Journal of Surgery
2020; 8(6): 217-221
http://www.sciencepublishinggroup.com/j/js
doi: 10.11648/j.js.20200806.18
ISSN: 2330-0914 (Print); ISSN: 2330-0930 (Online)

Contribution of Imaging to the Management of Surgical Emergencies in the General Surgery Department of the Ignace Deen National Hospital

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To cite this article:
Diakite Sandaly, Mamy Gnan Francis, Camara Soriba Naby, Soumaoro Labile Togba, Dabo Mamoudou, Fofana Houssein, Fofana Naby, Camara Mariame, Camara Fode Lansana, Diakite Saikou Yaya, Touré Aboubacar, Diallo Aissatou Taran. Contribution of Imaging to the Management of Surgical Emergencies in the General Surgery Department of the Ignace Deen National Hospital. *Journal of Surgery.* Vol. 8, No. 6, 2020, pp. 217-221. doi: 10.11648/j.js.20200806.18

Received: October 29, 2020; **Accepted**: November 11, 2020; **Published**: December 8, 2020

Abstract: The aim of this work was to eassess the contribution of imaging in the management of non-traumatic abdominal surgical emergencies at the General Surgery Department of the Ignace Deen National Hospital. Material and methods: This was a prospective, descriptive study that included for 6 months all patients admitted and operated for a non-traumatic abdominal surgical emergency and having performed at least one imaging test. Results: During our study period, Non-traumatic abdominal surgical emergencies accounted for 25.27% of admissions. The average age was37.58 years old with a male predominance (65.3%) and a sex ratio of 1.88. The mean consultation time was 66.92h±40.15. PSA was the most performed imaging test (86.44%) followed by abdominal ultrasound (8.47%). The main non-traumatic abdominal surgical emergencies observed were acute generalized peritonitis (45.8%), followed by acute intestinal obstruction (44.1%). The agreement between imaging and operative diagnosis was 93.46% on PSA, 92.86% on abdominal ultrasound and 100% on abdominal CT. Conclusion: Non-traumatic abdominal surgical emergencies are frequent, imaging examinations (ASP, ultrasound) allow a good appreciation of all non-traumatic abdominal emergencies when they are judiciously used. In addition, CT, although essential, remains inaccessible due to its cost, thus limiting its emergency use.

Keywords: Contribution, Non-traumatic Abdominal Surgical Emergencies, Imaging, Ignace Deen

1. Introduction

Non-traumatic abdominal surgical emergencies include all abdominal conditions of non-traumatic origin, of recent occurrence, having in common the therapeutic emergency [1].

They constitute one of the most frequent reasons for consultation in emergency reception services [2, 3].

The aetiological diagnosis of an acute abdomen, based on clinical data and laboratory results alone, is often difficult [1, 2-5] and a source of error in the absence of recourse to the imagery. The proportion of diagnostic errors is estimated between 25 and 50% in the absence of imaging [1]. Close collaboration between the responsible clinician and the

radiologist is therefore required [6].

In developed countries, an abdominal surgical emergency is managed promptly and adequately, thus providing a better prognosis for patients [7].

Developing countries suffer from the lack of means allowing judicious management of patients, most often admitted in a precarious clinical state [7].

The aim of this study was to report the contribution of imaging in the management of non-traumatic abdominal surgical emergencies in the general surgery department of the Ignace Deen National Hospital.

2. Methodology

This was a prospective descriptive study that took place over a 6-month period from September 1, 2017 to February 28, 2018.

We included in our study all patients admitted and operated on for a non-traumatic abdominal surgical emergency and having performed at least one imaging test with informed consent.

The parameters studied were: age, sex, origin, level of education; profession, consultation time, reasons for consultation, main etiologies, imaging examinations performed, concordance between imaging diagnoses and operative diagnoses.

