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Management of Acute Cholecystitis at Ouakam Military Hospital of Dakar, Senegal

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Abstract **Original Research Article**

Introduction: Acute lithiasis cholecystitis complicates 10 to 15% of symptomatic gallbladder stones. Emergency management with laparoscopic cholecystectomy within the first 72 hours treats the infection and the stones involved in one step without increasing morbidity or mortality. The aim of the study was to report our experience with laparoscopic treatment of acute lithiasis cholecystitis. ***Material and method***: This is a descriptive retrospective study from January 2015 to December 2019. It include all patients treated urgently for acute lithiasis cholecystitis by laparoscopic route. ***Results:*** There were twenty-three (23) patients composed of 6 men and 17 women, ie a sex ratio of 3/1 in favor of women. The average age was 50.91 years (range 26 years and 85 years). One patient has sickle cell type SS. The duration of symptoms was 4 days on average (extreme 2 days and 7 days). The symptoms consisted of pain in the right hypochondrium (100%), fever, vomiting (30.4%), pain and localized defense in the right hypochondrium (82.6%). Hyperleukocytosis and elevated CRP were found in all patients. Biological cholestasis was noted in 1 patient. Ultrasound showed stones and a thickened gallbladder wall in 23 cases (100%), a Murphy's sign in 19 cases (82,6). Cholecystectomy was retrograde in 82.6% and anterograde 17.3% of cases. Conversion to laparotomy was performed in 4.3% (1 case). The intervention time was on average 59.6 min (range of 30 min and 180 min). The mean hospital stay was on average 3.6 days (range 2 and 13 days). No death was noted. Morbidity was 8.6%. ***Conclusion***: The delay in consultation and the antibiotic therapy protocols lengthen the time taken for treatment. Laparoscopic cholecystectomy in the early forms can treat the inflammation and the stones involved in one step.

Keywords: Acute cholecystitis, biliary lithiasis, cholecystectomy, laparoscopy.

INTRODUCTION

Biliary lithiasis affects 10-15% of the population and remains asymptomatic in most cases. It remains a concern in 20 to 40% of cases because of the pain generated or the complications [1, 2]. The most frequent is acute lithiasis cholecystitis which complicates 10 to 15% of vesicular lithiasis [1, 2]. It is an emergency whose management is the subject of variable clinical practices between primary medical treatment, emergency cholecystectomy or percutaneous puncture in certain cases. However, the recommendations of several series are in favor of laparoscopic cholecystectomy within the first 72 hours [3-7]. It treats the infection and the stones in question in one step without increasing morbidity or mortality. After 5-7 days, fibrosis and adhesions set in and surgery exposes the patient to operative difficulties and risks of biliary, vascular or digestive complications with a conversion rate that can reach 20%. In spite of these data, antibiotherapy alone is still indicated for inoperable patients or in cases of multi-visceral failure for which vesicular drainage can be associated.

The objective of the study was to report our experience in the management of acute lithiasis cholecystitis and to analyze the indications and results of emergency laparoscopic cholecystectomy.

MATERIAL AND METHOD

This is a retrospective descriptive study over 60 months (from January 2015 to December 2019) that collected all patients managed in emergency for acute lithiasis cholecystitis by laparoscopic approach at the surgery department of Ouakam military hospital. We excluded chronic cholecystitis, chilled cholecystitis, alithiasic cholecystitis, associated main bile duct stones, and patients under medical supervision. Inoperable

patients, as well as incomplete records, were excluded from the study.

The assessment of the patients included a complete clinical examination, a biological workup with a blood count, a CRP (C Reactive Protein), a liver workup, a blood count, a renal function. The morphological workup included an ultrasound scan, with or without an abdominal CT scan.

Therapeutically, laparoscopy was performed using a column and basic multipurpose instrumentation (grasping forceps, hook, aspirator, ligaclip). The American position was chosen and the approach by systemic open laparoscopy in all patients. Four trocars were placed and a pneumoperitoneum created with a pressure between 12 and 15mmHg. Release of adhesions was performed followed by dissection of the cystic duct and artery (Figure 1-2). The section between two metallic clips of the cystic artery and duct was performed (figure 3). Drainage was performed for a variable duration depending on the case. Intraoperative cholangiography was not performed in the series. Extraction of the specimen was performed with a sterile glove (Figure 4). Postoperatively, antibiotics were continued for a variable duration.

