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Surgical Research

LIVER ABSCESSES: Epidemiology and Management in the Surgery Department of the N'zérékoré Regional Hospital, Concerning 97 Cases

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ABSTRACT

A liver abscess is a collection of pus in a newly formed cavity at the expense of hepatic tissue, which is destroyed or displaced [1].

Methodology: *Retrospective, descriptive 5-year study from January 1, 2016, to December 31, 2020.*

Results: *The frequency of liver abscesses relative to all pathologies managed was 2.23%. The average age of the patients was 39.32 years.*

The male sex was the most affected with 87.63%. Fifty-nine point eight percent (59.8%) of cases came from rural areas, and 40.20% of the cases were farmers. Pain in the right hypochondrium or epigastrium was the main reason for consultation found in everyone. Abdominal ultrasound for all cases was the examination of choice for a positive diagnosis. Liver abscesses were located in the right lobe in 52.5%. The course of the disease was uncomplicated in 74.22% of cases. The recorded complications consisted of parietal suppuration in 13.4% and postoperative peritonitis in 2.06%. We recorded a 9.27% mortality rate. The average length of hospital stay was 12 days, with extremes of 7 and 33 days.

Conclusion: *Liver abscess is a disease of young adults, common in men. Self-medication and consulting traditional practitioners are at the origin of delayed diagnosis and treatment.*

Multidisciplinary collaboration and training of medical staff in imaging such as abdominal ultrasound and CT scans could certainly promote early diagnosis. The multifactorial prognosis impacts the management, which must be prompt and appropriate.

Keywords

Liver abscess, FONTAN triad, Ultrasound, Surgical drainage.

Introduction

A liver abscess is defined as a collection of pus in a newly formed cavity at the expense of liver tissue [1]. This term, hepatic abscess, 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 [2].

In developed countries, liver abscesses are often pyogenic and occur mainly in patients with either congenital (chronic granulomatous

disease) or acquired (leukemia) immune deficits [3].

On the other hand, in sub-Saharan Africa, liver abscesses of amoebic origin are the most common, followed by pyogenic ones [4]. It is a cosmopolitan disease that is endemic in the warm regions of the world (Africa, South and Central America, Asia), where it constitutes a public health problem [3,5].

HIV/AIDS, diabetes, chronic alcoholism, cancer, corticosteroid therapy, cirrhosis, and cardiac liver disease are predisposing factors for liver abscess [4]. Diagnosis is based on medical history, clinical, biological, and imaging findings [3].

Treatment is sometimes medical (metronidazole, analgesics, antibiotics); instrumental (ultrasound-guided or CT-guided drainage). Surgical treatment consists of opening the abdominal cavity via a supra-umbilical midline or right subcostal trans-thoracic incision and draining the abscess [2,5].

If left untreated, a liver abscess can progress to peritonitis due to rupture of the abscess or into a hollow organ such as the bronchi or the intestine, or it can spread into a serous membrane (pleura, pericardium) [3,5,6]. The frequency of liver abscesses varies depending on the country. It accounts for 1.9% of hospitalizations in Abidjan (Ivory Coast) [7].

In Senegal, its prevalence is 1 to 2% of the general population [3]. In Mali, Traoré A et al. reported in 2014 a frequency of 1.3% with a mortality rate of 5.66% [8]. In Guinea, in a multicenter study conducted in the visceral surgery departments of Donka and the Sino-Guinean Friendship Hospital of Kipé, liver abscesses accounted for 1.49% of total hospitalizations and 62.59% of hepatobiliary diseases, with a mortality rate of 9.21%.

Methodology

The surgical department of the regional hospital of N'zérékoré served as the setting for the study. This was a retrospective, descriptive study over a five-year period from January 1, 2016, to December 31, 2020.

Target population

It involved all records of patients admitted and hospitalized for surgical conditions in the department during the study period.

Study population

All records of patients admitted and hospitalized for liver abscess. Included in the study were records of patients admitted, hospitalized, and operated on in the department for liver abscess during the study period. Incomplete or unusable records were excluded. Our study variables were epidemiological, clinical, therapeutic, and prognostic. Data extraction was manual, the collected data were entered using Word and Excel software, and analyzed using EPI Info version 3.5.4.

