

## Radio-Clinical and Surgical Confrontation of Abdominal and Pelvic Emergencies: About 55 Cases at the Fertilia Medical Clinic in Bamako

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### Abstract

### Case Report

**Background:** This study was initiated to compare the diagnostic hypotheses of doctors in the emergency department, ultrasound results and operative reports of patients seen for acute abdominal and/or pelvic pain. Patients and method: This is a prospective descriptive study of 12 months from January to December 2022, involving 55 consenting patients, hospitalized at the Fertilia medical clinic in Bamako and having benefited from at least one imaging examination to abdominal and pelvic emergency. Ultrasounds were performed using General Electric Voluson E8, Logic9 and Vivid3 devices. The x-rays were taken by an Italian Mecall machine. **Result:** Our study involved a sample of 55 consenting patients with acute abdominal and/or pelvic pain. The average age was 25.5 years. The male sex was the most represented with a sex ratio of 1.5. The most common etiology mentioned was appendicitis, i.e. 38%. The diagnostic hypotheses formulated by the host doctors were confirmed by imaging in 87.2% of cases and those of imaging confirmed by surgery in 60% of cases. **Conclusion:** Abdominal emergencies are frequent in consultations and mainly affect young people. The approach to the management of emergency patients requires a well-performed clinical examination which guides the choice of the imaging examination which remains most often necessary not only to make the diagnosis but also to guide the therapeutic actions. Imaging helps to correct the clinical suspicion. Despite these good results, progress remains to be made, especially in terms of the prescription of radiological examinations, in this case that concerning information.

**Keywords:** Abdominal-pelvic emergencies, Surgery, Imaging.

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## INTRODUCTION

Surgical abdominal emergencies or acute abdomens are abdominal conditions which, for the most part, for lack of surgical intervention obtained without delay, cause patients to succumb in a few hours or a few days [1]. Digestive surgical emergencies, which are daunting in their severity, occupy an important place in surgical pathology [2]. Surgical abdominal emergencies rank first among surgical resources ahead of urgent orthopedic surgery and represent 20.5% of surgical activity; by far the most common diagnosis is acute appendicitis, followed by strangulated hernias and bile duct disorders [3].

In the USA, 19 etiologies including 6 surgical (appendicitis, acute cholecystitis, acute intestinal obstruction, duodenal ulcer, ovarian cyst, aneurysm) were found in 1000 patients with an acute abdomen [4].

In France in 2003, out of 636 surgical emergencies operated on, 272 were abdominal, i.e. 42.75% and in Pakistan, in 2005, out of 759 surgical emergencies operated on, 71.4% were abdominal [5].

In Africa, in Nigeria, in 2005, out of 902 surgical emergencies, 25.6% were abdominal [6].

Imaging occupies an important place in the management of acute abdomens, as confirmed by several studies [7]. It must complete the clinical data which is generally incomplete.

In emergency abdominal situations, cross-sectional imaging techniques (CT scan and ultrasound) have superior performance to the standard radiograph of the abdomen without preparation (ASP) and guide the management of these patients [8].

The inaccessibility and unavailability of means of exploration lead to diagnostic delays; However, according to Taourel in 2001 [9] operative delays in the face of surgical treatment conditions are factors of morbidity and mortality. Other more recent studies [10] have found that new diagnostic means such as ultrasound have helped to reduce diagnostic errors in certain conditions (appendicitis, acute cholecystitis, torsion of the ovary, ectopic pregnancy).

A decision for immediate or deferred surgical treatment or, on the contrary, the choice of medical treatment avoiding unnecessary laparotomy is no longer made today without a prior radiological evaluation.

Thus, in our context, given the scarcity of studies on the role of imaging in confirming the diagnostic hypotheses formulated by the attending physicians and the postoperative confirmation of abdominal and pelvic emergencies at the Fertilia medical clinic, our study makes it possible to respond to the

fundamental question of what is the role of imaging in the diagnosis of abdominal and pelvic emergencies.

#### DATA PROCESSING AND ANALYSIS:

The data collected on the technical sheets were entered and analyzed using SPSS software. Spearman's and Pearson's correlation tests were used to determine the degree of significance during comparisons at the 5% level.

