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Generalized Acute Peritonitis due to Ileal Perforation: Epidemiological, Diagnostic, and Therapeutic Aspects at the General Surgery Department of Idrissa Pouye General Hospital, Dakar

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Abstract
Introduction: Generalized acute peritonitis from ileal perforation remains a serious surgical emergency, particularly in developing countries. This study aims to describe its epidemiological, diagnostic, therapeutic, and evolutionary aspects in a Senegalese hospital setting.
Methods: This was a retrospective, descriptive, and analytical study conducted over 8.5 years (January 2017 to June 2025) in the General Surgery Department of Idrissa Pouye General Hospital, Dakar. We included all patients operated on for generalized acute peritonitis due to ileal perforation.
Results: Thirty-six patients were included. The mean age was 33.25 years, with a male predominance (sex ratio 3:1). Abdominal pain (100%), vomiting (50%), and cessation of bowel movements (77.7%) were the main presenting symptoms. The mean consultation delay was 5.4 days. Typhoid fever was the leading cause (41.7%). All patients underwent emergency laparotomy. The main surgical procedures were ileal resection with ileostomy (86.1%) and peritoneal lavage. Postoperative morbidity was 19.4%, dominated by parietal suppuration. The mortality rate was 13.9%.
Conclusion: Ileal perforation peritonitis primarily affects young males in our context, with typhoid fever as the main etiology. The prognosis depends on early diagnosis and surgical management, which often requires resection with protective ileostomy. Public health measures against typhoid fever are crucial for prevention.

Keywords: Peritonitis, Ileal Perforation, Typhoid Fever, Ileostomy.

Introduction
Generalized acute peritonitis is defined as an acute inflammation of the entire peritoneal serosa, often secondary to infection [1]. It represents a medico-surgical therapeutic emergency whose prognosis depends on the cause and the timeliness of treatment [2].
In Africa, peritonitis remains a significant public health problem with high mortality rates, varying between 9.1% and 21% [3, 4].
Secondary peritonitis are the most frequent and can arise from various etiologies, among which ileal perforation is a common cause, especially in developing nations [5]. Ileal perforations account for approximately 20% of all hollow viscus perforations [6]. Typhoid ileal perforation is the most prevalent, followed by traumatic perforations and other causes like complicated Meckel's diverticulum and Crohn's disease [7]. The incidence of typhoid ileal perforation in West Africa varies from 15% to 33% [8].
Despite advances in surgical and resuscitation techniques, management of this condition in resource-limited settings like Senegal poses significant challenges, often leading to delayed presentation and high complication rates.
This study aimed to evaluate the epidemiological, diagnostic, therapeutic, and outcome aspects of generalized acute peritonitis due to ileal perforation at the General Surgery Department of the Idrissa Pouye General Hospital (HOGIP) in Dakar.

2. Methods

2.1. Study Design and Setting

We conducted a retrospective, monocentric, descriptive, and analytical study at the General Surgery Department of HOGIP, a major reference hospital in Dakar, Senegal.

2.2. Study Period and Population

The study covered an 8.5-year period from January 1, 2017, to June 30, 2025. We included all patients operated on for generalized acute peritonitis due to ileal perforation during this period. The diagnosis was based on clinical, paraclinical arguments, and intraoperative findings.

2.3. Data Collection and Analysis

Data were collected from hospitalization registers, operative reports, and patient medical records using a pre-established Excel 2013 form. Studied parameters included frequency, age, sex, consultation delay, clinical signs, paraclinical examinations, treatment, and outcomes. Data analysis was performed using R software version 4.2.2.

2.4. Ethical Considerations

Given the retrospective nature of the study, anonymity and confidentiality of patient data were strictly maintained.

3. Results

3.1. Epidemiological Aspects

Over the study period, 36 patients were managed for generalized acute peritonitis due to ileal perforation, yielding an average of 4 cases per year. The annual incidence peaked in 2025 with 10 cases. There was a clear male predominance, with 27 men (75%) and 9 women (25%), giving a sex ratio of 3. The mean age was 33.25 years (range: 12-66 years). The 19-30 years age group was the most represented (44.4%).

3.2. Clinical Presentation

The main presenting symptoms were abdominal pain (100%), cessation of bowel movements (77.7%), and vomiting (50%). The onset was brutal in 66.7% of cases. The pain was diffuse at admission in 61.11% of patients. The mean consultation delay was 5.4 days (range: 1-15 days); 75.8% of patients consulted within 7 days of symptom onset.