3. Results

During our series, 467 surgical pathologies were admitted to the department, non-traumatic abdominal surgical emergencies represented 118 cases, or 25.27%. All of these 118 cases of non-traumatic abdominal surgical emergencies underwent at least one imaging test. Both sexes were involved with a male predominance in 65.3% (77 cases); the sex ratio was 1.88. The 21-30 age group was the most represented (22.9%); The average age of our patients was 37.58 years with extremes of 5 years and 90 years. In 104 cases the patients resided in Conakry and came from the interior of the country in 14 cases. Workers were the most represented socio-professional layer with 38 cases (32.2%), followed by housewives 25 cases (21.2%), pupils / students 23 cases (19.5%), and traders 15 cases (12.7%). The mean consultation time from the onset of the disease was 40.18 h with extremes of 8 h and 168 h (Table 1). Generalized acute peritonitis was the most common pathology with 54 cases, ie 45.8% (Table 2). The most common imaging test was an unprepared x-ray of the abdomen. It was the only imaging test in 102 cases, associated with abdominal ultrasound in 04 cases and CT in 01 cases. Abdominal ultrasound alone was sufficient in 10 cases, CT alone was performed in 01 cases. The x-ray of the abdomen without preparation was contributory in 100 cases out of 117 cases, i.e. a positivity rate of 93.46%, abdominal ultrasound in 13 out of 14 cases, or a positivity rate of 92, 86% and CT in 02 out of 02 cases, i.e. 100% positivity. X-ray of the abdomen without preparation, abdominal ultrasound and CT resulted in various pathologies and signs (Tables 3 and 4). We reported the concordance and correlation between imaging diagnosis and operative lesions (Tables 5 and 6).

Table 1. *Breakdown of patients according to consultation time.*

Consultation time (hour)	Workforce	Percentage
≤ 24	15	12.71
25-48	35	29.66
49 - 72	40	33.90
>72	28	23.73
Total	118	100

Average delay: 66.92±40.15 hours Extreme delay: 8 and 168 hours.

Table 2. *Distribution of cases by clinical diagnosis.*

Clinical diagnostics	Workforce	Percentage
Acute generalized peritonitis	54	45.8
OIA	52	44.1
Acute lithiasis cholecystitis	3	2.5
Liver abscess	3	2.5
Ruptured ectopic pregnancy	3	2.5
Hirschsprung disease	1	0.8
Torsion of the left ovarian cyst	1	0.8
Strangulated white line hernia	1	0.8
Total	118	100

Table 3. *Main signs found at ASP.*

Signs	Workforce	Percentage
Hydro-aeric levels (NHA)	56	52.3
Gas crescent under diaphragmatic	37	34.6
Diffuse grisaille	29	27.1
Aerogrèlie	17	15.9
Aerocoly	7	6.5
Gas arches	7	6.5
Normal	2	1.9

Table 4. *Diagnosis after ultrasound and CT examinations.*

Diagnostic	Workforce	Percentage
Abdominal ultrasound	14	
Acute lithiasis cholecystitis	3	21.4
Liver abscess	3	21.4
Ruptured ectopic pregnancy	3	21.4
Peritoneal effusion	3	21.4
Hirschsprung disease	1	7.1
Myoma plus right ovarian cyst of the ovary	1	7.1
Abdominal CT	2	
Acute bowel obstruction	1	50
AOS by sigmoid volvulus without necrosis	1	50

Table 5. *Distribution of patients according to the agreement between imaging and operative diagnosis.*

Imaging performed	Operative diagnostic agreement			
	Positive		Negative	
	not	%	not	%
ASP	100	93.46	7	6.54
Abdominal ultrasound	13	92.86	1	7.14
Abdominal CT	2	100	0	0

Table 6. *Distribution according to the correlation of the radiological diagnosis and the final diagnosis of the main emergencies.*

Pathologies	Radiological diagnosis *	Operative diagnosis **	Statistical test
Peritonitis	57	54	P=0.6236
Occlusions	55	52	P=0.7433
Acute cholecystitis Lithiasis	03	03	P=0.9512
Liver abscess	03	03	P=0.8903
GEU	03	03	P=0.9731
Disease Hirschsprung	01	01	P=0.9403
Myoma + cyst of the right ovary	01	00	P=0.8657
Torsion of the cyst Left ovary	00	01	P=0.9821
Line hernia Strangled White	00	01	P=0.9734

* Imaging results.
** Intraoperative diagnosis.

