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Case Report

CT scan guided drainage in anticoagulated patients to avoid laparotomy: A case report [☆]

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ABSTRACT

Direct oral anticoagulant use has increased significantly over the last decade. Their perioperative management is always challenging for the anesthesiologist. Interventional radiology offers an interesting alternative nowadays, especially in emergencies. We report the case of a 52-year-old woman who was admitted to our department to manage a septic shock secondary to an abscessed collection in the right iliac fossa. After a multidisciplinary consultation, given that she was taking anticoagulation medications for venous mesenteric ischemia, it was decided to proceed with computed tomography scan-guided drainage of the collection, which resulted in the evacuation of over 500 cc of pus. This case report emphasizes the importance of interventional radiology and its role in avoiding surgical interventions in risky situations, especially for patients on anticoagulants, or at least to be carried out, in a second step, under better conditions.

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Abbreviations: DOACs, direct oral anticoagulants; CT scan, Computed tomography scan; SOFA, Sepsis-related Organ Failure Assessment; PT, prothrombin time; PTT, Partial thromboplastin time; SIR, Society of interventional radiology; FFP, Fresh frozen plasma.

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Introduction

Direct oral anticoagulant (DOAC) use has increased significantly over the last decade, with more than 10% of patients on anticoagulants requiring surgery or invasive procedures [1]. Their perioperative management, particularly in urgent situations, represents a challenge for the anesthesiologist, especially in the absence of direct oral anticoagulant dosing. In such cases, interventional radiology offers an interesting alternative, especially in emergencies. We report the case of computed tomography (CT)-guided drainage of an intra-abdominal abscess responsible for septic shock, in a patient on direct oral anticoagulant therapy.

Case report

Patient information

A 52-year-old woman was admitted to the IBN SINA emergency department to manage hemodynamic instability. In her medical history, we found venous mesenteric ischemia diagnosed 3 months ago, medically treated with rivaroxaban 15 mg per day, and a suspicious ileal process currently being explored in the gastroenterology department. Five days before admission, she presented diffuse abdominal pain, and severe constipation, with an unquantified fever.

Clinical findings

On admission, she was febrile at 38.8°C with hypotension at 60/30 mmHg, tachycardia at a rate of 120/min, and showed signs of peripheral hypoperfusion with prolonged capillary refill time (8 seconds). The abdominal examination revealed generalized abdominal defensiveness, maximally in the right iliac fossa.

Imaging and biological findings

After stabilizing the patient and introducing vasoactive drugs, an abdominopelvic injected CT scan was performed, revealing active inflammatory thickening of the right colon, cecum, and the last ileal loop with an abscessed collection in the right iliac fossa appearing to be supplied by an adjacent enteroenteric fistula. Inflammatory markers returned positive with hyperleukocytosis at 22,000 elt/mm^3 , procalcitonin at 11.9 ng/mL; and C reactive protein at 224 mg/l. Her SOFA score was 7, corresponding to a 15%-20% mortality rate. The diagnosis of septic shock was therefore made.

Therapeutic management

Antibiotic therapy was initiated within the hour based on the combination of piperacillin-tazobactam and amikacin. After a multidisciplinary consultation, given that the patient was on DOACs and presented abnormal clotting tests (PT 40%; PTT 42 sec), it was decided to proceed with a CT scan-guided drainage of the collection (Figs. 1 and 2) without using reversal agents. It

resulted in the evacuation of over 500cc of pus, with no bleeding complications.

Follow-up and outcome of interventions

A gradual withdrawal of vasoactive drugs marked the evolution, and she was then transferred to the surgical emergency intensive care unit for further treatment.

Discussion

CT or ultrasound-guided percutaneous drainage of intra-abdominal collections has been gaining ground in our clinical practice since the 1980s [2,3], as it has proven to be a safe and effective method for treating patients with collections in different locations, such as liver abscesses, psoas abscesses, collections secondary to Crohn's disease, or even retroperitoneal collections [4,5]. Depending on the radiologist's preference and the location of the abscess, the catheter can be placed under ultrasound or CT guidance [6].

This minimally invasive technique represents an interesting alternative to general anesthesia, which can be harmful, especially for patients with chronic illnesses who require preoperative preparation, which is not always feasible, especially in emergencies.

Nowadays, the number of patients on DOACs tends to increase in the emergency departments, with a more than 160% rise in their use since the end of 2014 [7]. In addition, it is estimated that approximately 10% of patients receiving long-term anticoagulation require surgery or other invasive procedures, as was the case of our patient who presented a septic shock secondary to an abdominal abscess, that needed to be evacuated. However, to perform a laparotomy, DOACs must be withheld in an attempt to minimize the hemorrhagic risk. Interventional radiology represents an interesting alternative, with minimally invasive imaging-guided drainage.

Yet, this minimally invasive procedure is not harmless for all patient categories. Moreover, data to guide interventionalists on the periprocedural management of patients receiving anticoagulation is still limited to retrospective series primarily focused on non-radiology-based procedures, with the unavailability of high-quality, randomized, controlled data.