Parameters evaluated in this study included age, sex, history, time to management, symptoms, morphologic data, intraoperative data, postoperative morbidity and mortality.

Data entry and analysis were performed with Epi info 7 software. Quantitative variables were analyzed by determining the minimum, maximum and mean. The qualitative variables were analyzed by determining the frequency and percentage. The tables were made with Microsoft office Excel.

RESULTS

The study included twenty-three (23) patients who met the inclusion criteria. There were 6 males and 17 females with a sex ratio of 2.83 in favor of females. The mean age was 50.91 years and the extremes were 26 and 85 years. The patients were all Africans living in tropical areas (Senegal, Guinea, Mauritania, Congo Brazzaville). One patient was sickle cell type SS.

The average delay of consultation was 4 days (extremes 2 days and 7 days since the beginning of symptoms). The delay was more than 48 hours in 15 cases (65.2%).

The general condition of the patients was satisfactory. Symptoms were essentially pain in the right hypochondrium (100%), fever, vomiting (30.4%), pain and defense localized to the right hypochondrium (95.6%).

Diffuse pain and contracture were noted in one patient and associated with an infectious syndrome suggesting peritonitis (4.3%).

At the paraclinical level, hyperleukocytosis and high CRP were found in all patients (100%). Biological cholestasis was noted in 1 patient (4.3%). Ultrasound showed vesicular calculi and a thickened vesicular wall, a Murphy's sign in 19 cases (82.6%) confirming acute lithiasis cholecystitis.

A CT scan was performed in 8 cases (34.7%). It confirmed cholecystitis and showed a subhepatic and Douglas collection in 1 case.

The clinical and paraclinical characteristics are summarized in Table 1. Therapeutically, the exploration confirmed acute cholecystitis with adhesions of variable nature. The intraoperative data are summarized in Table 2.

Cholecystectomy was retrograde in 19 cases (82.6%) and anterograde in 4 cases (17.3%) due to significant inflammation and adhesions. A conversion to laparotomy was performed in 1 case (4.3%). This was due to operative difficulties caused by strong adhesions, pediculitis, and difficulty in identifying the elements. Drainage was performed in 10 cases (47.83%) of phlegmonous cholecystitis and 1 case (4.3%) of diffusion peritonitis. The average duration of laparoscopic surgery was 59.6 min with extremes of 30 min and 180 min. The average hospital stay was 3.6 days (extremes 2 and 13 days).

No case of death was noted. The postoperative complications were represented by:

- A biliary peritonitis at day 10 by release of the cystic clip. A laparoscopic revision with the placement of new clips on the cystic stump. The operative follow-up was simple.
- A postoperative peritonitis at day 2 was noted in one patient treated by biliostase and drainage. It was complicated 6 months later by a biliary stenosis for which a bilio-digestive bypass by hepaticojejunal anatomosis was performed with simple follow-up.

Table 1: Clinical and paraclinical data

Clinical Data	Number of cases	Percentage
Right Hypochondrium Pain	23	100%
Diffuse abdominal pain	1	4,3%
Vomiting	7	30,4%
Inflammation sign	23	100%
Defense	22	95,6%
Murphy Sign	19	82,6%
General defense	1	4,3%
Biology		100%
Hyperleucocytosis +CRP	23	
Alcaline phosphatase	1	4,3%
Abdominal sonography	23	100%
Gallbladder thickening		
+ Stones	23	100%
Abdominal CT scan	8	34,78%
Cholecystitis severity/TokyoGuideline		
Grade 1	17	73,91%
Grade II	6	26%

Table 2: Peroperative data

Data	Number of case	Percentage
Peritoneal adherensis	17	73,9%
Distended and thickned gallbladder	23	100%
Cholecystitis	22	28,3%
Hydrocholecist	1	4,3%
peritonitis	1	4,3%
Gallbladder perforation	9	39,1%
Retrograde cholecystectomy	19	82,6%
Anterograde cholecystectomy	4	17,3%
Abdominal drainage	11	47,83%
Stones		
One	2	8,70%
Multiples	21	91,30%
Conversion	1	4,3%

