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Retroperitoneal necrosectomy using lavage circuit as a new technique in the management of pancreatic infected walled off necrosis (WON): A case report

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ABSTRACT

INTRODUCTION: Walled off necrosis (WON) is clarified according to the revised Atlanta classification, 2013, as a late phase complication of acute necrotizing pancreatitis. Not all cases with WON need intervention but, if indicated both open approach and minimally invasive techniques were clarified. We are discussing here, a case presented to us with infected WON. We adopted the step up approach as the main line of treatment; the case was managed by percutaneous catheter drainage (PCD) followed by retroperitoneal necrosectomy using lavage circuit.

CASE PRESENTATION: Diabetic male patient aged 58 year old gave to us with left hypochondrial pain accompanied with easy fatigability and poorly controlled DM. The patient had an attack of acute pancreatitis (AP) 2 months before admission. Abdominal CECT revealed infected WON. The case was managed successfully by retroperitoneal necrosectomy using lavage circuit after failure of PCD.

DISCUSSION: A step up approach is followed for determining the optimal interventional strategy for patients presented with infected necrosis. We adopt retroperitoneal debridement using lavage circuit as a 2nd step in this approach. The concept of this technique is to facilitate the detachment of necrotic tissue using the force of saline while minimizing the risk of bleeding.

CONCLUSION: Infected WON cases are representing as challenging, we require to get rid of the necrotic material with infected fluid and reduce the hazard of complications. In this technique, we have the advantage of retroperitoneal necrosectomy where we can remove only the loose necrotic tissue by saline force and so, reduce the possible bleeding risk.

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1. Introduction

Acute pancreatitis (AP) is clarified according to the Revised Atlanta Classification (RAC), 2013, as an evolving and dynamic condition. It categorized the disease according to phase severity, type and with accurate elucidation of complications [1]. The RAC categorized AP complications to local, systemic and organ failure. The local complications are acute peripancreatic fluid collection (APFC), acute necrotic collection (ANC), pancreatic pseudocyst (PPC), and walled-off necrosis (WON) [2]. ANC is known as an accumulation that including variable amounts of necrotic tissue and fluid happening at the first 4 weeks of acute necrotizing pancreatitis. After 4 weeks from the onset of symptoms, ANC acquires a fibrous capsule and turn to be what is called WON. It may involve the pancreas

or the peripancreatic tissues. ON CECT, WON appears as heterogeneous collection with well-defined wall. WON appears in some cases as homogenous collection and hard to be distinguishing from pancreatic pseudocyst so MRI, transabdominal US or EUS may be needed for this distinction [1,2]. This work has been reported in line with the SCARE criteria [3]. This case was managed in an academic institution. This study is registered on Clinical trials.gov (NCT04615702) [4].

2. Case presentation

Diabetic male patient aged 58 year old gave to us with left hypochondrial pain accompanied with easy fatigability and poorly controlled DM. The patient had an attack of AP 2 months before admission that was managed successfully outside our facility. Abdominal CECT revealed infected WON (17 × 6 cm). Our decision was to do retroperitoneal surgical necrosectomy after failure of PCD.

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Fig. 1. Circuit of lavage between the percutaneous drain and the wide suction placed through the incision into the cavity of the WON with necrotic tissue inside the suction tube.



Fig. 2. Wound closure in interrupted sutures with large bore surgical drain placed inside the cavity.

2.1. Retroperitoneal necrosectomy

The procedure was done under general anesthesia with endotracheal intubation. The procedure was done by a consultant of general surgery with 25 years of experience. The patient was placed in supine position with 30 degree tilt towards the right side by a roll under the left flank. The left arm was positioned over the patients head. The planned incision line was marked with the aid of CECT to detect the best access site to the collection. The incision line was 5 cm one finger below the left costal margin over the mid-axillary line. The entire abdomen and flank were prepared and draped to enable conversion to laparotomy if needed. Skin incision was done as planned before and the muscles were divided sequentially.

Then, aspiration is carried out from the possible collection. After fixation that it was the collection site, the fibrotic thick wall was opened by a scissor. As the collection is opened, pus drained spontaneously. Firstly, a broad suction was inserted in the cavity and the friable loose necrotic tissue was aspirated. Then, a circuit of flushing saline is created in the residual cavity by injection of saline through the previously placed PCD followed by aspiration of the saline and detached loose necrotic tissue fragments by the wide suction tube, the lavage continued till the fluid in the suction was clear from debris (Fig. 1). After completion of the procedure, a large bore surgical drain was placed into the cavity. The fascia was closed over the drain. The skin closed by interrupted sutures (Fig. 2).