On physical examination, generalized abdominal guarding was found in 69.44% of patients, abdominal distension in 44.44%, and umbilical pain on palpation ("cri de l'ombilic") in 41.66%. Digital rectal examination elicited Douglas pouch tenderness ("cri du Douglas") in 41.66% of cases.

3.3. Paraclinical Investigations

Biology: Hyperleukocytosis with neutrophil predominance was present in 55.6% of cases, while leukopenia was noted in 30.5%. Anemia (Hb < 12 g/dL) was found in 41.67% of patients. Hyponatremia and hypokalemia were observed in 45.16% and 35.5% of cases, respectively. C-reactive protein was positive in 69.4% of patients. Widal and Felix serodiagnosis was positive in 14 cases (38.8%).

Imaging: Abdominal X-ray without preparation (ASP) performed in 30 patients (83.33%) showed hydro-aeric levels in 100% of cases, diffuse greyness in 80%, and pneumoperitoneum in 16.7%. Abdominal ultrasound, performed in 18 patients (50%), revealed intraperitoneal fluid in 38.8%. Abdominal Computed Tomography (CT) scan, performed in all 36 patients (100%), showed peritoneal effusion in 100% and pneumoperitoneum in 13.88%.

3.4. Etiologies

Typhoid fever was the leading cause of ileal perforation, identified in 15 cases (41.7%). This was followed by post-traumatic causes (16.7%) and perforations following illegal abortions using manual intrauterine aspiration (AMIU) (13.8%). The etiology was unspecified in 10 cases (27.8%).

3.5. Therapeutic Management

Medical Treatment: All patients received preoperative medical resuscitation, including vascular filling, correction of hydro-electrolytic disorders, and nasogastric tube and urinary catheter placement. Analgesia was administered to all patients, primarily based on Paracetamol (100%), often associated with Nefopam (72.2%). Antibiotic therapy, initiated in all cases, was most frequently a triple therapy combining Ofloxacin, Metronidazole, and Gentamicin (78%). Blood transfusion was required in 13 patients (36.1%).

Surgical Treatment: All patients underwent emergency laparotomy under general anesthesia, predominantly via a xipho-pubic midline approach (52.8%). Intraoperative findings included purulent (36.1%), bloody (25%), and feculent (19.4%) peritoneal fluid. The perforation was unique in 61.1% of cases (figure 1) and multiple in 38.9% (figure 2). The most common surgical procedures were ileal resection with ileostomy (86.1%), extensive peritoneal lavage (100%), and drainage of the peritoneal cavity (100%). Resection-anastomosis and simple suture were performed in 8.4% and 5.6% of cases, respectively.

3.6. Microbiological Results

Hemocultures, performed in 10 patients, were positive in 8 cases (80%). *Escherichia coli* was the most frequently isolated pathogen (40%). Bacteriological analysis of peritoneal fluid identified various germs, including *Enterobacter cloacae* (4 patients), *Acinetobacter baumannii* (2 patients), and *Proteus mirabilis*, *Pseudomonas aeruginosa*, and multiresistant *Citrobacter diversus* (1 patient each).

3.7. Evolution and Outcomes

Postoperative course was simple in 24 patients (66.7%). Morbidity was 19.4%, dominated by parietal suppuration (8.3%), intestinal fistula (5.56%), and evisceration (5.56%). Five deaths were recorded, yielding a mortality rate of 13.9%. All deaths were linked to an unfavorable postoperative course, primarily in the context of septic shock following anastomotic leakage.

4. Discussion

Our study provides a comprehensive overview of generalized acute peritonitis due to ileal perforation in a West African surgical department. The condition predominantly affects young, active males (mean age 33.25 years, sex ratio 3), a finding consistent with other studies in sub-Saharan Africa [9, 10]. This demographic is particularly exposed to risk factors for typhoid fever and abdominal trauma.

The significant consultation delay (mean 5.4 days) is a critical factor impacting prognosis. This delay, often due to self-medication, consultation with traditional healers, and limited access to healthcare facilities, allows for extensive peritoneal contamination and systemic deterioration, increasing the risk of sepsis and mortality [11]. Our mortality rate of 13.9% aligns with rates reported in other African series, which range from 9.1% to 21% [3, 4], but remains high compared to high-income countries.