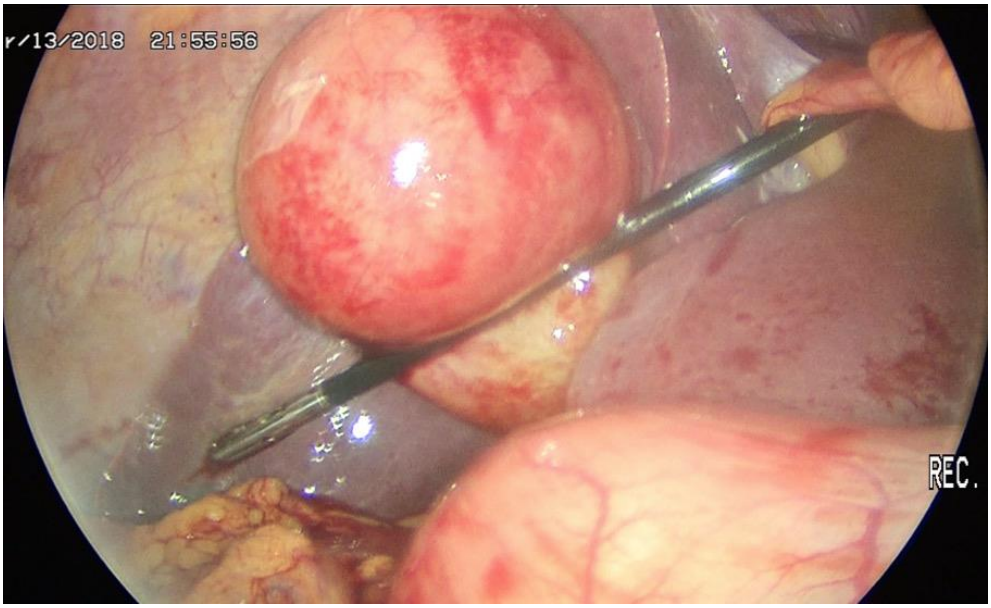

Figure 1: Distended, thickened gallbladder (acute cholecystitis)

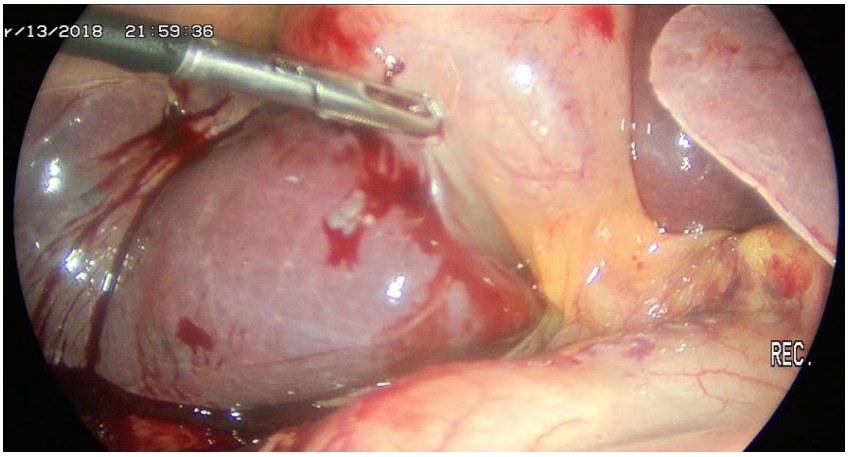

Figure 2: Exposition and dissection of Calot triangle

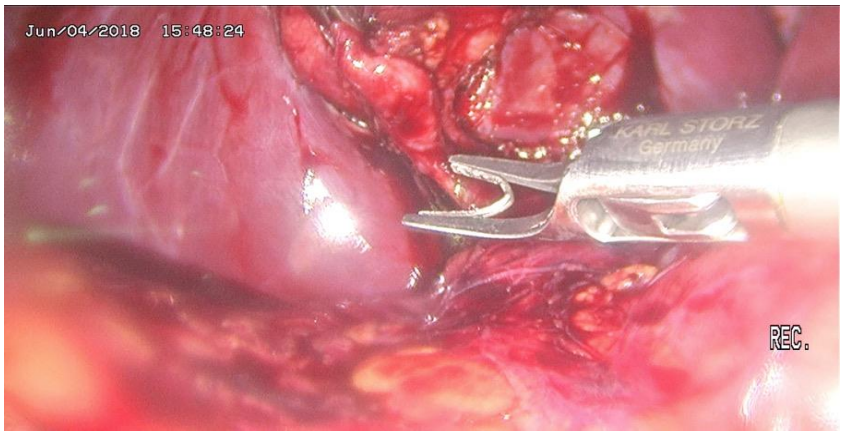

Figure 3: Cystic artery and cystic canal ligation by clips

Figure 4: Specimen (Gallbladder and stone)