28-year-old patient admitted for abdominal-pelvic pain, metrorrhagia.

Ultrasound: Demonstration of the presence of an extrauterine gestational sac containing an embryo. Cranio-caudal length=12 mm. Gestational age=7SA

Conclusion: Extrauterine Pregnancy

Figure 1. *Ultrasound: presence of hyperechoic gallbladder lithiasis with posterior shadow cone compatible with acute lithiasic cholecystitis.*

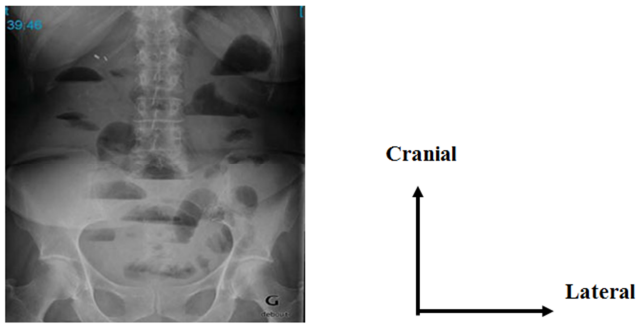

Figure 2. *ASP: Demonstration of hydro-aeric levels, aerogreal and aerocoly. Translating: a high OIA.*

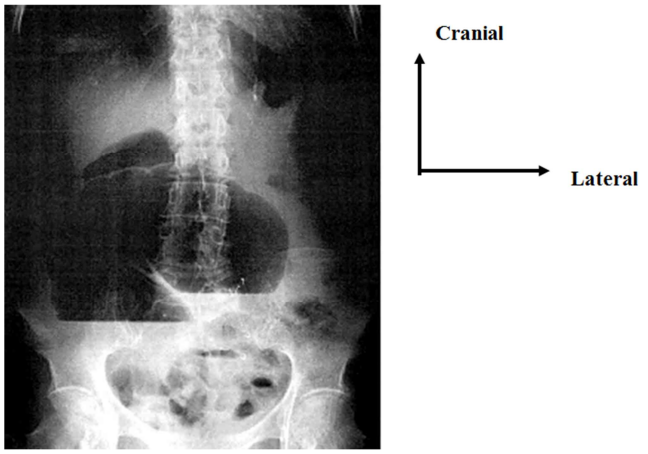

Figure 3. *ASP: Highly dilated arched sigmoid loop image with two liquid levels that can reach the epigastric region and with a slightly dilated upstream colon. Concluding at one: Occlusion by sigmoid volvulus.*

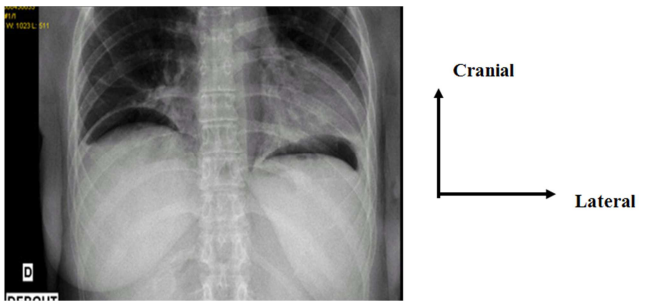

Figure 4. *ASP: Evidence of bilateral sub-diaphragmatic gas crescents evoking Peritonitis by perforation of a hollow organ.*

During our study period, 118 patients consulted for a non-traumatic abdominal surgical emergency out of a total of 467 patients admitted to the department, ie a hospital frequency of 25.27%. This frequency was lower than that ofKassegne I et al.[3] in Togo which reported 95.6% and that of

Harouna Y et al. [4] in Niger who reported 90.11% emergency abdominal non-traumatic surgery. On the other hand, it is higher than that ofDembele Y (10%) [8] in Mali. These figures can be explained respectively by the fact that the sample size and the duration of the studies are not the same.