## RESULTS

Our study was a prospective study that focused on a sample of 55 consenting patients presenting with acute abdominal and/or pelvic pain. The average age was 25.5 years. The male sex was the most represented with a sex ratio of 1.5. The most commonly used imaging test was ultrasound. 87.5%. The most mentioned etiology was appendicitis, i.e. 38%. The diagnostic hypotheses formulated by the host doctors were confirmed by imaging in 87.2% of cases and those of imaging confirmed by surgery in 60% of cases.

**Table I: Distribution of Patients According to Age Group**

Age Group (Years)	Frequency	Percentage (%)
16-24	12	21.81
<b>25-34</b>	<b>23</b>	<b>41.81</b>
35-44	11	20.00
45-54	6	10.90
55-64	2	03.63
65-74	1	01.81
<b>Total</b>	<b>55</b>	<b>100%</b>

The most represented age group was 25-34 years with nearly 41.8% and an average age of 25.5 years.

**Table II: Distribution of Patients According to Site of Pain**

Site Of Pain	Male	Femal	Total	(%)
Diffuse abdominal pain	13	5	18	32.70
Right iliac fossa pain	13	8	21	<b>38.00</b>
Left iliac fossa pain	2	1	3	05.45
Pain in the right hypochondrium	0	2	2	03.63
Pain in the left hypochondrium	2	1	3	05.45
Lower back or flank pain	2	0	2	03.63
Pelvic pain	0	2	2	03.63
Epigastric pain	1	0	1	01.81
Periumbilical pain	0	2	2	03.63
Indefinite pain	1	0	1	01.81
<b>Total</b>	<b>34</b>	<b>21</b>	<b>55</b>	<b>100%</b>

Pain in the right iliac fossa was the most cited reason for consultation with 38% of cases.

**Table III: Distribution of Patients According to Suspicious Diagnosis and Imaging Results**

Clinical Informations	Number	Imaging Results	Number	p
Right iliac fossa pain: Appendicitis?	21	Appendicitis	21	P<0.005
Abdominal pain + defense: Peritonitis?	18	péritonitis	13	P=1
Abdominal pain + cessation of matter and gas: Bowel obstruction?	04	Bowel obstruction	2	P<0.001
Lumbar pain radiating to the pelvis: Kidney colic?	02	Lithiasis + hydronephrosis: Kidney colic	2	P<0.005

Clinical Informations	Number	Imaging Results	Number	p
Pelvic pain + amenorrhea: ectopic pregnancy?	02	Ectopic pregnancy	2	P<0.001
Pain in the right hypochondrium + fever: Liver abscess or cholecystitis?	04	Liver abscess	3	P<0.005
		Cholecystitis	1	P=1
Acute diffuse abdominal pain: Peritonitis?	04	Diffuse aerocoly	3	P=0,833
		Large ovarian cyst	1	P=0,667
<b>Total</b>	<b>55</b>		<b>48</b>	

The diagnostic hypotheses formulated by the emergency room doctors were confirmed by imaging at 87.2% (48 cases out of 55).

**Table IV: Distribution of Patients According to Ultrasound Diagnosis and Operative Diagnosis**

Examination Requested	Radio-Clinical Confrontation		TOTAL (%)
	CONCORDING	NOT CONCORDING	
ULTRASONOGRAPHY	<b>48 (94%)</b>	3 (05.88%)	<b>51 (92,7%)</b>
ABDOMEN X-RAY	<b>02 (50%)</b>	<b>02 (50%)</b>	04 (07.3%)
<b>Total</b>	<b>50</b>	<b>5</b>	<b>55 (100%)</b>

Imaging results were confirmed by surgery in 100% of cases for operated patients (50/55).

**Table V: Distribution of Patients According to Radio-Clinical Concordance**

Examinations Requested	Clinical Confrontation-Final Diagnosis		TOTAL (%)
	CONCORDING	NOT CONCORDING	
CLINICAL DIAGNOSIS	<b>45 (92%)</b>	5 (08%)	<b>50 (100%)</b>
<b>Total</b>	<b>45</b>	<b>5</b>	<b>50</b>

The clinical diagnostic hypotheses agreed with the imaging results in 94% of cases for ultrasound and 50% for plain abdominal radiography (p<0.005).