DISCUSSION

The small number of patients in our series could be due to the lower incidence of gallstones in black Africans as reported by epidemiological data [8-10]. It may also be explained by the disparity in the management of acute lithiasis cholecystitis. This is a medical-surgical emergency that is managed in medical and surgical departments, as well as in the emergency department, and patients are frequently put on medical treatment and then referred to digestive surgery for cold cholecystectomy.

Under antibiotic therapy, the evolutionary modalities are variable. It may worsen in 9.7 to 23% of patients treated medically and be the object of an emergency cholecystectomy because of the failure and gangrenous evolution of the cholecystitis [3, 4].

However, in 80% of cases, conservative treatment improves the symptomatology [11]. Nevertheless, the inflammatory phenomena evolve quietly towards fibrous reorganization and chronicity, which is a source of fibrosis, pediculitis and thus of operative difficulties. New complications of the stones leading to chronic or scleratrophic cholecystitis may occur in 17.5 to 36% [12]. The recurrence of cholecystitis is accompanied by vesicular atrophy and adhesions to the surrounding structures, which can be difficult to dissect in a delayed surgery. This is a frequent mode of discovery in our context as found by Sanogo *et al*., who reported in his series 52.6% of chronic cholecystitis [13].

Contrary to this presentation, in the first hours after the onset of symptoms, the inflammation of the gallbladder produces an infiltrate and a parietal oedema which is more or less easily amenable to surgical dissection.

Data from the literature show the feasibility of laparoscopic cholecystectomy and the reduction of morbidity within ideally less than 48 or 72 hours after the onset of symptoms [3-7, 14]. However, the time to management varies according to the series. It was 4 days in our series with extremes of 2 and 7 days. Most of our patients were admitted after 48 hours of evolution, i.e. 15 cases (65.2%). In the series by Bray in Chad, 41% were admitted after 48-72 hours [15].

The critical period is 48-96 hours, beyond which fibrous phenomena remain important and surgery is risky and more difficult [7, 16].

The comparative study by Zafar et al found a mortality of 0.2, 0.6 and 1.7 respectively when the patients were operated on at 0-1 day, 2-5 days and 6-10 days respectively [7]. No additional mortality was noted in our series. However, the morbidity was closely related to the time of management. The risk of iatrogenic biliary injury in this setting is 0.1 to 0.9% according to several series [17, 18]. It was 0.42% in a survey of 56591 cholecystectomies by Nuzzo et al and was more marked for acute cholecystitis, i.e. 0.56% [19]. The critical view of safety concept introduced by Strasberg since 1992 allows a better control and prevention of iatrogenic lesions of the bile ducts [20]. The biliary lesion noted in one of our patients was related to a laborious dissection, a less clear critical view. It was the cause of an accidental section and inappropriate clipping of the bile ducts. The aftermath was simple after hepaticojejunal anastomosis in our patient. Some factors are predictive of difficult cholecystectomy. These are duration of evolution greater than 72 hours, a palpable gallbladder, hyperleukocytosis greater than 18,000, or gangrenous cholecystitis [21].

The severity grade of cholecystitis according to the Tokyo guideline is also correlated with the risk of complications. Endo I *et al*., report a mortality of 0.3; 0.4; 4.1% respectively for cholecystitis grades 1; 2; 3 [22]. It was 0; 0.5; 1.8% respectively in the Joseph study [23]. In our series, the majority of patients were grade 1 and 2 and no patient was classified grade 3. In late forms, cold surgery within 4-6 weeks allows the inflammation to decrease and reduces the risk of complications.

Perforation of the gallbladder during dissection was noted in 9 cases. It does not impact morbidity and mortality according to Khush. Aspiration and cleansing reduces the related complications [24].