Typhoid fever was the leading etiology (41.7%), underscoring its persistent burden as a public health issue in regions with

inadequate sanitation and clean water supply [8, 12]. This highlights the imperative need for public health interventions, including vaccination campaigns and improved water, sanitation, and hygiene (WASH) infrastructure.

The surgical management in our series was predominantly conservative, with ileal resection and protective ileostomy being the procedure of choice (86.1%). This approach is widely recommended in contexts of delayed presentation, significant peritoneal contamination, and unstable patient conditions, as it minimizes the risk of catastrophic anastomotic leakage [13, 14]. The low rate of primary anastomosis (8.4%) reflects a prudent surgical stance in this high-risk environment.

The microbiological profile, with a variety of enterobacteriaceae and multiresistant germs isolated, justifies the systematic use of broad-spectrum antibiotic therapy, ideally guided by local antibiograms. The high prevalence of these pathogens necessitates a combination therapy covering both aerobic and anaerobic bacteria [15].

The main limitations of this study are its retrospective nature and the relatively small sample size, which is inherent to single-center studies on a specific surgical pathology. Furthermore, the etiology remained unspecified in a significant proportion of cases (27.8%), suggesting potential limitations in diagnostic workup.

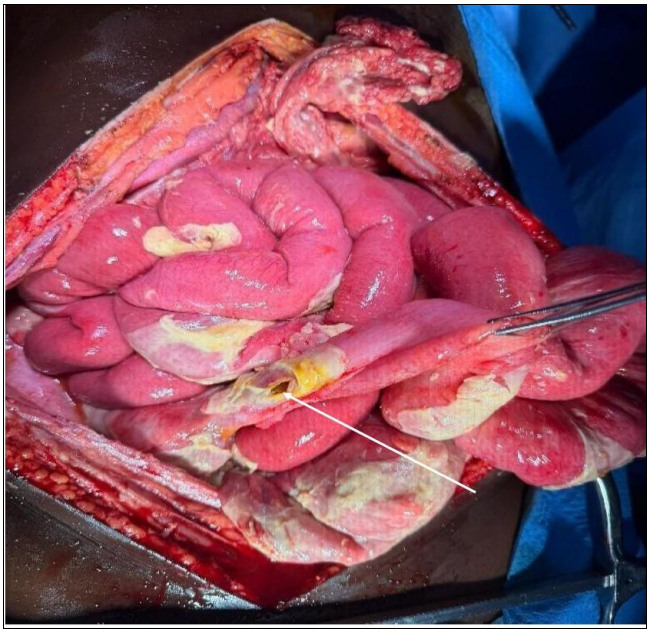

Fig 1: Operative view showing a single ileal perforation, probably of typhoid origin

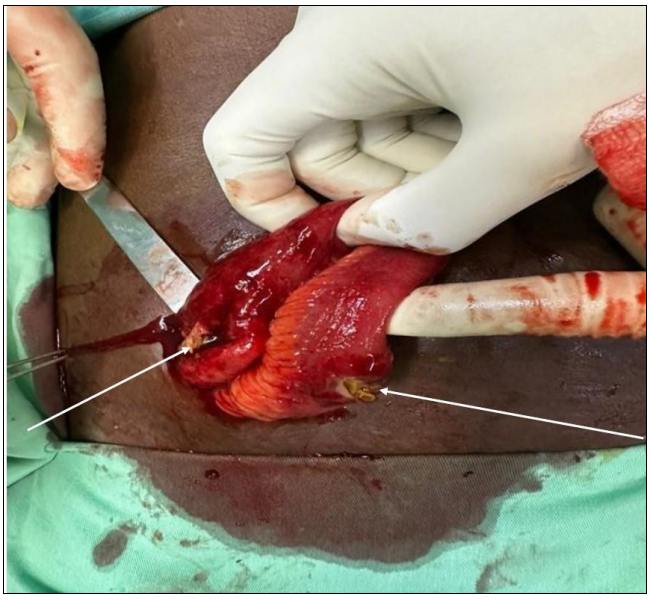

Fig 2: Operative view showing two ileal perforations, probably of typhoid origin

5. Conclusion

Generalized acute peritonitis from ileal perforation at the Idrissa Pouye General Hospital in Dakar is a severe disease of young adults, with typhoid fever as the predominant cause. The management is heavily challenged by delayed patient presentation. The surgical strategy must be adapted, with ileal resection and ileostomy often being the safest option in this context. Reducing the burden of this disease requires a dual approach: strengthening preventive public health measures against typhoid fever and improving access to prompt surgical care.

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