4. Discussions

During our study period, both sexes were represented with a predominance of men. Our results are similar to those of Attipou K in Lomé (64.4%) [9] and ofDembele Ein Mali (61%) [10]. However, our result is different that of Dembele Y [8] in Mali which reported a female predominance. This male predominance in our study could be explained by the fact that men are more exposed to risk factors (regular use of NSAIDs, poor food hygiene, carrying heavy loads).

Our study population consisted mainly of adults. Our results are similar to those found in the literature [10, 11] who report that abdominal surgical emergencies concern adults with an average age ranging from 40 to 50 years. However Bienyame [12] found 52.2% of acute abdominal surgical emergencies in children. This difference could be explained by the fact that his study was carried out in a pediatric center while ours took place in a general surgery department.

The majority of our patients were from urban areas. This could be explained by the fact that our study was carried out in a National Hospital located in the capital and which is a benchmark in the management of surgical pathologies.

In our study, the most represented socio-professional layer was the working class followed by housewives and schoolchildren. Our results are similar to those of Ouologuem MO [13] in Mali, which reported a high frequency of manual workers (46.05%) followed by schoolchildren (20.7%). This observation in our context could be explained by the low level of education concerning our population.

The majority of our patients consulted after 48 hours of onset of the first signs. Our result is close to that of Harissou A et al. [14] who reported that the majority of patients (57%) were admitted to the emergency room more than 48 hours after the onset of symptoms. The delay in consultation in our study could be explained by the fact that most patients favor traditional treatment on the one hand and on the other hand, by the financial difficulties affecting our population..

The most common non-traumatic abdominal surgical emergencies were acute generalized peritonitis followed by acute intestinal obstruction.

Our results are similar to those of Kassegne I et al. [3] who reported that the most common abdominal surgical emergencies were acute generalized peritonitis (54.5%), intestinal obstruction (26.6%), acute appendicitis (14.5%). Otherwise, Ouologuem MO [13], meanwhile reported a high frequency of Acute generalized peritonitis (54.7%) followed by acute appendicitis (20.3%), strangulated hernias (12.4%) and acute intestinal obstruction (9.6%).

We did not encounter any acute appendicitis during our series; this could be explained by the fact that the diagnosis is made most often by the clinic on the one hand and on the other hand, by the fact that some patients often arrive at the hospital at an advanced stage.

During our study, all of our selected patients performed at least one imaging test.

PSA was the most frequently performed imaging test followed by abdominal ultrasound. Dembele Y [8] andKassegne I and Coll. [15] also reported in their study that the ASP was the most performed examination.

However, according to Delabrousse E et al [16] CT has now become the gold standard for abdominal emergencies.

The availability and lower cost of PSA and ultrasound examinations explain this high frequency of their performance.

The main signs found at ASP were mostly hydro-aeric levels and gaseous crescents under diaphragmatic.

The rate of agreement between the results of the imaging examinations carried out and the operative diagnosis was 93.46% at the ASP; 92.86% on ultrasound and 100% on abdominal CT.

This justifies the indication of abdominal CT for the positive diagnosis of non-traumatic abdominal surgical emergencies according to the data in the literature [17].

In general, we observed that ASP made it possible to confirm a clinically suspected diagnosis without providing much additional information (causal mechanism). This finding is consistent with the data in the literature [2, 18, 19], considering PSA as a non-sensitive examination, but specific in occlusions and the search for signs of peritonitis.

5. Conclusion

Non-traumatic abdominal surgical emergencies are frequent, imaging examinations (ASP, ultrasound) allow a good appreciation of all non-traumatic abdominal emergencies when they are judiciously used. In addition, CT, although essential, remains inaccessible due to its cost, thus limiting its emergency use.

Conflicts of Interest

The authors declare that there were no conflicts of interest in carrying out this work.

References

[1] Ayi MA, Diouf CT, Diop M, Diallo M, Mbengue A, Ndiaye A et al. Contribution of computed tomography (CT) to the diagnosis of acute non-traumatic abdominal emergencies in 67 cases at the Main Hospital of Dakar. J Afr Imag Med 2017; 9 (4): 148-152.

[2] Dubuisson V, Voïglio EJ, Grenier N, Le Bras Y, Thomad M, Launay-Savary MV. Imaging of non-traumatic abdominal emergencies in adults. Journal of Visceral Surgery 2015; 575: 1-9.