The conversion rate was 4.3% (1 case) in our series. It was a cholecystitis seen beyond 72 hours. It was 4.5% in Bray's series and can vary from 5 to 20% in the literature [15]. It was 14% in the series of Akin *et al*., of acute gangrenous cholecystitis with a morbidity of 19% and a mortality of 17.8% [25]. Several risk factors for conversion have been identified. These are the extent of inflammation and mainly the difficulty in identifying anatomical structures which should lead to conversion without delay.

The duration of the procedure is prolonged because of the inflammation, vesicular thickening, vesicular dilation, less easy handling and the need for careful dissection, etc. It was 59.6 minutes on average with extremes of 30 - 180 minutes. The reduced intervention time of 30 minutes concerned early forms seen at an early stage with limited inflammatory phenomena. It was 1h30 on average in the series of Bray and 66mn in the series of Bourgiotis *et al*., [15, 26].

CONCLUSION

The delay in the management of cholecystitis is still long in our countries because of the delay in consultation and the antibiotic therapy protocols proposed by several care units. Laparoscopic

cholecystectomy in the early forms of cholecystitis allows to treat in one time the inflammation and the stones involved. Morbidity is not increased within 72 hours after the onset of symptoms. Beyond that, the operative difficulties are important and the risk of iatrogenic biliary injury is high. Conversion should be the rule when the critical safety view is not obtained.

