

Liver Abscess: Etiology and Management Issues in the Surgical Services of the Conakry University Hospital

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Received date: May 05, 2026; **Accepted date:** May 20, 2026; **Published date:** May 27, 2026

Citation: Sylla H, Camara FL, Barry AM, et al. Liver Abscesses: Etiology and Management Issues in the Surgical Services of the Conakry University Hospital. *J Med Res Surg.* 2026;7(3):52-56. doi:10.52916/jmrs264207

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ABSTRACT

Background: Liver Abscess (LA) can be defined as a suppurative cavity related to the invasion and multiplication of microorganisms at the expense of healthy or pathological liver tissue.

Aim: To understand the etiologies and highlight the issues in the management of liver abscesses in the surgical departments of the University Hospital of Conakry.

Methodology: This was a prospective, descriptive study lasting one year from January 1 to December 31, 2023, during which we collected 70 cases of liver abscess. Included in our study were all patients hospitalized for liver abscess in the departments during the study period. The variables studied were sociodemographic, clinical, therapeutic and prognostic.

Results: The frequency was 3.6%. The average age of the patients was 40.4 years. Males were the most affected at 78.6%. 54.3% of our patients came from HC areas and 28.6% of the cases were farmers. Pain in the right hypochondrium and fever were the main reasons for consultation, found in almost all patients (98.6%). Abdominal ultrasound, performed for all our patients, was the examination of choice for a positive diagnosis. 67.6% of liver abscesses were located in the right lobe. The evolutionary outcomes were simple in 62.8% of our patients, with some complications mainly consisting of surgical site infection in 18.6%, septic shock in 1.4% and post-operative peritonitis in 4.3%. We recorded an 8.3% mortality rate. The average hospital stay was 10.4 days, with extremes of 1 day and 24 days.

Conclusion: Liver abscess was a disease of young adults, common in men. However, self-medication and recourse to traditional healers are usually responsible for diagnostic and therapeutic delays. The diagnosis of liver abscess was made using Fontan's triad, ultrasound and multidisciplinary collaboration. The prognosis could be improved with early and adequate management. **Keywords:** Abscess, liver, surgical drainage.

Keywords:

Liver abscess, Liver tissue, Ultrasound, Surgical drainage, CT.

Introduction

Liver Abscess (LA) can be defined as a pus-filled cavity related to the invasion and multiplication of microorganisms at the expense of healthy or pathological liver tissue [1].

This term for liver abscess commonly encompasses two etiologically and epidemiologically distinct entities: amebic abscesses and pyogenic or bacterial abscesses. Other forms, such as cardiac and actinomycotic abscesses, are extremely rare. It can be divided according to the infectious agent into: parasitic, bacterial, or fungal causes [2].

According to the WHO, it is a cosmopolitan condition that occurs endemically in certain regions of the globe where it constitutes a public health problem and ranks second after trauma in liver pathology [3].

In developed countries, liver abscesses are generally pyogenic and occur mainly in patients who have a congenital immune deficiency (chronic septic granulomatosis) or acquired [4]. HIV/AIDS, diabetes mellitus, chronic alcoholism, cancer, corticosteroid therapy, cirrhosis and cardiac liver are the predisposing factors for liver abscess [5]. The relatively easy diagnosis is based on clinical and paraclinical arguments, with imaging playing a predominant role in the diagnostic assessment, particularly hepatic ultrasound as the first-line examination [2,6]. The positive diagnosis of liver abscess is based on Fontan's triad (right hypochondrium pain, hepatomegaly, fever) and the result of hepatic ultrasound, while determining its bacterial, fungal, or parasitic etiology remains difficult [7].

The treatment is sometimes medical (metronidazole, analgesics, antibiotics); surgery consists of making an incision with drainage via the trans-abdominal or transthoracic route and drainage by echo-guided puncture [1,3].

The prognosis of liver abscess depends on the patient's condition, the speed of diagnosis, the initiation of treatment, possible complications of surrounding structures, as well as the causative organism and its etiology [1,4,8].

The frequency varies from one region to another. In Southeast Asia, amebiasis occurs in 15% of healthy carriers (13 to 43% of the general population) and is responsible for 25% of liver abscesses [3,4].

