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CASE REPORT

Management of pyoperitonitis in primary healthcare setting: a case report

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Abstract

Pyoperitonitis can rapidly progress to septic shock which leads to extremely high morbidity and mortality. The current guidelines outline the core percepts of care including prompt resuscitation, appropriate antibiotics, and meticulous source control. However, the management of such cases poses one of the biggest challenges, especially in resource-limited settings. It is critical that such cases are meticulously dealt with, as the risk of sepsis and consequently septic shock and organ damage is extremely high. A comprehensive case report will be used in this article to highlight the management of pyoperitonitis in primary healthcare setup.

Keywords: Laparotomy, Peritonitis, Primary healthcare, Sepsis

INTRODUCTION

The spillage of enteric contents into the peritoneal cavity with gastrointestinal perforation can have potentially fatal consequences, resulting in increased mortality with delay in diagnosis and management.[1] The timely resuscitation and execution of damage control laparotomy for source control is a key to the prevention of the progression of sepsis.[2] A detailed case study in this article aims to provide a better understanding that basic principle of care to such patients can be instituted in primary healthcare settings.

CASE REPORT

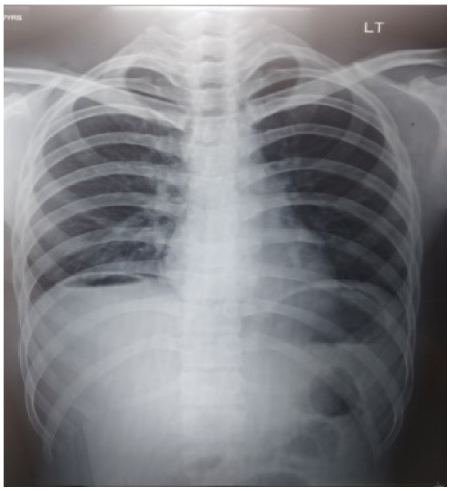
A 17-year-old male patient presented to the emergency department with complains of fever, right iliac fossa pain which became generalized and abdominal distension for seven days. He was lethargic, diaphoretic, febrile (103°F), normotensive (BP 100/60 mmHg) and tachypneic with shallow respiration. On examination, he had generalized abdominal tenderness and rigidity with guarding, and absent bowel sounds. His lab investigations showed leukocytosis (26,000/mm3), neutrophilia (95%) and uremia (52 mg/dl).

The patient was resuscitated with one liter of intravenous ringer's lactate solution. Intravenous paracetamol relieved his fever and pain. The x-ray abdomen erect view showed free air under right hemi-diaphragm (Figure 1A). The point-of-care ultrasound showed echogenic free fluid in the peritoneal cavity (Figure 1B). The paracentesis yielded grossly purulent fluid (Figure 1C), which was sent for culture.

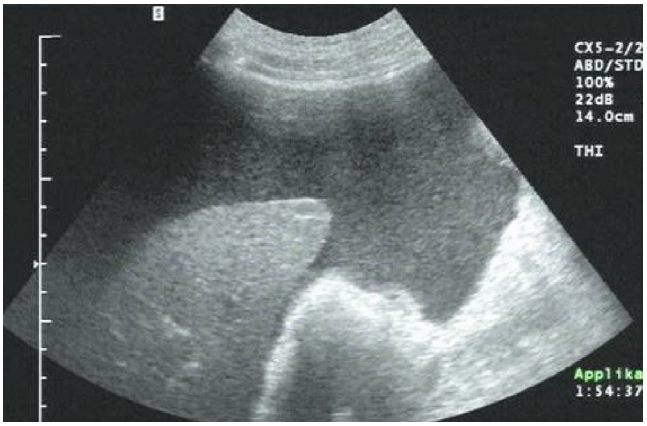
An explorative laparotomy (Figure 1D), peritoneal lavage and adhesiolysis was performed for pyoperitonitis secondary to appendiceal perforation. An abdominal drain was placed. Meanwhile, the pus culture sensitivity reported *Escherichia coli*, which was sensitive to Piperacillin-Tazobactam and Levofloxacin. Throughout his two-week hospital stay, he received intravenous Piperacillin-Tazobactam 4.5gm thrice a day and intensive individualized care. His remarkable recovery allowed us to transition his diet gradually from liquid to solid over that period. He was discharged on oral levofloxacin (750mg once daily).

