Prevalence of liver abscess (pyogenic and amebic) in a secondary hospital in southeastern of Mexico. Analysis of six years.

Guillermo Padrón Arredondo *

*1 Guillermo Padrón Arredondo MD
Cerrada Corales 138, Residencial Playa del Sol
Solidaridad, Playa del Carmen, Quintana Roo. México. PC: 77724.
Tel. 01-984-110-0707
Cell. 01-984-876-2267
gpadronarredondo@hotmail.com

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Surgery Department of General Hospital Playa del Carmen
Av. Constituyentes s/n c/Av. 135 Colonia Ejido.
Tel.: 01-984-206-1691
hospital2011_@hotmail.com

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Abstract

Background
Background. Liver abscesses are an expression of a disease that remains a challenge, as their clinical course is usually severe, diagnosis it’s sometimes late and have high mortality. Pyogenic liver abscess does not represent a specific liver disease, but rather the final destination of many disease processes.

Material and method
A descriptive and retrospective study based on the review of the medical records of patients diagnosed with hepatic abscess during a period of 6 years (2011-2016) was performed. Descriptive statistics were used for averages and percentages as well as standard deviation.

Results
During the study period only six cases of liver abscesses were collected. Four cases were men and two women; two cases were listed as amoebic, two cases as pyogenic and two etiology was not specified. All were treated with medical therapy; complications two cases with pleural effusion, and a case with paralytic ileus post puncture resolved with medical management; one case with combined use (antibiotics more puncture catheter); there were no surgical procedures and no mortality.

Discussion
From the etiopathogenic point of view, germs can invade the liver through different routes, and hepatic abscess are classified as diffusion pathway. In abscesses or biliary cholangitis, the obstruction may be due to benign causes, as cholelithiasis, stenosis and sclerosing cholangitis, or malignancies, such as pancreatic carcinoma or bile ducts. Etiologic agent previously dominant E. coli, however, currently the most frequently agent has been isolated is the Klebsiella. Treatment is medical and / or surgical depending on your progress.
Keywords: Pyogenic liver abscess; Amebic liver abscess; Prevalence

Introduction

Liver abscesses are an expression of a disease that still remains a medical challenge, since their clinical course is usually severe, diagnosis, sometimes late and high mortality. Pyogenic liver abscess (PLA) does not represent a specific liver disease, but rather the final destination of many disease processes.

In recent decades, there have been several advances such as the introduction of antibiotics and the development of radiological techniques (US and CT and MRI) that have improved the diagnostic efficacy and possible percutaneous drainage. Both circumstances, coupled with the improvement in the management of severely ill, has determined that the mortality rate has decreased significantly, ranging from 10 to 30%; however, the complication rate is still high (30-60%).

Hepatic amoebic abscesses (HAA) in areas where amoebiasis is endemic, as in Mexico, predominate over pyogenic, whereas they are more prevalent in developed countries, where those are < 20%; however, in certain areas thereof and due to migration phenomena, this pattern is altered in future. [1]

Material and Method

An observational, descriptive and retrospective study based on the review of the medical records of patients discharged with a diagnosis of HA at the Hospital General Playa del Carmen, Quintana Roo, Mexico for a period of six years between January 2011 and December 2016 was conducted, according to information it consists in the hospital statistics service.

Basic demographic information (age, sex), comorbidity, findings of hematological, biochemical and ultrasound and/or tomographic information, the established management and evolution was recorded.

HA in patient with compatible clinical features and diagnosis confirmed by ultrasound and/or tomography, they were defined as inclusion criteria. After reviewing medical records that had failed or not supported diagnosis were excluded, the results are presented as frequencies and percentages for categorical variables; averages according to the distribution of quantitative variables. Descriptive statistics were used for statistic analysis.