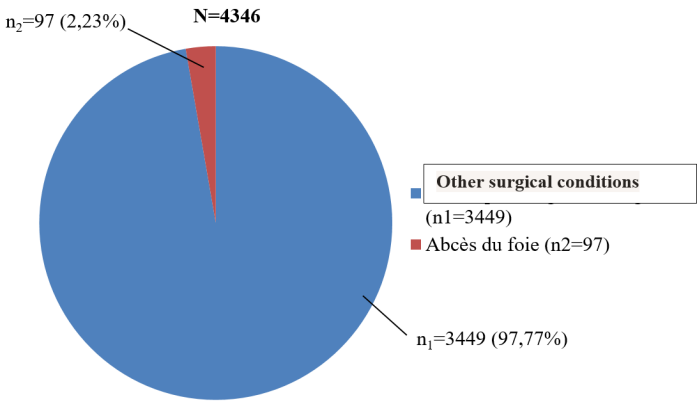

Figure 1: Frequency of cases compared to other surgical pathologies. The most affected age group was 21-30 years with 28.87%, followed by 31-40 years with 27.84%. The average age is 39.32 years, with extremes of 10 and 51 years. Men were the most affected, 87.63% compared to 12.37%, with a male/female sex ratio of 7.08. The majority of cases came from urban areas, 58.8% compared to 38.14% from rural areas.

Table 1: Distribution of cases by occupation.

Occupation	Workforce	Percentage
Farmers	39	40,20
Workers	25	25,77
Pupils/students	10	10,30
Drivers	9	9,27
Cutlery sets	6	6,18
Teachers	5	5,15
Retailers	3	3,09
Total	97	100

Pain in the right hypochondrium was found in all patients (100%). Fever, physical weakness, anorexia, and nausea/vomiting were present in 90.72%, 89.69%, 85.56%, and 81.44% of cases, respectively. Direct consultation accounted for 67.37% of cases, compared to 21.05% of referred cases and 13.40% of cases referred from elsewhere. Traditional treatment was used in 90.72% of cases.

The average time to consultation was three and a half weeks, with extremes ranging from 1 to 6 weeks. The majority of patients consulted between the 4th and 6th week (35.05%), and delayed consultation beyond 6 weeks was noted in 22.26% of cases.

Frequency of Risk Factors

Risk factors were present in many cases: alcoholism 69.07%; history of amoebic dysentery 37.1%; diabetes 10.3%; lithiasic cholecystitis 8.2%; HIV 5.15%; and liver trauma 3.1%. Physical examination revealed pain in the right hypochondrium/epigastrium in all cases; hepatomegaly was present in 73.19%; a positive costal shock was noted in 71.13%; while other signs included conjunctival pallor 19.58%; jaundice/sub-jaundice 17.52%. Murphy's sign was positive in 17.52%.

Abdominal ultrasound, which is the first-line examination, showed

52.57% in the right lobe; 27.83% in the left lobe; 19.58% in both lobes simultaneously. Abscesses were multiple in 19.58% and solitary in 80.41%. Biological tests performed on all patients revealed.

The abdominal ultrasound, which is the first-line examination, revealed 52.57% in the right lobe; 27.83% in the left lobe; and 19.58% in both lobes simultaneously. The abscesses were multiple in 19.58% and single in 80.41%. The biological tests carried out in all patients showed: A neutrophilic leukocytosis greater than 10,000/mm³ in 63.91%; an eosinophilic leukocytosis greater than 10,000/mm³ in 28.86%. Anemia with hemoglobin levels below 10 g/dl was present in 19.58%; the erythrocyte sedimentation rate was elevated in all patients. The surgical approach was right subcostal in 43.30% (n=42), median supraumbilical in 38.14% (n=37); median supra- and infraumbilical in 18.56% (n=18).

Table 2: Distribution of cases according to postoperative outcomes.

Postoperative care	Workforce	Percentage
Simple	73	75,25
Parietal suppuration	13	13,40
Postoperative peritonitis	02	2,06
Death	09	9,27
Total	97	100

The deaths were due to septic shocks in patients, three of whom had comorbidities such as diabetes; four patients had consulted late, two of whom developed postoperative peritonitis with multiple organ failure.

