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Case Report

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Two Catastrophes in One Patient: Perforated Peptic Ulcer with a Coexisting Impending Aneurysm Rupture

Cheng-Yen Lin[1], Hsiu-Yu Chi[2*], Po-Jen Hsiao[3*]

[1]Division of General Surgery, Department of Surgery, Taoyuan Armed Forces General Hospital, Taoyuan 325, Taiwan

[2]Division of Cardiovascular Surgery, Department of Surgery, Taoyuan Armed Forces General Hospital, Taoyuan 32551, Taiwan

[3]Division of Nephrology, Department of Internal Medicine, Taoyuan Armed Forces General Hospital, Taoyuan, Taiwan

[*]Corresponding author:

Hsiu-Yu Chi,
Division of General Surgery, Department of Surgery, Taoyuan Armed Forces General Hospital, Taoyuan 325, Taiwan and Po-Jen Hsiao, Division of Nephrology, Department of Internal Medicine, Taoyuan Armed Forces General Hospital, Taoyuan, Taiwan

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1. Abstract

Acute abdominal pain often requires urgent evaluation and treatment to address life-threatening conditions, which typically stem from a single cause, such as infection, vascular events, or obstruction. This report describes a rare case of an elderly man presenting with two critical conditions: an 8.3 cm abdominal aortic aneurysm (AAA) and a perforated peptic ulcer. A multidisciplinary team prioritized endovascular aortic repair (EVAR) to stabilize the aneurysm, followed by laparoscopic repair of the ulcer. This case highlights the importance of a collaborative approach and tailored surgical strategies to successfully manage the simultaneous occurrence of life-threatening abdominal conditions.

2. Introduction

Acute abdominal pain can arise from various etiologies, necessitating precise differential diagnosis in the emergency setting to ensure timely and appropriate management. Many of these conditions require prompt surgical intervention, as the acute abdomen represents a clinical scenario demanding urgent evaluation and treatment. Common causes include infections, inflammation, vascular events, or obstructions, each of which has the potential to become life-threatening [1]. These conditions are typically singular events; however, in this report, we present a unique case involving a patient simultaneously experiencing life-threatening complications from both an aneurysm and a peptic ulcer.

3. Case Present

An octogenarian male patient with a history of hypertension and recurrent back pain managed with non-steroidal anti-inflammatory drugs (NSAIDs) presented to the emergency department at 5 AM with acute, severe upper abdominal pain. Associated symptoms included nausea, diaphoresis, and pain radiating to the back and neck. On examination, a pulsatile abdominal mass was identified, along with tenderness in the upper abdomen. Initial vital signs were relatively stable, with a temperature of 35.6°C, blood pressure of 171/80 mmHg, heart rate of 61 bpm, and respiratory rate of 20 breaths per minute. The emergency team conducted blood tests and a bedside ultrasound, which revealed a 7 cm abdominal aortic aneurysm (AAA). Laboratory findings indicated leukocytosis, elevated inflammatory markers, and mild renal dysfunction. CT angiography was subsequently performed, confirming an 8.3 cm infrarenal AAA, along with evidence of subphrenic free air and fatty stranding near the stomach and duodenum, suggesting a hollow organ perforation. Given the critical findings, consultations with cardiovascular and general surgery teams were initiated. A multidisciplinary decision was made to prioritize endovascular aortic repair (EVAR) for the aneurysm, followed by laparoscopic repair of an identified perforated gastric ulcer. Postoperatively, the patient was admitted to the surgical intensive care unit and began oral hydration and feeding on postoperative day five. His recovery was uneventful, with no complications or long-term sequelae.

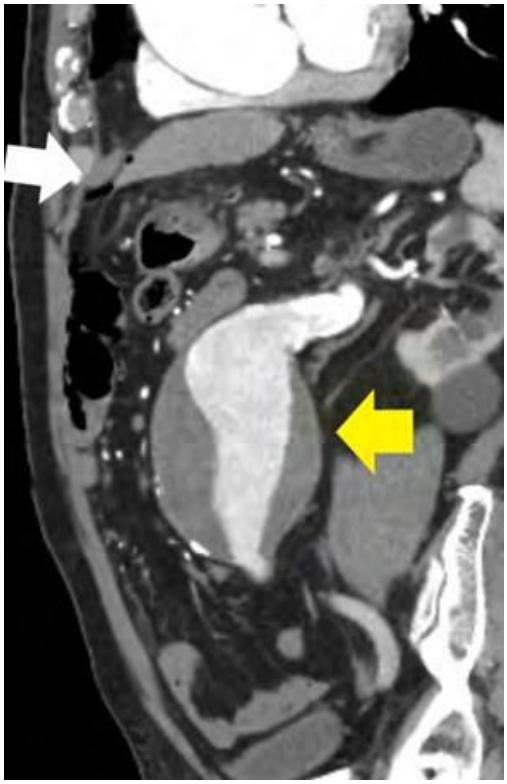

Figure 1: An 8.3 cm infrarenal abdominal aortic aneurysm with mural thrombus (yellow arrow) and subphrenic free air and fatty stranding near the stomach and duodenum (white arrow).