In Europe, it is an imported disease due to immigration and tourism. The 1 and 15 per 100,000 per year according to European and American authors [6].

In France [1], the annual incidence is low but seems to be increasing, rising from 13/100,000 to 20/100,000 inhabitants.

Perez in 2006 recorded an incidence of 11 cases per 500,000 admissions in the Philippines [3].

In a study in Qatar in 2014, pyogenic abscesses accounted for 48% of visceral abscesses and 13% of intra-abdominal abscesses [9].

In Turkey, Onder A et al. reported in 2011 a prevalence ranging between 5–13/100,000 admissions [6].

In Africa, pyogenic abscesses represented a hospital frequency of 0.1% according to a study conducted in Morocco in 2015 [10].

In Senegal, its prevalence is 1 to 2% of the general population [4].

Traore A et al. [11] in Mali reported in 2014 a frequency of 1.3% with a mortality rate of 5.66%.

In Guinea, Camara et al. [5] in 2018; in a multicenter study conducted in the visceral surgery departments of Donka.

Kpoghomou A et al. in 2022 at HRZ [12], the frequency was 2.2%. The average age of our patients was 39.3 years. The male sex was the most affected with 87.6% and 59.8% of our patients came from rural areas, while 40.2% of the cases were farmers. The high frequency of morbidity and mortality in Africa and particularly in Guinea, the difficulties of etiological diagnosis and management of liver abscesses in the general and visceral surgery departments of the Conakry University Hospital, as well as the rarity of previous studies combining the two departments, motivated the choice of this topic.

Materials and Methods

The general surgery departments of Ignace Deen National Hospital and visceral surgery of Donka National Hospital of the Conakry University Hospital Centers served as the setting for this study.

Methods

Our study focused on patients admitted, hospitalized and treated (medically and/or surgically) for liver abscess in the departments during the study period.

It was a prospective descriptive study covering a period of one (1) year from January 1 to December 31, 2023.

Study Population

All patients admitted, hospitalized and treated in the departments for liver abscess during the study period.

Results

- Total number of hospitalized patients: 1929 (100%)
- Liver abscess: 70 (3.6%)
- Men accounted for 78.6% n=55 versus 21.4% n=15 Sex ratio (M/F)=3.7
- The age group 21-30 years was the most affected with 37.2%; an average age of 40.4 ± 17.6 years and extremes of 7 years and 82 years

Table 1: Distribution of cases by profession.

Profession	Effectifs (N=70)	%
Farmers/Peasants	20	28.6
Workers	06	8.6
Students	07	10
Drivers	11	15.7
Housewives	07	10
Teachers/Civil servants	06	8.6
Merchants/Vendors	11	15.7
	02	2.8
Total	70	100.0

The reasons for consultation were dominated by pain in the right hypochondrium/epigastrium 98.6%; fever 98.6%; physical asthenia 38.6%; nausea/vomiting 74.3%; abdominal distension 28.6%; diarrhea 8.6%.

Regarding the evolution, 29 cases had a course of more than 3 weeks, 32 cases from 2 to 3 weeks and 9 cases less than 2 weeks.

Table 2: Distribution of patients according to medical history/background/risk factors.

History/Terrain/FDR	Effectifs (N=70)	%
Concept of amebic dysentery	60	85.7
Tobacco	50	71.4
Alcohol	47	67.1
Previous episode of hepatomegaly	31	44.3
Diabetes	09	12.9
HTN	05	7.1
HIV	04	5.7
Total	70	100.0

Regarding the general condition, 34.3% of cases were emaciated, conjunctival jaundice was present in 50%, pallor was noted in 62.9% and 7.1% of cases were dehydrated.

Physical signs were dominated by pain in the right hypochondrium/epigastrium on palpation in 100% of cases, costal percussion was positive in 97.1% of cases. Hepatomegaly was noted in 92.9% of cases and crackles at the bases of the right lung were present in 12.8% of cases.

Regarding the mode of admission, 25 cases were diagnosed in emergency, 38 cases were referred and 9 cases in regular consultation.

Forty-five cases used traditional treatment before consulting at the hospital compared to 35 who did not use traditional treatment.