Table 3: Distribution of cases according to the length of hospitalization

Length of hospital stay (days)	Workforce	Percentage
≤ 7	08	8,25
8-14	57	58,76
15-21	22	22,68
22-28	04	4,12
29-33	06	6,12
Total	97	100

Discussion and Comments

The hospital frequency is 2.23%. Our result is higher than that of Camara SN [9], who reported a frequency of 1.39% in the visceral surgery department of the Donka National Hospital. This frequency could be explained by the unfavorable socio-economic environment, the tropical climate, fecal risk, and overcrowding. The morbidity associated with this condition is significant, with a risk of mortality ranging from 6 to 10%. The pathogen is most often bacterial, responsible for pyogenic abscesses. It can exceptionally be parasitic or fungal. The annual incidence of pyogenic abscesses varies from one region to another; however, it is estimated to be between 1.1 and 2.3 cases per 100,000 people. The origin is mainly biliary or portal [10].

The average age of patients found in our study was similar to that in African series. This average age is by far lower than that found in developed countries, where it is around 60 years. The male predominance is an observation regularly reported. The conditions conducive to the development of liver abscesses were precarious social situations (unemployment) and chronic alcohol consumption. In fact, alcohol inhibits the function of Kupffer cells, which play an essential role in eliminating infectious agents in the liver [11-14].

Impoverished patients, on the other hand, are exposed to overcrowding, poor hygiene, and malnutrition. This makes them susceptible to developing infectious diseases, notably a liver abscess. The combination of right upper quadrant pain, hepatomegaly, and fever constituted the clinical presentation found in our series.

This clinical presentation is the typical form classically reported in the literature. With sizes over 5 cm, the abscesses were relatively large in our series. Camara [9] found a mean age of 35 years, with extremes of 15 and 86 years. Our result is also comparable to that reported in the literature [8,9,15-17]; it falls within the 20-50 year age range. Liver abscesses can occur at any age but are more common in young adults. This male predominance corroborates the data in the literature [7-9,11]. Liver abscesses are mainly found among disadvantaged social classes, with 59.8% of cases coming from this background. Farmers, laborers, and pupils/students represented the most affected socio-professional groups, with 40.20%, 25.77%, 10.30%, and 9.27%, respectively. If we consider low-income professions such as farmers and workers, then the majority of cases in our series were in a precarious socio-economic situation. Our result is similar to that found by DEHHAZE [11] in 2011 in Morocco, who found 100% of pain in the right hypochondrium, 100% fever, and 98.38% physical asthenia.

Cases received through direct consultation represented 67.37%, compared to 21.05% referred cases and 13.40% transferred cases. Self-medication in the local context was present before consultation in 90.72% of cases. The average consultation delay was 4.02 weeks, with extremes ranging from 1 to 10 weeks. Indeed, in Africa in general [8,9,11-14] and in our country in particular, the constant first recourse to traditional medicine and insufficient health coverage are factors that may explain the delay in care. Alcohol consumption was found in 69.07% of cases, while a history of amebic dysentery was noted in 37.11%; 10.30% of cases were diabetic; 8.24% of cases had a history of hepatobiliary diseases, and 5.15% of cases were on antiretrovirals. Indeed, alcohol inhibits the function of Kupffer cells, which play an essential role in eliminating infectious agents in the liver. Impoverished patients, on the other hand, are exposed to both overcrowding and unsanitary conditions [18,19]. Our result is comparable to that of Nabé [13] in 2015, who found in the visceral surgery department of Donka National Hospital 100% of cases with abdominal pain in the right hypochondrium or epigastrium; 72% hepatomegaly and 61.33% positive costal tenderness. Diagnostic abdominal ultrasound was the first-line paraclinical examination requested and performed. The abscess was located in the right lobe in 52.57% of cases.

This localization was also found by the authors DEHHAZE [11]; BA [3]; Traoré [8]; and Camara [9] with 56.46%, 46.15%, 44%, and 74%, respectively. This could be explained by the fact that mesenteric and portal blood flow is more directed toward the right lobe.

The abscess was solitary in 80.41% of cases compared to 19.58% with multifocal location. This finding was made by the same authors [3,8,11,12]. This could be explained by the fact that the mesenteric and portal flow is more attributable to the right lobe. The abscess was solitary in 80.41% of cases compared to 19.58% with multifocal localization. This observation was made by the same authors [3,8,11,12]. Most liver abscesses are polymicrobial. Bacteriological examination of the pus is generally positive in 80% of cases, often revealing between 2 and 4 pathogens (Gram-negative bacilli, enterococci, anaerobes). Multiple abscesses are more frequently polymicrobial than solitary abscesses. Blood cultures are positive in 25 to 50% of cases, provided multiple samples (aerobic and anaerobic) are taken before any administration of antibiotics [20]. The blood count showed neutrophilic leukocytosis above 15,000 cells per cubic millimeter in 63.91% of cases, anemia with a hemoglobin level below 10 g/dl in 18 cases, and an accelerated ESR in 100% of cases.