Figure 2: Endovascular aortic repair.

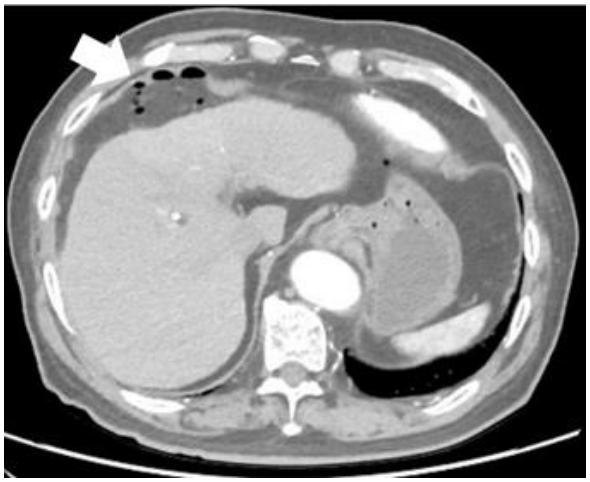

Figure 3: Subphrenic free air.

Figure 4: Laparoscopic repair of a perforated gastric ulcer.

4. Discussion

Elective surgical intervention is advised for AAA exceeding 5.5 cm in diameter, as the risk of rupture escalates significantly with increasing aneurysm size. For aneurysms between 5 and 5.9 cm, the rupture risk ranges from 3–15%; for those measuring 6 to 6.9 cm, the risk rises to 10–20%; for 7 to 7.9 cm, the rupture risk increases to 20–40%; and for aneurysms larger than 8 cm, the risk is 30–50% [2]. The patient's recent onset of back pain cannot be conclusively ruled out as a sign of aneurysm instability or impending rupture. As such, surgical intervention was indicated in this case. The two primary surgical techniques for managing AAA are open repair and EVAR. Open repair, though more invasive, is highly effective, offering long-term durability and fewer complications in appropriate candidates. This procedure is performed under general anesthesia, involving clamping of the aorta to stop blood flow, removal of thrombus and debris, and replacement of the diseased segment with a synthetic graft [3]. However, open repair may be contraindicated in the presence of conditions like hollow organ perforation, which could lead to widespread peritonitis. EVAR, on the other hand, is less invasive, facilitates quicker recovery, and is often the procedure of choice for high-risk patients. However, it necessitates lifelong follow-up and may require further interventions. Laparoscopic surgery involving pneumoperitoneum in patients with AAA presents unique challeng-

es due to the effects of elevated intra-abdominal pressure (IAP). The increased IAP compresses the aneurysm, elevating wall tension and enhancing the risk of rupture, particularly in larger or unstable aneurysms. Hemodynamic changes, such as reduced venous return, increased systemic vascular resistance, and impaired cardiac output, can exacerbate cardiovascular strain, potentially reducing perfusion to the aneurysm and compromising vessel integrity. Additionally, the anatomical distortion caused by the aneurysm may complicate access during laparoscopic surgery, increasing the risk of inadvertent injury. For cases of hemodynamic instability and substantial intra-abdominal contamination, simple closure with a Graham patch using omental tissue is recommended. If viable omentum is absent, a patch from the falciform ligament can be used as an alternative. A randomized trial comparing laparoscopic and open surgery for perforated ulcers revealed no significant differences in operating time or complication rates. However, laparoscopic surgery was associated with shorter hospital stays and reduced postoperative pain [4]. A meta-analysis by Cirocchi et al. [5]. Similarly reported no major differences in clinical outcomes, although laparoscopic repair resulted in less postoperative pain and a lower incidence of wound infections [5]. A retrospective study by Vakayil et al. [6]. Which analyzed 6,260 patients, found that laparoscopic repair, despite longer operating times, was linked to fewer complications, reduced mortality, and shorter hospital stays compared to open surgery [6]. Given the patient's age and condition, laparoscopic repair of the perforated peptic ulcer was chosen to optimize postoperative recovery. After AAA repair with stenting, the pneumoperitoneum pressure was adjusted to 8 mmHg (compared to the typical 12–15 mmHg) to minimize the impact of IAP on the aneurysm, thus facilitating the successful completion of the laparoscopic procedure.

5. Conclusion

This patient faced two critical conditions: a potentially ruptured abdominal aortic aneurysm and a perforated peptic ulcer with associated peritonitis. While each condition required distinct surgical approaches, both presented unique challenges and limitations. Through effective collaboration among the multidisciplinary medical team, the most appropriate surgical strategy was determined and implemented, resulting in a successful treatment outcome for the patient.

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