Chest x-ray including the diaphragm domes was performed in

21.4% of cases, with 8.6% of cases showing no abnormalities, 5.7% of cases of pleurisy; 5.7% of cases of bronchopneumopathy and 1.4% of cases of combined bronchopneumopathies and pleurisy.

Table 3: Distribution of cases according to ultrasound results.

Ultrasound result		Number of People (N=68)	%
Rounded hypoechoic image with a well-defined thick wall	Image with a well-defined thick wall	68	100
Number of the abscess	Unique	20	29.4
	Multiple	48	70.6
Site of the abscess	Left lobe	18	26.5
	Right lobe	48	67.6
	Both lobes	4	5.9

Biological examinations revealed neutrophilic hyperleukocytosis >10,000/mm³ in 98.6% of cases; leukopenia in 1.4% of cases; anemia ≤ 10 g/dl in 82.9% of cases; ESR >20 mm was accelerated in 34.3% of cases; HIV serology was positive in 4.3% of cases. CRP was positive in 22.9% of cases.

Regarding liver enzymes, AST was elevated in 10% of cases; ALT in 1.4% of cases; indirect bilirubin was elevated in 10% of cases; direct bilirubin in 4.3% of cases. Prothrombin levels were very low in 11.4% of cases.

Medical treatment was The direct [examination] in 4.3% of cases. The prothrombin rate was collapsed in 11.4% of cases. The bacteriological examination of the pus showed 54.3% of cases of amoebas, 31.4% of cases of bacteria; the pus was sterile in 7.1% of cases. The medical treatment was done in addition to rehydration solutions, the combination of metronidazole, ceftriaxone, Gentamicin, analgesics. Ten cases, that is 14.3% of the cases, evolved favorably without drainage.

Table 4: Distribution of cases according to the color and odor of the pus.

Aspects of pus	Number of People (N=60)	%
Color		
Chocolatey	31	51.7
Pearly white	21	35
Others	8	13.4
Odor		
Odorless	50	83.3
Nauseating	10	16.7

Table 5: Distribution of cases according to post-operative outcomes.

Post-operative outcomes	Number of People (N=60)	%
Simple	43	71.7
Parietal suppuration	10	16.6
Post-operative peritonitis	1	1.6
Septicemia	1	1.6
Death	5	8.3
Total	60	100
Nauseating	10	16.7

The initial approach was midline supraumbilical in 53.3% of cases, midline supra- and infraumbilical in 18.4% of cases; right subcostal in 28.3% of cases.

Note: A total of 19.8% complications, including 8.3% deaths, all in a shock table. The average length of hospital stay is: 10.4 days, standard deviation: 4.4 days, extremes: 1 and 24 days.

Discussion

This study certainly has limitations, notably information biases and the unavailability of certain results from amebic serology and blood cultures, which are essential for the etiological diagnosis of liver abscess, but it allowed us to gain knowledge on the epidemiological aspect and the management problems in the services. Traoré et al [11] and Diallo MD et al [13] in Mali reported a frequency of (1.3% and 1.13%), Camara et al [5] reported a frequency of 1.49% and Kpoghomou et al [12] reported a frequency of 2.2% in Guinea. This high prevalence would be linked, on the one hand, to the unfavorable socio-economic environment, the tropical climate, risk factors and underlying conditions (HIV/AIDS, hepatitis, etc.) and on the other hand to the fact that university hospital centers are the last reference level at the top of Guinea's health pyramid. The average age found in our series was comparable to that of Camara et al. [5], who found an average age of 35 years, with extremes of 15 and 86 years. Kpoghomou et al. [12] found an average age of 39.3 years. According to the literature data [9,14-16], liver abscess can be seen at any age but is more common in young adults [4-6].