According to the Society of Interventional Radiology's (SIR) recommendations, intra-abdominal abscess drainage is considered a high bleeding risk procedure [8]. So, clotting tests and withholding DOACs or reversing them are mandatory before any intervention [7,8]. Major surgeries can be performed with a platelet count of $>50 \times 10^9/\text{L}$ (5) and an INR <1.5 . These surgical laboratory thresholds have been extrapolated to inform generalized recommendations for image-guided procedures with high bleeding risk because of evidence paucity to suggest alternatives [8]. Even though these recommendations are not intended to supplant professional judgment, a physician may deviate from these guidelines as necessitated by the individual patient, practice setting, or available resources.

In developing countries, prothrombin complex concentrate is not always available, so reversing DOACs with fresh frozen plasma (FFP) transfusion is the only alternative available.

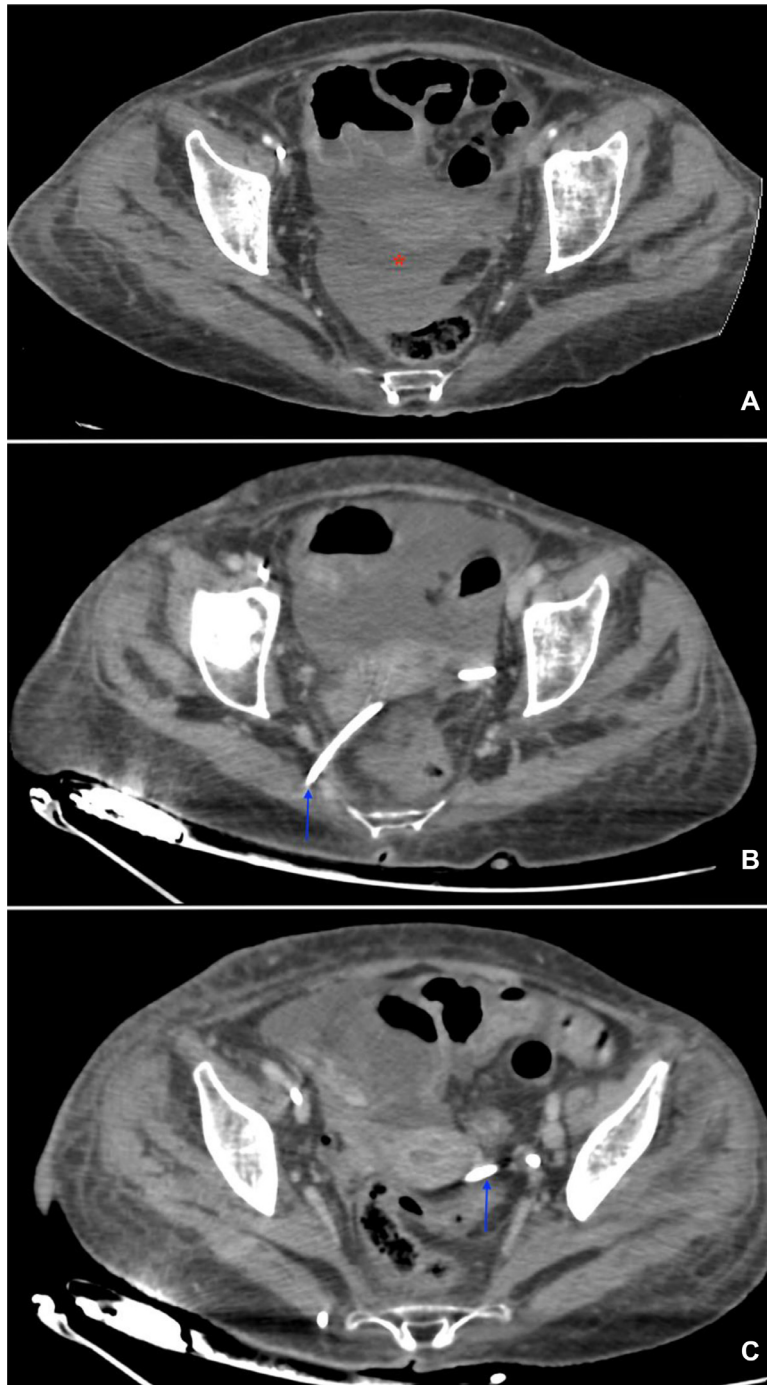


Fig. 1 – Axial CT-SCAN of our 52-year-old female patient pelvis after Intravenous contrast administration showing peritoneal fluid within the Douglas pouch (red asterisk in A). A drainage was successfully performed through a right trans gluteal approach (blue arrow showing the catheter route).