Results

During the study period six cases of liver abscesses collected one year with 0.5 cases per 100,000 inhabitants/year. Four cases (66.6%) were men and two (33.3%) women; maximum age 64 years, age 26 years, mean 46, median 48 and 49 fashion with a SD = 12.3; days of hospital stay: maximum 15 days, at least 1 day, average 7.6, median 6, mode 15 and SD = 6. Two cases (33.3%) were classified as amoebic, 2 (33.3%) cases with pyogenic and two (33.3%) the etiology was not specified. One case presented as a factor of risk jaundice and Cancer (Table 1). All cases had elevated glucose. Laboratory findings on admission (Table 2). Hb: mean 10.4, median 10.3, mode 9.1, SD = 1.5; Ht: mean 30.6, median 30.5. SD = 4.5; leukocytosis: mean 17.6, median 15.5, SD =
Prevalence of liver abscess (pyogenic and amebic) in a secondary hospital in southeastern Mexico. Analysis of six years.

Discussion

From the point of view etiopathogenic germs can invade the liver through different routes, and depending on the route of diffusion, the PLA are classified. In abscesses or biliary cholangitic, obstruction may be due to benign causes such as choledocholithiasis, strictures, and sclerosing cholangitis, or malignancies, such as pancreatic carcinoma or bile duct. Although it is clear that the bile flow obstruction can cause abscesses, there is little agreement with regard to the production mechanism.

Abscesses portal origin are often secondary to infection of an organ whose venous drainage is performed in the portal system, as may occur in the course of appendicitis, diverticulitis, ulcerative colitis or pancreatitis. Crohn's disease is complicated, so rare with liver abscesses, despite being quite common in these patients, a high degree portal bacteremia.

They have also been found liver abscesses after performing anal surgery and after ingestion of various foreign bodies. Abscesses direct extension occur as a result of infection neighborhood, contiguity, it affects the liver parenchyma. The most common diseases associated with such abscesses are usually: acute cholecystitis, empyema, subphrenic abscess or other contiguous abdominal abscesses, perforated ulcers, etc. Despite the various technical advances, the incidence of PLA has always been low, constant throughout the twentieth century remain, ranging from 0.29-1.47% of autopsy series 0.008- to 0.016% of hospital admissions; however, in recent years we are seeing a slight but progressive increase diagnosis, with an incidence between 0.020 and 0.088% of hospital admissions. It is unclear whether this upward trend is due to changes in the real incidence, greater diagnostic efficacy or variations in income policy. It is remarkable a recent population study, which found eleven cases / 1,000,000 inhabitants / year. In general it has an incidence varying from 1.1-2.3 for each 100,000 habitants. In our results, we found only 0.5 cases per year/100,000 inhabitants, which speaks fortunately low frequency of this disease in our environment.

The classic triad of fever, jaundice and pain, widely described in the literature, and almost always associated with cholangitis or pylephlebitis, is seen less and less in the current series, being more common sub-clinical form and undemonstrative, represented by fever, malaise overall, anorexia, vomiting, weight loss, etc. This clinical presentation, observed especially in elderly patients, may lead to confusion with cancerous processes, but also a PLA can be the...
presentation of a neoplasm. Hepatomegaly or painful palpable mass is one of the signs described in this disease, with varying frequency between 38 and 60%.

Moreover, the amoebiasis is the third leading cause of death from parasitic disease in the world; within the intestinal manifestations of this disease is amebic liver abscess. This entity is observed with higher incidence in underdeveloped countries like Mexico, so it should be diagnosed and treated with antiparasitic drugs in uncomplicated cases and can be prevented with proper hygiene measures.

Pyogenic liver abscesses (PLA) have been described with a higher prevalence in countries with temperate climate with an average size between 5 and 10 cm, referring to sizes up to 20 cm, varying treatment. The clinical presentation is diverse in which predominates fever, pain and hepatomegaly, jaundice adding associated as a sign of seriousness.