**Table VI: Distribution of Patients According to Clinical Agreement and Final Diagnosis**

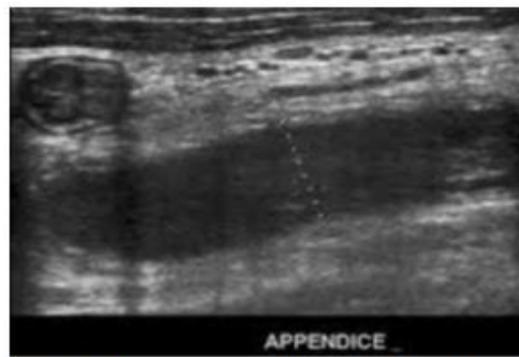
IMAGING RESULTS	NUMBER	OPERATIVE REPORT	NUMBER	P
Appendicitis	21	Appendicitis	21	P<0.005
péritonite	18	péritonite	18	P<0.002
Bowel obstruction	04	Bowel obstruction	04	P<0.001
Ectopic pregnancy	02	Ectopic pregnancy	02	P<0.001
Liver abscess	03	Liver abscess	03	P<0.005
Acute cholecystitis	01	Acute cholecystitis	01	P=1
Giant ovarian cyst	01	Giant ovarian cyst	01	P=0,667
<b>Total</b>	<b>50</b>		<b>50</b>	

Of the 50 patients operated on, the clinical diagnostic hypotheses agreed with the final diagnosis retained after the operation in 92% of cases. There is a

statistical correlation between the clinical diagnostic hypotheses and the final postoperative diagnosis (p<0.005).



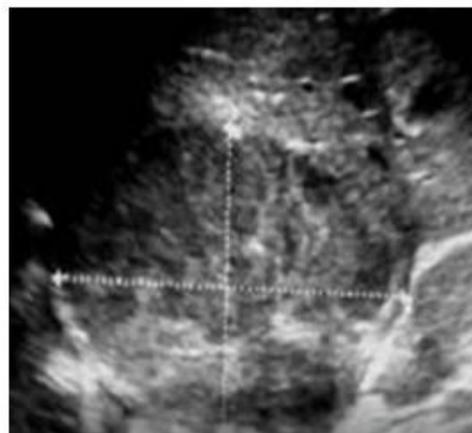
**Figure 1: Plain abdominal X-ray taken in a standing position, showing a large volvulus of the sigmoid colon with an inverted "U" or double-leg image.**



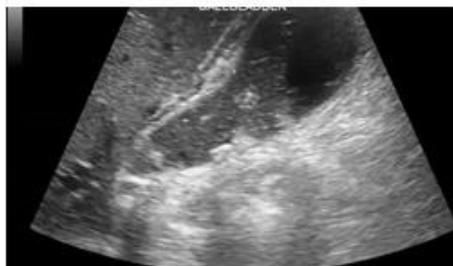
**Figure 2: Tubular image in longitudinal section with wall thickened at 4.8 mm: Appendicitis.**



**Figure 3: Pelvic ultrasound showing homogeneous empty uterus, ectopic gestational sac with embryo**



**Figure 4: Ultrasonography shows a heterogeneous hypoechoic rounded formation at the level of segments VI and VII of the liver evoking a liver abscess.**



**Figure 5: Abdominal ultrasound shows hyper echogenic formation in the gallbladder with posterior cone of shadow and cloudy content.**

## DISCUSSION

### 1. THE OVERALL FREQUENCY OF ABDOMINAL AND PELVIC EMERGENCIES

During the study period, we recorded 4800 patients for radiological examinations (ultrasound, radiography) among which we had 55 abdominal and pelvic emergencies, i.e. a hospital frequency of 1.14%. Our results are consistent with that of Berthé D [11] who found a hospital frequency of 1.16% hospital frequency of abdominal and pelvic emergencies but slightly higher than that of Dembélé E [12] who had 0.9%. Harouna Y *et al.*, [13] found 25.6% of surgical abdominal emergencies compared to other interventions. Our low rate of abdominal and pelvic emergencies is due to the lack of on-call services for ultrasound and X-rays, which means that many patients are lost to follow-up.