REFERENCES

1. Shaffer, E. A. (2005). Epidemiology and risk factors for gallstone disease: has the paradigm changed in the 21st century?. *Current gastroenterology reports*, *7*(2), 132-140.
2. Stinton, L. M., Myers, R. P., & Shaffer, E. A. (2010). Epidemiology of gallstones. *Gastroenterology Clinics*, *39*(2), 157-169.
3. Lau, H., Lo, C. Y., Patil, N. G., & Yuen, W. K. (2006). Early versus delayed-interval laparoscopic cholecystectomy for acute cholecystitis. *Surgical Endoscopy and Other Interventional Techniques*, *20*(1), 82-87.
4. Cao, A. M., Eslick, G. D., & Cox, M. R. (2015). Early cholecystectomy is superior to delayed cholecystectomy for acute cholecystitis: a meta-analysis. *Journal of Gastrointestinal Surgery*, *19*(5), 848-857.
5. Mou, D., Tesfasilassie, T., Hirji, S., & Ashley, S. W. (2019). Advances in the management of acute cholecystitis. *Annals of gastroenterological surgery*, *3*(3), 247-253.
6. Ciftci, F., Abdurrahman, I., & Girgin, S. (2015). The outcome of early laparoscopic surgery to treat acute cholecystitis: a single-center experience. *International Journal of Clinical and Experimental Medicine*, *8*(3), 4563-4568.
7. Zafar, S. N., Obirieze, A., Adesibikan, B., Cornwell, E. E., Fullum, T. M., & Tran, D. D. (2015). Optimal time for early laparoscopic cholecystectomy for acute cholecystitis. *JAMA surgery*, *150*(2), 129-136.
8. Rahman, G. A. (2005). Cholelithiasis and cholecystitis: changing prevalence in an African community. *Journal of the National Medical Association*, *97*(11), 1534-1538.
9. Ngo Nonga, B., Oumarou Nana, B., Assiga Ahanda, Y. M., Farikou, I., & Sosso, M. A. (2012). Expérience préliminaire de la cholécystectomie par voie laparoscopique au Cameroun. *Médecine et Santé Tropicales*, *22*, 162-165.
10. Owono, P., Mingoutaud, L., Limoukou, M., Ivala, L., Mve, N., & Ngabou, U. (2008). Cholecystectomie par laparoscopie: éxpérience du centre hospitalier de Libreville, à propos de 25 cas. *Médecine d'Afrique Noire*, *55*(5), 285-292.
11. Bedirli, A., Sakrak, O., Sözüer, E. M., Kerek, M., & Güler, I. (2001). Factors effecting the complications in the natural history of acute cholecystitis. *Hepato-gastroenterology*, *48*(41), 1275-1278.
12. Johansson, M., Thune, A., Blomqvist, A., Nelvin, L., & Lundell, L. (2004). Impact of choice of therapeutic strategy for acute cholecystitis on patient's health-related quality of life. *Digestive Surgery*, *21*(5-6), 359-362.
13. Sangaré, D., Camara, M., Sanogo, Z. Z., Koumaré, S., Koïta, A. K., Soumaré, L., ... & Malle, M. K. (2015). Cholécystectomie laparoscopique au Mali. État de la pratique à Bamako en 2012: 340 cas. *E-mémoires de l'Académie Nationale de Chirurgie*, *14*(3), 072-076.
14. Csikesz, N. G., Tseng, J. F., & Shah, S. A. (2008). Trends in surgical management for acute cholecystitis. *Surgery*, *144*(2), 283-289.
15. Kaimba, B. M., Mahamat, Y., & Akouya, S. D. (2015). Cholécystectomie laparoscopique pour cholécystite aiguë lithiasique: ą propos de 22 cas colligés ą l'hōpital de la renaissance de Ndjamena. *Pan African Medical Journal*, *21*(1), 311.
16. Asai, K., Watanabe, M., Kusachi, S., Matsukiyo, H., Saito, T., Kodama, H., ... & Nagao, J. (2014). Risk factors for conversion of laparoscopic cholecystectomy to open surgery associated with the severity characteristics according to the Tokyo guidelines. *Surgery today*, *44*(12), 2300-2304.
17. Chuang, K. I., Corley, D., Postlethwaite, D. A., Merchant, M., & Harris, H. W. (2012). Does increased experience with laparoscopic cholecystectomy yield more complex bile duct injuries?. *The American Journal of Surgery*, *203*(4), 480-487.
18. Malla, B. R., & Shrestha, R. K. M. (2010). Laparoscopic cholecystectomy: complication and conversion rate. *Kathmandu University medical journal*, *8*(4), 367-369.
19. Nuzzo, G., Giuliante, F., Giovannini, I., Ardito, F., D'Acapito, F., Vellone, M., ... & Capelli, G. (2005). Bile duct injury during laparoscopic cholecystectomy: results of an Italian national survey on 56 591 cholecystectomies. *Archives of Surgery*, *140*(10), 986-992.
20. Vettoretto, N., Saronni, C., Harbi, A., Balestra, L., Taglietti, L., & Giovanetti, M. (2011). Critical view of safety during laparoscopic cholecystectomy. *JSLS: Journal of the Society of Laparoendoscopic Surgeons*, *15*(3), 322-325.
21. Navez, B., Ungureanu, F., Michiels, M., Claeys, D., Muysoms, F., Hubert, C., ... & Gigot, J. F. (2012). Surgical management of acute cholecystitis: results of a 2-year prospective multicenter survey in Belgium. *Surgical endoscopy*, *26*(9), 2436-2445.
22. Endo, I., Takada, T., Hwang, T. L., Akazawa, K., Mori, R., Miura, F., ... & Yamamoto, M. (2017). Optimal treatment strategy for acute cholecystitis based on predictive factors: Japan-Taiwan multicenter cohort study. *Journal of Hepato-biliary-pancreatic Sciences*, *24*(6), 346-361.

23. Joseph, B., Jehan, F., Dacey, M., Kulvatunyou, N., Khan, M., Zeeshan, M., ... & Riall, T. S. (2018). Evaluating the Relevance of the 2013 Tokyo Guidelines for the Diagnosis and Management of Cholecystitis. *Journal of the American College of Surgeons*, *227*(1), 38-43.
24. Sohu, K. M., Shah, A. A., Solangi, R. A., Arshad, S., Jamal, M. R., & Hussain, R. (1970). Complications of laparoscopic cholecystectomy: a study of 1100 cases at Sukkur, Pakistan. *Rawal Medical Journal*, *37*(4), 399-399.
25. Önder, A., Kapan, M., Ülger, B. V., Oğuz, A., Türkoğlu, A., & Uslukaya, Ö. (2015). Gangrenous cholecystitis: mortality and risk factors. *International surgery*, *100*(2), 254-260.
26. Gourgiotis, S., Dimopoulos, N., Germanos, S., Vougas, V., Alfaras, P., & Hadjiyannakis, E. (2007). Laparoscopic cholecystectomy: a safe approach for management of acute cholecystitis. *JSLS: Journal of the Society of Laparoendoscopic Surgeons*, *11*(2), 219.