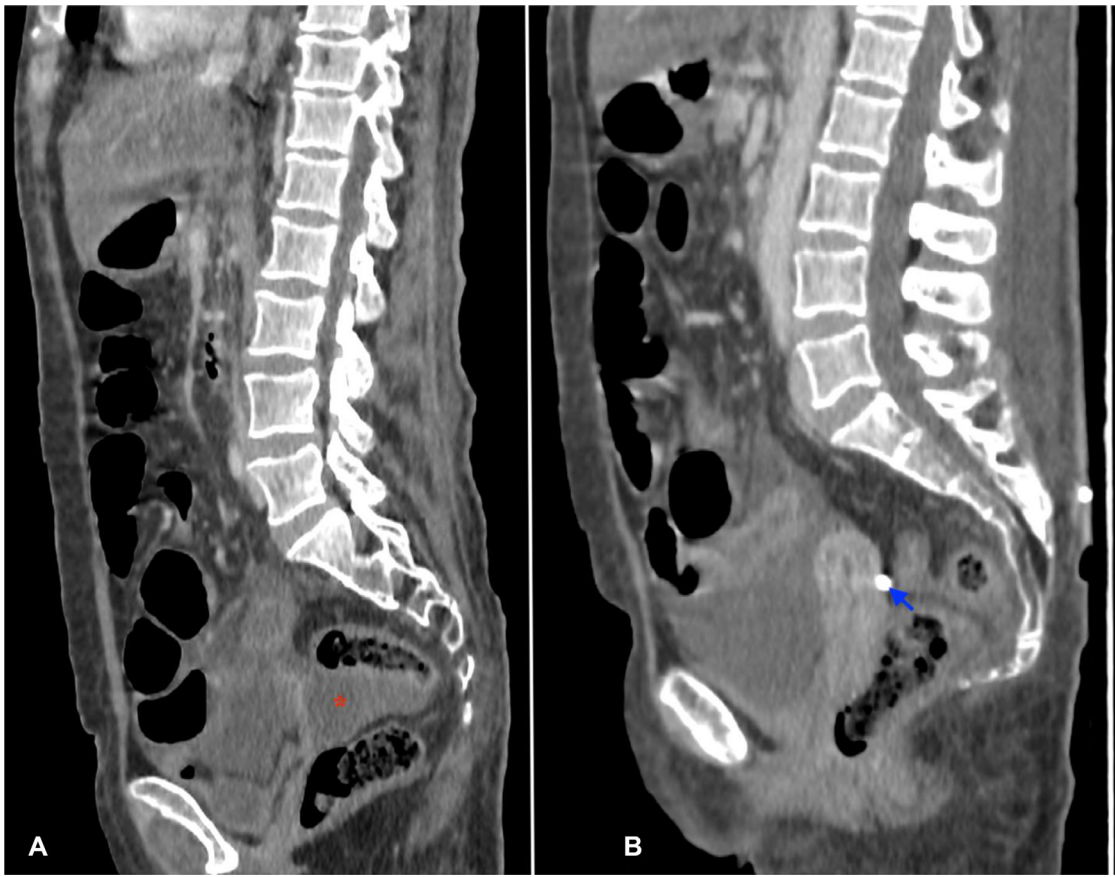


Fig. 2 – Sagittal CT-SCAN of our 52-year-old female patient pelvis after intravenous contrast administration before and J-1 after drainage showing peritoneal fluid within the Douglas pouch (red asterisk in A) and the catheter tip (blue arrow).

However, given the FFP's transfusion risks, the procedure can be done under anticoagulation medication as was the case of our patient. There has been no data supporting it, except some case series [9] which demonstrated the absence of clinically significant bleeding in patients with coagulation disorders not receiving FFP before low bleeding risk procedures. This leaves us with our clinical common sense, especially when the vital prognosis is at stake and when therapeutic action is essential.

Conclusion

Nowadays, CT scan-guided drainage occupies an important place in the management of intra-abdominal abscesses, at least initially, especially in chronically ill patients taking anticoagulation medications. It makes it possible to avoid surgical intervention or at least to be carried out, in a second step, under the best local and general conditions.

Teaching point

Interventional radiology is a safe and efficient alternative for surgical interventions in risky situations, especially for chron-

ically ill patients on anticoagulants, or at least to be carried out, in a second step, under the best local and general conditions.

Author contributions

Safae Dehbi, Mohamed Youssef El Mcharfi, Hicham Ziani, Hamza El Hamzaoui, Bouchra Armel, Manal El Arfaoui: patient management.

Yahya El Harras, Ola Messaoud, and Omar El Aoufir: they performed the CT scan guided drainage.

Omar Mkira, Karim Bellarabi, Khawla Bahou, Younes Laroussi, Youness Bakali: patient management.

Safae Dehbi, Yahya El Harras, Ola Messaoud, Omar El Aoufir: data collection.

Safae Dehbi, Hicham Ziani, and Hamza El Hamzaoui: manuscript drafting.

Hamza El Hamzaoui and Mustapha Alilou: manuscript revision.

All the authors have read and approved the final version of the manuscript.

Patient consent

The author obtained written informed consent from the patient's family for submission of this manuscript for publication.

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