On outpatient follow-up, the patient's surgical wound had purulent discharge. The pus culture was sent. Daily wound lavage was done until healthy granulation tissue had appeared, and the wound was then closed over a suction drain made out of a nasogastric tube and 50-ml syringe (Figure 2). Nitrofurantoin was prescribed as per the culture report which showed growth of *Klebsiella pneumonia*, sensitive to the same drug. After two weeks, his wound had healed. The interval appendectomy was planned, which was performed three months later (Figure 3).

The patient was overjoyed to receive such compassionate care. Initially, he was doubtful about the possibility of



A. Erect chest x-ray showing free gas under right hemi-diaphragm



B. Ultrasonography finding shows echogenic free fluid in the peritoneal cavity

C. Grossly purulent aspirate on diagnostic paracentesis

D. Intraperitoneal pus extruding on explorative laparotomy

Figure 1. Clinical profile of patient- diagnostics to therapeutics

managing his condition due to his financial struggles. However, the dedicated healthcare workers provided him with the best possible treatment and he has expressed his gratitude to the care team.

Figure 2. Subcutaneous suction drain

Figure 3. Amputated appendix after interval appendectomy

DISCUSSION

The primary healthcare centers in Nepal are inadequately staffed, under-resourced, and far too frequently overworked.[3] The management of sepsis is a huge challenge in such a setup.

The second most prevalent source of sepsis is the abdomen.[4] Acute Appendicitis is a surgical emergency that is most commonly encountered, and it is evident that early appendectomy has excellent prognosis.[5] However, the risk of appendiceal perforation rises to over forty percent if the symptoms persist for longer than two days.[6] Patients usually present with fever, abdominal pain, diarrhea and ileus, along with diffuse tenderness and rigidity on palpation.[7] The diagnosis can be further confirmed by the evidence of free gas under hemi-diaphragm in an erect chest radiograph.[8]

The mortality rate for a hollow viscus perforation peritonitis reaches to twenty percent.[9] Hence, when diffuse peritonitis is diagnosed via clinical parameters, a formal laparotomy should be performed to enable complete peritoneal lavage and toileting.[10] The treatment also includes fluid resuscitation and appropriate broad-spectrum antibiotics to cover aerobes and anerobes.[11] In one prospective study, the authors concluded piperacillin-tazobactam or imipenem should be initiated in cases of peritonitis due to perforated viscus, complicated with sepsis or septic shock.[12] It is often advised to start enteral feedings as early as possible to mitigate surgical complications and hasten the recovery.[13]

While the placement of drainage tubes is debated, many surgeons still prefer intraperitoneal drains to drain collections such as pus and intestinal contents that reduce the potential source of infection.[14] However, the placement of tube drainage could not prevent surgical site infection in the patient. The placement of a subcutaneous suction drainage tube, therefore, should be considered in cases of surgical site infection following emergency surgery for perforation peritonitis, as it not only facilitates early treatment of such infection and secondary suturing, but also enables early rehabilitation.[15]

The management of such cases requires rigorous efforts and skilled expertise. Although the healthcare team demonstrated dedication, there were certainly a few limitations. First, the case was operated on spinal anesthesia with the aid of anesthesia assistant. Second, the assisting doctor in the operation theatre was a medical officer. Another notable constraint was that none of the nurses had formal intensive care training. The suction drain was not available at our center, so it was prepared from a nasogastric tube and 50-ml syringe. The poor generalizability of observational findings of this case report is the major limitation.

CONCLUSION

The case of sepsis secondary to pyoperitonitis can be managed in the primary healthcare center if there is no evidence of organ damage and the treatment can be instituted early. However, the lack of adequate resources and expertise can accompany limitations.

DECLARATIONS

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Conflict of Interest
None

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None

Consent of the Study
JGPEMN case Report Consent Form was signed by the patient and the original article is attached with the patient's chart.

Consent for Publication from Authors

All the author/s and participants consented to the publication of the findings.

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