Liver abscesses occur primarily in disadvantaged social groups. Kpoghomou et al [12] reported that more than half of the patients came from urban areas, which is contrary to our study. Farmers, laborers, students and drivers were the most affected professions. Kpoghomou et al [12] reported that 40.2% of cases were farmers. If we consider professions with modest income, particularly peasants, laborers, students and drivers, then the majority of our patients would be in a precarious socioeconomic situation. Dehhaze et al [10] in 2011 in Morocco found 100% had pain in the right hypochondrium/epigastrium, 100% had fever, 98.38% (61/62) had physical asthenia, 93.54% (58/62) had anorexia and 66.12% (41/62) had nausea/vomiting. In Africa in general and in our country in particular, there is a constant and almost always first-line recourse to traditional medicine

by our Populations, the insufficiency of health coverage, would be among other factors that explain this delay in care [2,14,17,18]. Localization in the right lobe has been reported by other authors: Camara et al, Dehhaze et al, Traore et al and Ba et al, [5,10,11,17] with respectively 46.15%; 79.2%, 74% and 56.46%; according to the literature where this localization in the right lobe is attributed to the preferential mesenteric-portal flow towards the right lobe. Traore et al [11] in Mali reported that HIV serology was positive in 14.3% (4/28) of cases of liver abscess. Diallo et al [19] in 2014 in the two surgical departments of the CHU of Conakry (Ignace Deen and Donka) reported that 4.41% (9/204) of patients with liver abscess had a positive HIV serology. Liver abscess and HIV infection constitute a possible co-infection in tropical regions. The combination of antibiotics and metronidazole was systematically the basis of medical treatment in all our patients before and after drainage.

Ceftriaxone + Metronidazole in 70%; Ceftriaxone + Gentamicin + Metronidazole in 27.1% ; Ciprofloxacin + Gentamicin + Metronidazole in 2.9% of cases.

This therapeutic approach corresponds to the epidemiological context in African settings, where liver abscesses are mostly of amoebic origin [2,17,19]. In addition to Metronidazole, other medications such as intravenous paracetamol in 14.3% and injectable tramadol in 85.7% were also used. This therapeutic approach has been adopted by other authors [2,4,17,20].

However, it should be noted that this treatment, which is only probabilistic, suffers from several shortcomings in our services, notably:

The lack of systematization or the unavailability of blood culture and pus culture to identify the causative germs and the unavailability of amoebic serology in university hospitals. Kpoghomou et al and Nabé et al [12,14] reported 100% drainage by laparotomy. Itoudi Bignoumba et al [19] in 2020 in Gabon reported the use of percutaneous aspiration drainage under ultrasound guidance in all patients, that is, 100% of cases, of which two patients required additional surgical drainage. Our result is also different from those of Ongoiba M et al; Diallo MD et al and the literature [2,4,19,21,22] who reported the use of other modern, much less invasive methods, such as ultrasound-guided or CT-guided puncture, laparoscopic drainage, as well as percutaneous drainage. In these literature series, surgical drainage by laparotomy has always been indicated as a last resort. This difference can be explained by the fact that university hospitals are lacking equipment and qualified personnel for the use of techniques other than surgical drainage by laparotomy.

Of the Diallo MD [19], Ongoiba M [22] and Nabé [14] in 2015, the right subcostal oblique incision predominated with 46.67% followed by the supra-umbilical median incision in 42.67% of cases.

The appearance of the pus has been mentioned by many authors as probably serving as elements for guiding amoebic or pyogenic etiologies. Some authors [12,14,19,22] think that the chocolate-colored appearance of the pus is characteristic of amoebic origin. The etiological diagnosis of hepatic abscesses in our study is based on the culture of the pus since no patient underwent blood culture and/or amoebic serology.

Kpoghomou et al. in 2022 [12] and Nabé [14] in 2015 noted 72% favorable evolution, 18.67% complication and 6.67% death. However, it is lower than that of Dehhaze [10] in 2011, who reported 96.78% favorable evolution and 3.22% (2/62) complication of which 1.61% (1/62) death.

The mortality rate found in our series is higher than those in European, Asian and Maghreb series, which reported a low or zero mortality rate [15,23,24]. The average length of hospital stay found in our series is comparable to those found in most African publications, which varies from 10 to 14 days, with extremes of 2 to 24 days [12,14,22].

Conclusion

It appears that despite its rarity, liver abscess has a growing frequency in our region and remains a public health problem. Young adults were the most affected, with a male predominance. Self-medication and consulting traditional practitioners were the cause of diagnostic and therapeutic delays. The prognosis could be improved by early management and timely diagnosis, combined with appropriate antimicrobial therapy, adequate drainage procedures when indicated, and increased public awareness regarding the importance of seeking prompt medical care.

Funding

None.

Conflict of Interests

The authors declare no conflict of interest.

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