

Nonoperative management of a Left renal artery's traumatic dissection. Case report and review of the literature

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ABSTRACT

The traumatic dissection of the renal pedicle is rarely reported after blunt trauma. Clinical symptoms often fickle and rare. Thus, the diagnosis is based angio- CT; arteriography remains useful when revascularization gesture is considered. Observation: We return a case of a 23-year-old patient referred for a renal's pedicle traumatic dissection near the aortic ostium imposing a monitoring in intensive care. Management strategies for RAD include surgical revascularization, endovascular intervention, and observation with or without anticoagulation. The late diagnosis and localization delicate forced us not to use the endoscopic embolization: the risk was too high; and with respect to the endoscopic revascularization was not possible due to lack of means. We update through a review of the literature aspects of the diagnostic and therapeutic care of the renal artery's traumatic dissection.

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Introduction

Traumatic lesions of the renal pedicle are scarce [1]. The initial clinical signs are poor, limiting itself mostly to a fickle hematuria and / or abdominal pain; they may be masked by the associated lesions and / or the need for sedation analgesia in case of multiple trauma. Consequently, the diagnosis is late, at a stage of complete vascular thrombosis, compromising all the chances of success of a surgical or endovascular revascularization.

We report the case of a traumatic dissection of a renal pedicle near the aortic ostium imposing a single location monitoring in the ICU, revascularization being too risky.

From this observation, we present the clinical and pathological aspects and report our therapeutic strategy.

Observation

A 23 year-old patient, without specific medical history, was admitted in intensive care for a left lumbar trauma following an accident of the public highway. The story of the accident back to 2:00 before admission when the patient helmeted driver was ejected from a motorcycle after hitting a car.

The violence of the initial shock was not precisely known, the point of impact was left lumbar. A non- medical transport was brought to the emergency room of the hospital, where initial clinical examination revealed a conscious patient, blood pressure was 100/60mmHg. Furthermore, the patient showed a left lumbar pain.

After the conditioning, an abdominal CT scan was performed and revealed a rupture of the left renal artery a few millimeters from the beginning, with a mute left kidney and a large retroperitoneal hematoma (Figure 1). There wasn't any extravasation of contrast. In addition, the patient had splenic contusion and a complex fracture of the eleventh left rib.

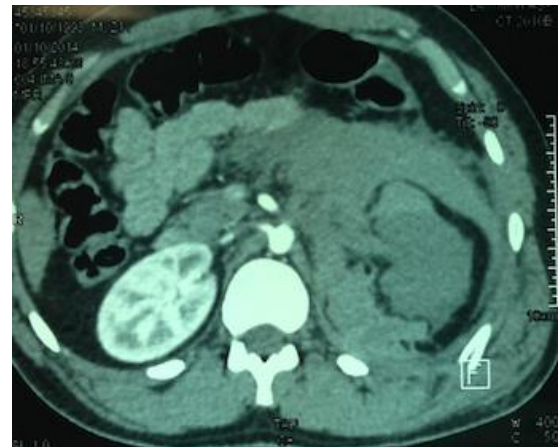


Figure 1. Scan at D0 showing a rupture of the left renal artery a few millimeters from the beginning, with a mute left kidney and a large retroperitoneal hematoma

Initial laboratory tests yields a hemoglobin 13.5 g/dL, the rate wafer was 582,000/mm³, and white blood cells were 18400/mm³. Furthermore there was no hydro electrolytic or renal function disorder.

After multidisciplinary consultation (urologists, radiologists and intensivists) , given the young age of the patient, and location of the injury it was decided a surgical abstention with strict and regular monitoring with blood counts twice daily to detect any hemorrhaging . And in this context the patient was transfused once per two blood units. A control CT scan was performed after 2 days and 7 days showing a decrease of the retro peritoneal hematoma (Figure 2 and 3).

The evolution during his stay in the ICU was marked by the appearance of a feverish peak, a polypnea and a left chest pain. Thoraco abdominal CT scan was done and showed a

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mean left rib abundant effusion with bilateral basal atelectasis. The patient underwent drainage of the effusion by pleurocath and which led in 1600 ml of hematic liquid. On septic Plan we conducted a removal of the femoral venous route with culture catheter tip and blood culture who returned for a *Staphylococcus aureus* sensitive to antibiotics. The patient received the Tienam and Rifampicine. After a week of treatment the patient was transferred to the urology department.

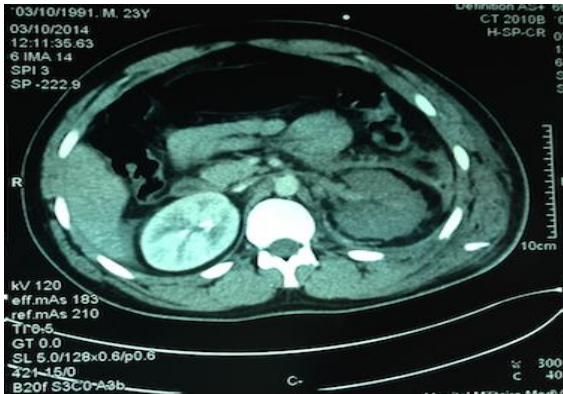


Figure 2. Scan at D2 showing showing a decrease of the retro peritoneal hematoma

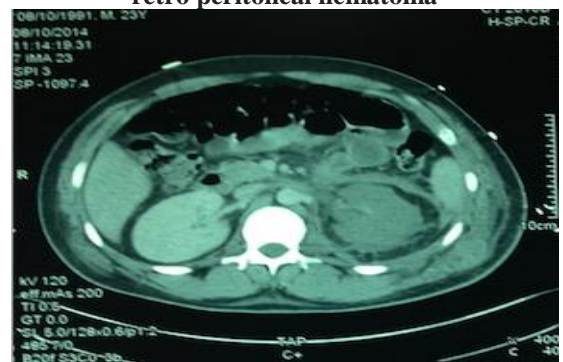


Figure 3. Scan at D7 showing showing a decrease of the retro peritoneal hematoma



Figure 4. Reconstruction of the right and left renal vasculature in three dimensions from the CT images. Dissecting lesion near the aorta

The authors declare no conflict of interest.