[3] http://dx.doi.org/10.1016/j.jviscsurg.2015.09.019.

[4] Kassegne I, Kanassoua K, Sewa EV, Tchangaï B, Sambiani J, Ayité AE et al. Management of surgical abdominal emergencies at the university hospital of Kara (Togo): retrospective study of 594 cases over a period of ten years. Med Sante Trop 2015; 25: 39-43.

[5] Harouna Y, Ali L, Seibou A, Abdou I, Gamatie Y, Rakotomalala J, et al. Two years of emergency digestive surgery at the Niamey National Hospital (Niger): Analytical and prognostic study. Med Afr Noire 2001; 48: 49-54.

[6] Dieth AG, Kouamé N, Soumma A, Manewa FS, Ngoan-Domoua AM, Ngbesso RD. Management of Non-Traumatic Acute Abdominal Pain in Children: The Couple Standard Radiography / Ultrasound, Is It Still Relevant? Open Access Library Journal 2016; 3: e2084.http://dx.doi.org/10.4236/oalib.1102084.

[7] Joffre F, Chemla P, Otal PH Acute Non-Traumatic Abdominal Pain: What Place For Imaging. Seminar S. F. M. U 2001, Francophone Society of Emergency Medicine. 2001; 1-14.

[8] Kassegne I, Sewa EV, Alassani F, Kanassoua KK, Adabra K, Tchangai B et al. Management of abdominal surgical emergencies at the regional hospital of Dapaong (Togo). J. Afr. Hepatol. Gastroenterol. 2016; 10: 85-88.

[9] Dembele Y. Place of imaging in non-traumatic abdominal emergencies. Thesis Med. University of Bamako2007.

[10] Attipou K, Kanassoua K, Dosseh D. Non-traumatic abdominal surgical emergencies in adults at Tokoin University Hospital in Lomé (5 years assessment). J Rech Sci Univ Lomé 2005; 7: 43-8.

[11] Dembele E. Contribution of imaging to the management of non-traumatic abdomino-pelvic emergencies in the radiology department of the Gabriel TOURE Hospital. Thesis Med. University of Bamako 2005.

[12] Rosen MP, Daniel ZS, Esterbrook Longmaid III H, Reynolds KF, Wagner M, Raptopoulos V. Impact of abdominal CT on the management ofpatients presenting to the emergency department with acute abdominal pain. AJR 2000; 174: 1391–1396.

[13] Bienyame J. Abdominal pain in children: the surgeon's point of view. Pediatric Rev 1999; 3: 115-20.

[14] Ouologuem MO. Non-traumatic digestive surgical emergencies At the hospital of sikasso in connection with 380 cases. Thesis Med. University of Bamako2009.

[15] Harissou A, Amadou M, Ibrahim M, Oumarou H, Mansour A, Ousseni EA et al. Diagnostic delay and prognostic implication in an African environment. Case of digestive surgery emergencies at the Zinder National Hospital, Niger. European Scientific Journal 2015; 11 (12): 251-262.

[16] Kassegne I, Sewa EV, Kanassoua KK, Alassani F, Adabra K, Amavi AK et al. Diagnostic, therapeutic and prognostic aspects of typhoid perforations of the small intestine in Dapaong, Togo. Méd Sante Trop 2016; 26: 71-74.

[17] Delabrousse E, Kastler B, Baulard R, Guinier D. CT of abdominal emergencies. 2nd Ed. Paris: Masson; 2009. ISBN: 9782294706004.

[18] Amadou A, Agbangba KA, Watara G, Sonhaye L, Tchangai B, Tchaou M et al. Knowledge and Motivations of Doctors in Prescribing Imaging Examinations in a Non-Traumatic Abdominal Emergency in Togo: Regarding a Survey of Doctors. European Scientific Journal 2017; 13 (6) ISSN: 1857-7881 (Print) e-ISSN 1857-7431.

[19] GENEVA C, PIRRACCHIO R. Place of imaging in acute abdominal pain in the elderly. EMERGENCIES 2011; 517-530.