Etiologic agent previously dominant E. coli, however, currently the most frequently agent has been isolated is the Klebsiella. Treatment is medical and / or surgical depending on your progress. [3]

Approximately 80% of patients with amoebic liver abscess (ALA) symptoms that develop over a period of days to weeks, typically less than 2 to 4 weeks. Among travelers who have an HAA after leaving an endemic area, 95% developed in the first five months. Young patients with ALA are more likely to go with greater intensity of symptoms within ten days. Most patients have fever and pain in the right upper quadrant, which may be severe or pleuritic nature and irradiated shoulder. Often the point tenderness it’s the liver and the right pleural effusion, jaundice is rare. While the primary site of infection in the colon is less than one third. [4]

It is not possible to provide accurate regarding the etiology in our series information, only in one patient, because rarely seroameba test was conducted after identifying a probable hepatic abscess and one third of patients had record crop secretion performed; only in patients could be isolated germ, which have to 14.28% of the cultures secreting defined etiology abscess.

No significant differences in clinical amoebic abscess and pyogenic, since both more than 90% of patients experience weight loss, fever, abdominal pain, night sweats, chills and malaise, can also present vomiting, headache, myalgia, pruritus, diarrhea, in more serious cases, confusion, and shock. Clinical examination can be found jaundice and right upper quadrant pain that worsens on percussion.

Other patients enrolled only with fever, therefore, the diagnosis of amebic liver abscess should always be seen in the presence of fever of unknown origin. In its diaphragmatic abscesses usually no respiratory symptoms such as cough and pleuritic pain radiating to the right shoulder. [5]

According to Shi SH, et al., little is known about etiology and morbidity and clinical characteristics of pyogenic liver abscess caused by extended-spectrum beta-lactamase (ESBL)-producing Enterobacteriaceae and PLA caused by ESBL-producing Enterobacteriaceae isolates mainly occurs in patients with biliary disorders and with a treatment history of malignancy. [6] The mainstay of treatment remains carbapenems in combination with adequate aspiration or
Ulger TN, et al., present a case of pyogenic liver abscess toxigenic *C. difficile* by a woman of 80 years old not hospitalized with diabetes mellitus, cerebrovascular and cardiovascular disease.[7] Toxigenic *C. difficile* was susceptible to antibiotics but despite appropriate antibiotic therapy and surgical drainage the patient died.

Lin JN, et al., report that PLA can be a rare but severe in patients with inflammatory bowel disease (IBD) extraintestinal complication.[8] However, their incidence is unknown. Patients with diabetes mellitus or with percutaneous aspiration of the bile ducts and gall and who underwent endoscopic placement of a biliary drainage tube gallbladder showed a significantly increased risk of PLA particularly those with ulcerative colitis. The knowledge of the expected frequency and the potential risk of this serious extraintestinal infection can minimize the serious consequences.

Ming Shai T, et al., he found in their study that an additional analysis showed that diverticular disease group exhibited a high risk of PLA whether patients had diverticulitis.[9] In our series, one patient have diverticular disease but isolate germen were *Staph. aureus*.

Ming-Shian T, et al., report that gastrectomy which is a widely used treatment option for many diseases, including morbid obesity, peptic ulcer disease and gastric neoplasia.[10] However, if patients who have undergone gastrectomy high risk of bacterial infection in your digestive system is not yet clear. Gastric acid is a crucial mechanism against infection of the digestive system. Therefore, medical and surgical treatments that reduce gastric acid secretion can increase the risk of digestive tract infection. For example, the use of agents gastric acid suppression is associated with an increased risk of infection by *Clostridium difficile*. Moreover, gastrectomy has been associated with enterocolitis. In severe outbreaks of *E. coli* associated colitis, gastrectomy is considered an independent risk factor for infection. Without recognition and timely treatment, the PLA can be fatal. In theory, the various conditions that cause intestinal infection may increase the risk of PLA, and clinically identify the underlying etiology is an integral part of the management of the PLA, none of our patients were operated gastrectomy.

Jaideep Dey, et al., reported in their study that 25% of patients presenting with liver abscess tuberculous etiology had no characteristics of active pulmonary or miliary tuberculosis. [11] The liver can act as the primary site of involvement in the absence of activity in other body sites. Tuberculosis elsewhere should be considered as an important differential diagnosis of PLA regardless of evidence of active tuberculosis in other parts of the body.