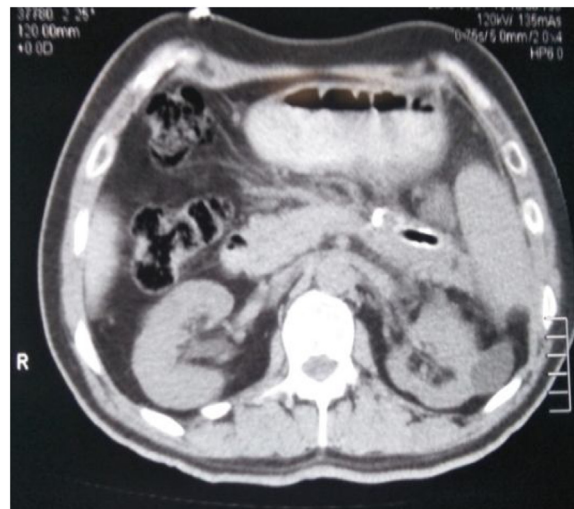


Fig. 3. Follow up CT showing complete resolution of the fluid collection with the drain in the site of the previous collection.

2.2. Postoperative care

The PCD was flushed continuously with saline, 8 L/day in the first 3 days postoperative. On the 3rd day, the patient developed pelvic collection that was drained by another PCD and removed one week later. After the presentation of the pelvic collection, the irrigating fluid was minimized to 2 L/day guided by US to estimate the collection size. After the retroperitoneal necrosectomy, the patient developed pancreatic fistula that was managed conservatively and closed spontaneously after 6 months. By the end of the 6th month, the drain effluent was as little as 30 cc/day, CECT was done showing no residual collection and the drain removed (Fig. 3).

3. Discussion

Recently, management of infected pancreatic necrosis has shifted away from open necrosectomy to a more conservative management and minimally invasive approaches [5]. However, the experiences with these techniques must be considered among the centers. A step up approach is followed for determining the optimal interventional strategy for patients presented with suspected or proved infected necrosis. Image guided percutaneous catheter drainage or endoscopic drainage must be taken in the consideration as the initial choice [6]. We depended on PCD in this case as an initial step. It was announced that PCD solo has the ability for preventing up to 50% of necrosectomies in patients suffered from infected necrosis [7].

We adopt retroperitoneal debridement as a 2nd step in the step up approach. It minimizes the surgical stress through reducing the surgical incision with necrosectomy completely carried out during a retroperitoneal approach without intraperitoneal contamination [8]. A disadvantage is the require for multiple interventions to obtain complete drainage. Open surgical necrosectomy can be avoided in more than 90% of patients [9].

This technique represents a simple and easy modification of videoscopic assisted retroperitoneal debridement (VARD) without the need for videoscopic assistance. We require 2 drains in the cavity to obtain the irrigation circuit. In VARD, the previously placed drain is utilized as a guide to the collection site, in this technique; we can determine the perfect access site depending upon the CT localization of the collection. The concept of this technique is to facilitate the detachment of friable loose necrotic tissue using the force of saline that was injected from the percutaneous

drain, we avoid the bleeding risk from forcefully grasped necrotic tissue. We considered the possibility of a 2nd session but fortunately the residual necrotic tissue was detaching sequentially with postoperative continuous irrigation. The day following the procedure, the patient developed SIRS which resolved completely after 48 h. The WBC count reduced after necrosectomy. Apart from the require for PCD for the pelvic collection, no further intervention was needed.

4. Conclusion

Infected WON cases are representing as challenging, we require to get rid of the necrotic material with the infected fluid and reduce the hazard of complications. In this technique, we have the advantage of retroperitoneal necrosectomy where we can remove only the loose necrotic tissue by saline force and so, reduce the possible bleeding risk.

Declaration of competing interest

The authors have no competing interest to disclose.

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Ethical approval

Permissions were obtained from Institutional Review Board at Faculty of Medicine, Zagazig University hospitals ZU-IRB #3264-15-1-2017.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author's contribution

Ali Helmy El Shewy and Abd Elhafez Mohammad El Shewail drafted the main manuscript; Yasmine Hany Hegab and Doaa Omar Refaat managed the manuscript conception and design of the work; Yasmine Hany Hegab, Ali Helmy El Shewy, Doaa Omar Refaat

and Abd Elhafez Mohammad El Shewail contributed to acquisition, analysis, and interpretation of data. All authors reviewed the manuscript.

Registration of research studies

Clinical trial.gov, NCT04615702 available at: <https://clinicaltrials.gov/ct2/show/NCT04615702>.

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Data availability

The datasets generated during the current study are available from the corresponding author on reasonable request.

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