Discussion

Kidney injuries are the preserve of the young man of 10-40 years with a male predominance [2]. The literature does not really slice on the most affected kidney: for some it is the left kidney [2] the remaining outstanding bilateral involvement. In our case we believe that the most affected kidney is the most left because the etiology is found the accident of the public highway (50-70 %) as is the case of our patient. [2]

Vascular lesions are well reported in less than 8% of patients with renal injury [3]. The complete arterial obstruction is even rarer. [5] Thus, over a 15 year period (1981-1996), Haas et al. [4] describe 12 posttraumatic arterial blockages including one case of bilateral obstruction. These lesions are often linked to the deceleration mechanism. They sit on the proximal portion of the renal arteries (first two centimeters). [5] The most affected is the left kidney. The arguments supporting this thesis are: first the structures adjacent to right kidney (liver, duodenum and vena cava) are used to limit the movements and the fact that the right renal artery is longer promote better distribution of forces of the long axis of the vascular shear. Finally, it is important to note that the contact angle of the left renal artery is more acute than the right and the deceleration force therefore would generate a pull on the vascular pedicle and a breach of the most fragile tunic, the intima. All this, will cause dissection that is a secondary factor of thrombosis and ischaemia. However, phenomena are compression between the abdominal wall and vertebral bodies have also been implicated.

Clinically, unlike the major renal trauma that present low back pain often associated with gross hematuria, clinical signs of isolated trauma of the renal vascular pedicle are rough or absent; moreover, they may be masked by the associated lesions. The impasto lumbar pit, can be the witness of a retro peritoneal hematoma [6]. Clinical signs, suggesting the presence of severe renal trauma, must lead to the achievement of immediate radiological assessment in stable hemodynamically patients or after resuscitation. With regard to the hemodynamically unstable patients abdominopelvic coupled to the ultrasound color Doppler can be used as a review of descrambling ("screening") in emergency room and allows the realization of a lesion results quickly. It is effective for abdominal lesions, including liver and spleen, but not for those of the pancreas or small intestine. [7]

In our case, it is the knowledge of the occurrence of context of initial trauma (exact nature, kinetics) was a warning sign and pushed us to place the patient in the ICU surveillance situation. Indeed, clinical signs were absent, the patient was only accusing back pain.

The abdominopelvic scan with cuts without injection and with early and late injection remains the key examination to study the state of the kidney and do the comprehensive review of the associated lesions [8]. He supplanted angiography whose only interest lies in the possible association of endovascular therapeutic gesture. [9] Only early diagnosis allows to consider revascularization. The duration of ischemia directly determines the functional recovery of the kidney Actions hence the need for early diagnosis. Circulation "residual" because of the incomplete nature of the obstacle or collateral circulation, through the renal capsule, ureteral perished, can maintain some degree of renal perfusion and explain cases of recovery Late revascularization [3]. When the

obstruction is complete, there is no consensual deadline beyond which revascularization is illusory.

In the literature the maximum period of ischemia used for unilateral renal disease is variously between four, five, 12 or even 18 hours [6]. However, the indication of revascularization is formal when the lesions are bilateral pedicle or in case of single kidney [3].

Regarding the venous lesions, difficulty is both diagnostic and therapeutic

They are particularly difficult to detect and the danger lies in the event of breach of this type of injury is a massive hemorrhagic recovery typically occurring between the 5th and 10th day once the lysed clot (initial tamponade effect created by the hematoma perirenal having disappeared) [2]. The entire section is rarely serviceable and often requires nephrectomy due to persistent bleeding. However a proximal ligation of the left renal vein does not necessarily involve a total nephrectomy due to the presence of collateral drainage created by gonadal vein and adrenal lumbar veins [2].

Whereas for the arterial lesions we can use different vascular repair processes (end-to-end anastomosis resection, venous or arterial graft and autologous transplantation). In the literature, the long-term success of the revascularization varies between the series for MAGGIO it's 28.5% [10], 66.6% for SMITH [11], 20-75% for PIÉCHAUD [6]. The success of the revascularization is bonded to the warm ischemic time. There is no consensus on the "ideal" deadline for revascularization so it varies from 4 hours for El Khader [3] and up to 16 hours for PIÉCHAUD [6].

The availability of a vascular surgeon and experience greatly influence the chances of revascularization. The repair does not mean restoration of renal function of the injured kidney. [12] Percutaneous transluminal angioplasty with insertion of one or more stents is an alternative to surgery especially for the most fragile patients. It is increasingly proposed, even if still little reported in the literature with an insufficient use decline. [13]

Nonoperative management is recommended when vascular injury is unilateral and management of time too late to hope for a long-term benefit on renal function or when associated lesions override kidney damage. In the case reported, late diagnosis and the location did not allow endoscopic embolization because it was too risky or endoscopic revascularization for lack of technical means.

Conclusion

The traumatic dissection of the renal pedicle is rare and difficult clinical diagnosis. The scan can ask the positive diagnosis and comprehensive assessment of associated injuries. Surgical revascularization has limited indications,

however, endovascular revascularization, under evaluation, would have encouraging immediate results. The minimally invasive is an undeniable asset for cases of multiple trauma but remains to be assessed over the long term. In some situations the knowledge of the specific context of the occurrence of the trauma should help identify patients for whom optimized support is required.

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