Cherian J, et al., tell us that most of the PLA are polymicrobial etiology with less than 10% caused by *Staphylococcus aureus*. [12] Of these, few are caused by *Staph. aureus* resistant to methicillin (MRSA) and even less by a community-acquired strain. Typically, a liver abscess is treated empirically with ceftriaxone for pyogenic liver abscess and metronidazole for amebic liver abscess. However, if the patient has risk factors for a staph infection, it is imperative that antibiotics that cover gram-positive awaiting culture reports organisms are added. Only one case have Staphylococcus aureus infection in our series.

Lardiere, et al., report that microbial contamination of the liver parenchyma leading
to hepatic abscess (HA) can occur via the bile ducts or vessels (arterial or portal) or directly, by contiguity.[13] Infection is usually bacterial, sometimes parasitic, or very rarely fungal. In the Western world, bacterial (pyogenic) HA is most prevalent; the mortality is high approaching 15%, due mostly to patient debilitation and persistence of the underlying cause. In South-East Asia and Africa, amebic infection is the most frequent cause.

The etiologies of HA are multiple including lithiatic biliary disease (cholecystitis, cholangitis), intra-abdominal collections (appendicitis, sigmoid diverticulitis, Crohn’s disease), and bile duct ischemia secondary to pancreatoduodenectomy, liver transplantation, interventional techniques (radio-frequency ablation, intra-arterial chemo-embolization), and/or liver trauma. More rarely, HA occurs in the wake of septicemia either on healthy or preexisting liver diseases (biliary cysts, hydatid cyst, cystic or necrotic metastases).

The incidence of HA secondary to Klebsiella pneumoniae is increasing and can give rise to other distant septic metastases. The diagnosis of HA depends mainly on imaging (sonography and/or CT scan), with confirmation by needle aspiration for bacteriology studies. The therapeutic strategy consists of bactericidal antibiotics, adapted to the germs, sometimes in combination with percutaneous or surgical drainage, and control of the primary source. The presence of bile in the aspirate or drainage fluid attests to communication with the biliary tree and calls for biliary MRI looking for obstruction.

When faced with HA, the attending physician should seek advice from a multi-specialty team including an interventional radiologist, a hepatobiliary surgeon and an infectious disease specialist. This should help to determine the origin and mechanisms responsible for the abscess, and to then propose the best appropriate treatment. The presence of chronic enteric biliary contamination (i.e., sphincterotomy, bilio-enterostomy) should be determined before performing radio-frequency ablation and/or chemo-embolization; substantial stenosis of the celiac trunk should be detected before performing pancreatoduodenectomy to help avoid iatrogenic HA.

Kale S, et al., unfortunately, there is confusion among the medical community regarding the management of amoebic liver abscess (ALA).[14] Treatment options range from simple drug therapy with the use of interventions such as needle aspiration or catheter under ultrasound guidance to surgery. There are a number of parameters such as the maximum diameter of abscess and volume on ultrasound suggested by several authors to serve as a criterion to help decide when to use which modality in these cases. A conservative approach is effective in treating the AHA for most patients. The failure of conservative treatment was predicted by the size of the abscess (maximum diameter > 7.7 cm).

Kasamatsu Y, et al., reported that amoebic liver abscess alone in the right lobe small (<5 cm) are usually treated using only medical treatment, while large abscesses are usually treated through a combination of antibiotics and sewer system.[15] However, the therapeutic indications of ALA (5-10 cm) remain unclear. They report a 53-year-old who was receiving lenalidomide for multiple myeloma and later developed multiple amoebic abscesses. Metronidazole was unsuccessful and only percutaneous drainage of the right lobe, left lobe, and chest proved ultimately successful.
JK Ghosh, et al., reported that needle aspiration with metronidazole hastens clinical improvement especially in large cavities in patients with ALA (5 to 10 cm); Aspiration is safe and no major complications occurred. Therefore, combination therapy should be the first choice, especially in large ALA (5 to 10 cm).[16]

Yildiz H, et al., report a male patient aged 67, known systemic sarcoidosis was admitted to the internal medicine service because of cough and chest pain for several weeks. Tomodensitometry chest showed multiple pulmonary nodules.[17]