### 2. AGE AND GENDER

In our study, the most represented age group was that of 25-34 years with 41.8% of cases. This rate is close to that of BERTHE. ID [14], who had found an age group of 20 to 39 years with 48.6%, it is higher than that of Camara M *et al.*, [15] who found 30.9% in the 31-40 age group. This could be explained by the youth of the African population in general and that of Mali in particular.

### 3. PROFILE OF THE PRESCRIBER

Radiology examinations for abdominal and pelvic emergencies in our work were mainly prescribed by general practitioners with a proportion of 37.6%, specialists and internal students came respectively in 2nd and 3rd position with rates of 34.9% and 27.5%. This strong representation of general practitioners can be explained by the fact that they are the ones who are on the front line in the management of abdominal and pelvic emergencies. Cisse MS [16] had made a different observation by finding a majority of prescribers composed essentially of internal students with 78.7% against 21.3% for specialists.

The role of imaging in the management of abdominopelvic emergencies is multidimensional, both diagnostic to ensure a precise and rapid lesion assessment, but also decision-making and therapeutic

within the framework of multidisciplinary management [17].

During the study period in our clinic, ultrasound was the most requested examination for abdominal and pelvic emergencies with a rate of 92.7%, plain abdominal radiography (ASP) was requested in 07.3 % of cases.

Appendicitis (38%), peritonitis (32.7%), intestinal obstruction (07.27%) were the most common clinical diagnoses and required ultrasound and abdominal radiography without preparation (ASP) in 51 and 04 cases are 92.7% and 07.3%. This fact is explained by the ease of access to ultrasound, its acceptable cost, on the other hand the low solicitation of the radiography of the abdomen without preparation (ASP) can be explained by the fact that it directs very little except in some urgent pathologies such as: occlusion, peritonitis and cases of renal colic.

The reasons for consultation during our study were mainly appendicitis (38%), peritonitis (32.7%) and occlusions (07.27%). Our study finds almost the same figures as Mungadi I [18] reported 38.9% acute appendicitis.

### 4. CONCORDANCES OF DIAGNOSES

The diagnoses suspected by the attending physicians were confirmed by imaging in 48/55 cases, i.e. 87.2% of cases (table III). This concordance was especially noted in appendicitis (100%), peritonitis (72.2%), occlusions (50%) (Table III); The clinical diagnoses of abdominal and pelvic emergencies were concordant at 92% at the final diagnosis against 94% of the diagnoses made on imaging (Table IV).

The radiological examination encountered difficulties of concordance with the appendicular abscesses, indeed in these pathologies the concordances were respectively at 80.8% and a case where it had been able to detect nothing whereas in the end the patient presented an occlusion, for against the clinic was totally concordant only in cases of ectopic pregnancy, liver abscess. A statistically significant difference ( $p < 0.001$ ) exists with more than 20 times more chance (Odds ratio

= 23.778, IC = [7.097 – 79.668]) for imaging to give an exact diagnosis compared to the clinic. The concordance between diagnosis at the clinic and the final diagnosis was found to be correlated with the examination requested with a ( $p < 0.005$ ).

Our patients received for abdominal and pelvic emergencies have for 90% benefited from surgical treatment and the rest from medical treatment, this could be justified by the massive presence of surgical pathologies. The results reported by Cissé MS [16] were below ours with a surgery rate of 60.1%.

## CONCLUSION

The approach to the management of emergency patients requires a well-performed clinical examination which guides the choice of the imaging examination which remains most often necessary not only to make the diagnosis but also to guide the therapeutic actions. Imaging helps to correct the clinical suspicion. Despite these good results, progress remains to be made, especially in terms of the prescription of radiological examinations, especially concerning clinical information.

**Declaration of Conflict of Interest:** All authors declared having no conflict of interest.

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