iatrogenic ureteral injury is infrequent complication during vascular reconstructive surgery, with overall incidence of 0,8-2,2%, while direct injury occurrence in 0,6-0,85% of cases (6). These injuries are usually not confirmed intraoperatively. They can lead to asympto-
Acute Renal Failure and Ureteral Leak After Open Surgery Aortoiliac Aneurysm Repair

Instructions for the authors of the journal Medical Archives

All papers need to be sent electronically by web page: www.avicanapublisher.org : Print version and signed copyright form need to be sent by post to the Editorial board of journal Med Arh. Faculty of medicine, Cekalusa str. 90, 71000 Sarajevo, BiH. Every sent article gets its number, and author(s) will be notified if their paper is accepted and what the number of paper. Every correspondence will use that number. The paper has to be typed on a standard size paper (format A4), leaving left margins to be at least 3 cm. All materials, including tables and references, have to be typed double-spaced, so one page has no more than 2000 alphanumerical characters (30 lines). Sent paper needs to in the form of triPLICATE, considering that original one enclosure of the material can be photocopy. Presenting paper depends on its content, but usually it consists of a title page, summary, text references, legends for pictures and pictures. Title page

Every article has to have a title page with a title of no more than 10 words: name(s), last and first of the author(s), name of the institution the author(s) belongs to, abstract with maximum of 45 letters (including space), footnote with acknowledgments, name of the first author or another person with who correspondence will be maintained.

Summary

The paper needs to contain structured summary (goal, methods, results, discussion, and conclusion) containing up to 300 words, including title, initials of the first name and the last name of the author as well as the name of the institution. The summary has to contain a list of 3 to 4 keywords

Central part of the article

Authentic papers contain these parts: introduction, goal, methods, results, discussion and conclusion. Introduction is brief and clear review of problem. Methods are shown so that interested reader is able to repeat described research. Known methods don’t need to be identified, it is cited (referenced). If drugs are listed, their generic name is used (brand name can be written in brackets). Results need to be shown clearly and logically, and their significance proven by statistical analysis. In discussion, results are interpreted and compared to existing, previously published findings in the same field. Conclusions have to give an answer to author’s goal.

References

Quoting references must be in a scale in which they are really used. Quoting most recent literature is recommended. Only published articles (or articles accepted for publishing) can be used as references. Not-published observations and personal notifications need to be in text in brackets. Showing references is as how they appear in text. References cited in tables or pictures are also numbered according to quoting order. Citing paper with six or less authors must have cited names of all authors; if seven or more authors' wrote the paper, the name of the first three authors are cited with a note “et all”. If the author is unknown, at the beginning of papers reference, the article is named as “unknown”. Titles of the publications are abbreviated in accordance to Index Medicus, but if not listed in the index, whole title of the journal has to be written. Footnote – comments, explanations, etc. cannot be used in the paper.

Statistical analysis

Tests used for statistical analysis need to be shown in text and in tables or pictures containing statistical analysis.

Tables and pictures

Tables have to be numbered and shown by their order, so they can be understood without having to read the paper. Every column needs to have title, every measuring unit (5) has to be clearly marked, preferably in footnotes below the table, in Arabic numbers or symbols. Pictures also have to be numbered as they appear in text. Drawings need to be enclosed on a white paper or tracing paper, while black and white photo have to be printed on a radiant paper. Legends next to pictures and photos have to be written on a separate A4 format paper. All illustrations (pictures, drawings, diagrams) have to be original and on their backs contain illustration number, first author last name, abbreviated title of the paper and picture top. It is appreciated if author marks the place for table or picture.

Use of abbreviations

Use of abbreviations has to be reduced to minimum. Conventional units can be used without their definitions.

Supplement

If paper contains original contribution to a statistical method or author believes, without quoting original computer program, papers value will be reduced, Editorial staff will consider possibility of publishing mathematical/statistical analysis in-extenso. Papers with the following failure will not be accepted for publishing: grammatically or technically incorrect, materials do not represent original work by author and author(s) have to sign statement that submitted paper has not been published, nor is it currently under consideration for publication elsewhere.

REFERENCES


Corresponding author: Prof Senija Rasic, MD, PhD. Clinic of Nephrology, Clinical Center University of Sarajevo, Bolnica 25, 71000 Sarajevo, BiH. Email: rasicnef@bih.net.ba