Biopsies showed characteristics compatible with abscesses. Cultures and serologic tests were negative and the patient was successfully treated with prednisone. Three years later, a thoracoabdominal tomodensitometry showed a relapse in the lung and also the emergence of similar lesions in the liver. The blood test revealed elevated level of CRP 40 mg / L and mild cholestasis. Liver biopsies excluded neoplastic or infectious disease and showed the formation of granulation tissue with an inflammatory abscess. Next, a diagnosis of sarcoidosis associated aseptic abscesses syndrome, which was successfully treated with corticosteroids was performed. Sohn SH, et al., recommend that when the PLA forecast appears to be dependent pathologies and severity of the underlying condition.[18] The most aggressive treatment should be considered if a poor prognosis is expected.

Czerwonko ME, et al., report that in the current times of modern surgery, transplantation and percutaneous techniques, PLA has become a problem essentially biliary or iatrogenic.[19] The history of cholangitis is a strong predictor of recurrence. Mortality associated with hyperbiliurinemia and anatomical distribution of lesions.

Meyer M, et al., report that E. histolytica can live asymptptomatically in the human gut, or may disrupt the intestinal barrier and induce life-threatening abscesses indifferent organs, most commonly in the liver.[20] The molecular structure that makes possible this invasion, highly pathogenic phenotype is not yet well understood. Based on extensive studies of the transcriptome of these clones, a set of candidate genes that are potentially involved in pathogenicity were identified. Using ectopic overexpression of the most promising candidates, either pathogenic or non-pathogenic clones Entamoeba, they have identified genes that high expression of reduced pathogenicity and only a gene that increases the pathogenicity. Overall, the present study identifies new pathogenicity factors of E. histolytica and highlights the observation that many different genes contribute to the pathogenicity.

Mavilia MG, et al., report that despite its low incidence, the HA is associated with a relatively high rate of mortality and serious complications.[21] For these reasons, immediate recognition is essential to institute effective management and achieving good results. Because the symptoms are not specific or laboratory results, the presence of predisposing factors may be useful to increase the level of diagnostic suspicion. Radiographic features can help both with the classification of HA and appropriate treatment approach. Depending on their characteristics HA can be effectively treated by either DP or DQ in combination with antibiotics. The key to getting
good results with both approaches is early diagnosis and the establishment of appropriate treatment. Surgery is indicated only in broken liver abscess, peritonitis, difficult anatomical and surgical pathologies access coexistent.

Shelat, et al., found in their study that negative cultures compared to those positive for *Klebsiella pneumoniae* had the same response to treatment, but in our cases the cultures were not performed in patients and their treatment was empirical.[22]

In study of Zhao-Qing D, et al., all the patients, once diagnosed with PLA, were usually treated by a combination of a two or third-generation cephalosporin and metronidazole empirically or based on identification of bacteria and susceptibility test if available.[23] Usually Treatments of PLA (antibiotics alone, PD or SD) were decided according to abscess size, number, degree of abscess liquefaction, separation of abscess cavity, patient response to antibiotics and personal experience of the physicians. All the patients with positive blood culture were treated with intravenous antibiotics for 7 to 14 days or even longer depending on the clinical and radiological response. For patients undergoing PD, a 12 to 14 Fr drains were placed into the abscess cavity monitored by ultrasound. And the volume of drains was documented daily. Once the volume of drains was decreased less than 10 ml/day, the patients would undergo ultrasound examination for confirmation of drains displacement, obstruction or complete drainage. The drainage tube would then be repositioned, replaced or withdrawn depending on imaging findings. SD was mostly performed for patients with large or giant abscess with thick pus, multiple abscess separation, failure of PD due to location or ineffective drainage, or abscess rupture. Abscess cavity was determined with the help of ultrasound. Abscess wall was deroofed, and loculations were broken down.