In none of the cases did we find major cytolysis, hyperbilirubinemia, or biological signs of hepatocellular failure. Retroviral serology (SRV) was positive in 34.02% of the cases. Our result is much higher than that of Traoré [8] in Mali, who had 14.3% positivity for retroviral serology, and that of Diallo [18] in 2014 in the two surgery departments of CHU of Conakry, 4.41%. HIV infection and liver abscess are co-infections in tropical environments, or at least liver abscess is also an opportunistic disease of HIV infection.

Therapeutic And Evolutionary Variables The antibiotic combination of ceftriaxone or ampicillin; metronidazole; and gentamicin was the regimen used. This likely reflects the epidemiological context in African settings and the limitations in performing certain tests such as blood cultures and pus cultures to identify the causative germs.

Surgical Procedure

All cases underwent surgical drainage of the abscess under general anesthesia. No cases underwent ultrasound-guided drainage. The initial treatment should consist of CT-guided drainage of the abscesses and empirical intravenous antibiotic therapy consisting of ceftriaxone 2 g per day, gentamicin 3 mg/kg (i.e., 180 mg for a 60 kg patient) once daily for 3 days, and metronidazole 500 mg every 8 hours, combined with supportive measures [20]. Our results differ from those reported in the literature, which documented the use of modern, less invasive drainage methods such as ultrasound- or CT-guided puncture. The surgery department of the Regional Hospital of N'Zérékoré lacks both the equipment and qualified personnel to use techniques other than laparotomy. The right subcostal oblique incision was predominant, being used in 43.30% of cases, followed by the median supra-umbilical incision and the supra- and infra-umbilical incision. with 38.14% and 18.56% of cases, respectively. This result is supported by that of Nabé [13] in 2015 in Donka surgery. The right subcostal oblique incision accounted for 46.67% compared to the median supra-umbilical incision at 42.67%. The macroscopic assessment of the pus allowed us to note that it was chocolate-colored in 63.91%; pearly white in 28.58%; blackish in 4.12%; and greenish in 3.09% of cases. The appearance of the pus has been mentioned by many authors as likely serving as a guide for determining etiology. Some authors [13,18] believe that the chocolate-colored appearance of pus is characteristic of an amebic origin. The etiological diagnosis of abscesses in our study was not performed because no case underwent pus bacteriology or amebic serology. Postoperative outcomes were simple in 74.22% of cases; however, we observed septic complications such as parietal suppuration and postoperative peritonitis in 13.40% and 2.06% of cases, respectively. The evolution under treatment is most often favorable. The mortality rate in different series varies between 10 and 20%. It is highest in cases of antibiotic treatment alone and lowest in cases of percutaneous treatment (drainage, puncture) combined with antibiotic therapy [20]. In the most common case of favorable evolution under treatment, a follow-up CT scan should be performed 1 to 2 months after the end of antibiotic therapy. The recurrence rate is relatively low: 7% in cases of percutaneous treatment, 9% in cases of surgical drainage, and 10% in cases of antibiotic therapy alone [20]. Nabé [13] in 2015 reported 72% favorable outcomes; 18.67% complications and 6.67% deaths. This is significantly higher than that of DEHHAZE [11] in 2011 at CHU Mohammed VI in Morocco, with 3.22% and a mortality of 1.61%. In European and Asian series, the mortality rate is low or nil [12,13]. The average hospital stay was 12 days, with extremes of 7 and 33 days. The average duration of hospitalization ranges from 10 to 14 days in most African publications, with extremes of 2 to 49 days [14].

Conclusion

Despite its rarity, liver abscess is becoming more frequent in our regions and remains a relevant medical issue. It is a disease of young adults. The use of self-medication and traditional therapy contributes to delayed consultation and management. Improvements in diagnostic tools, ongoing staff training, and interdisciplinary collaboration could change the prognosis.

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