For patients with concurrent biliary disorders, additional biliary tract procedures were performed. Liver resection was performed for abscess with complete destruction of a segment or section of liver parenchyma. As it can be observed in our study, the treatment with double scheme antibiotics was the management in all the patients except one that could be guided puncture in another hospital being the only mixed treatment.

Hepatic abscesses are a relatively rare occurrence, but an important problem nonetheless. Improved awareness can decrease complications and mortality rates. Clinical features of pyogenic abscesses and amoebic abscesses are somewhat similar, but pyogenic abscesses are generally described as being more aggressive. Ultrasound and CT scans play key roles in diagnosis, but confirmation using blood/pus cultures and indirect hemagglutination tests are also recommended. Early treatment with broad-spectrum amoebicidal antibiotics, and percutaneous aspiration can prevent serious complications, Bhatti AB, et al.[24]

Kannathasan S, et al., in your article since 1985, amoebic liver abscess (ALA) has been a public health problem in northern Sri Lanka.[25] Clinicians arrive at a diagnosis based on clinical and ultrasonographic findings, which cannot differentiate pyogenic liver abscess (PLA) from ALA. As the treatment and outcome of the ALA and PLA differs, determining the etiological agent is crucial.
Immunological diagnosis of 346 serum samples tested for *E. histolytica* circulating antigen, 344 were positive (99.4%). All 221 pus samples (100%) collected from patients who were sero-positive for *E. histolytica*, were positive for *E. histolytica* antigen. Among the 346 serum samples investigated, 345 were positive (99.7%) for IgG antibody against *E. histolytica*. Although the one sample which was negative for IgG antibody was positive for circulating Entamoeba antigen. Moreover, *E. histolytica* IgG antibodies were negative in 100 serum samples collected from healthy individuals, suggesting that the sensitivity of the test is 100% and the specificity is 99.01%. Further, the positive and negative predictive values of the test were 99.7% and 100%, respectively. Undoubtedly, the distinction between amebic liver abscess and pyogenic hepatic abscess is ideal for establishing a specific treatment and thus avoiding empirical treatment.

**Conclusion**

Prevalence of hepatic abscess is very low in our environment; the treatment is the combination with antibiotics (metronidazole and cephalosporin or quinolone) and with or without drainage catheter; our patients not required surgical procedures; and there was no mortality, therefore, its management has been satisfactory.

The results of the study are influenced by the low number of patients (six patients), as well as the lack of cultures of the material obtained to determine the etiology of the abscess. Similarly, the lack of permanent tomography as well as magnetic resonance imaging does not allow to specify the characteristics of the abscess in support of the diagnosis.

The lack of interventional radiologists also limit the management of this type of patients because percutaneous drainage is the initial method of choice for treatment.

However, the clinical picture of hepatic asbestos is the touchstone for the suspicion of this pathology, which generally responds to combined interventional and / or medical treatment for amoebiasis and pyogenic origin.

**Abbreviations**

HAA hepatic amoebic abscess; ALA amoebic liver abscess; AHA Amebic hepatic abscess; HA hepatic abscess; MRI image magnetic resonance; MRSA staph aureus resistant methicillin; DP Percutaneous drainage; DQ Surgical drainage; PLA pyogenic liver abscess; PD Percutaneous drainage; US ultrasound; CT computed tomography; DM diabetes mellitus; Hb hemoglobin; Leuc leucocytes; Gluc glucose; FA alkaline phosphatase

**Acknowledgment**

None

**Declaration**

Author, states that this research work is original and has not been published in whole or in part elsewhere.

**Authorship (author(s) contribution or attribution)**

The single author of this work is the one who collected information, wrote and revised the manuscript and had the concept to be published and submitting for publication.

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Table 1. Risk factors for developing Hepatic abscess and increased mortality.

<table>
<thead>
<tr>
<th>High risk of Hepatic abscess</th>
<th>Increased mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM</td>
<td>Cancer</td>
</tr>
<tr>
<td>Hepatic cirrhosis</td>
<td>DM</td>
</tr>
<tr>
<td>Immunocompromised</td>
<td>Hepatic cirrhosis</td>
</tr>
<tr>
<td>PPIs use</td>
<td>Male</td>
</tr>
<tr>
<td>Male</td>
<td>Multiple organ failure</td>
</tr>
<tr>
<td></td>
<td>Sepsis</td>
</tr>
<tr>
<td></td>
<td>Infection with multiple organisms</td>
</tr>
<tr>
<td></td>
<td>Hepatic abscess rupture</td>
</tr>
<tr>
<td></td>
<td>Abscess &gt; 5 cm</td>
</tr>
<tr>
<td></td>
<td>Breathlessness</td>
</tr>
<tr>
<td></td>
<td>Hypotension</td>
</tr>
<tr>
<td></td>
<td>Jaundice</td>
</tr>
<tr>
<td></td>
<td>Extrahepatic disorders</td>
</tr>
</tbody>
</table>


Table 2. Laboratory tests at hospital admission in six patients with Hepatic abscess.

<table>
<thead>
<tr>
<th>Case</th>
<th>Hb (g/dl)</th>
<th>Leuc</th>
<th>Gluc</th>
<th>FA</th>
<th>BD</th>
<th>BI</th>
<th>TGO</th>
<th>TGP</th>
<th>Urea</th>
<th>Alb</th>
<th>TP</th>
<th>TPT</th>
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<tbody>
<tr>
<td>1</td>
<td>9.1</td>
<td>16000</td>
<td>118</td>
<td>1015</td>
<td>6.3</td>
<td>14</td>
<td>120</td>
<td>69</td>
<td>22.0</td>
<td>2.8</td>
<td>20.5</td>
<td>23.4</td>
</tr>
<tr>
<td>2</td>
<td>10.2</td>
<td>23000</td>
<td>141</td>
<td>90</td>
<td>0.3</td>
<td>0.2</td>
<td>54</td>
<td>45</td>
<td>15.0</td>
<td>2.8</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>3</td>
<td>10.8</td>
<td>26000</td>
<td>210</td>
<td>0</td>
<td>14</td>
<td>14</td>
<td>136</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
<td>13.0</td>
<td>31.0</td>
</tr>
<tr>
<td>4</td>
<td>13.2</td>
<td>15000</td>
<td>479</td>
<td>351</td>
<td>0.3</td>
<td>0.5</td>
<td>28</td>
<td>29</td>
<td>10.8</td>
<td>3.0</td>
<td>13.0</td>
<td>25.0</td>
</tr>
<tr>
<td>5</td>
<td>9.1</td>
<td>12000</td>
<td>189</td>
<td>242</td>
<td>0.4</td>
<td>0.2</td>
<td>14</td>
<td>10</td>
<td>3.8</td>
<td>2.1</td>
<td>15.0</td>
<td>32.2</td>
</tr>
<tr>
<td>6</td>
<td>10.5</td>
<td>14000</td>
<td>482</td>
<td>833</td>
<td>2.0</td>
<td>0.1</td>
<td>21</td>
<td>36</td>
<td>81.0</td>
<td>2.2</td>
<td>11.7</td>
<td>30.6</td>
</tr>
</tbody>
</table>


Table 3. Characteristics of patients with multiple handling in six patients with Hepatic abscess.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Patient 1</th>
<th>Patient 2</th>
<th>Patient 3</th>
<th>Patient 4</th>
<th>Patient 5</th>
<th>Patient 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Female</td>
<td>Male</td>
<td>Male</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>Age</td>
<td>64</td>
<td>49</td>
<td>26</td>
<td>47</td>
<td>41</td>
<td>49</td>
</tr>
<tr>
<td>Background</td>
<td>Ca</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>diverticular disease</td>
</tr>
<tr>
<td>Hb (g/dl)</td>
<td>9.1</td>
<td>10.2</td>
<td>10.8</td>
<td>13.0</td>
<td>9.1</td>
<td>10.5</td>
</tr>
<tr>
<td>Albumin</td>
<td>2.8</td>
<td>2.8</td>
<td>0</td>
<td>3.0</td>
<td>2.1</td>
<td>2.2</td>
</tr>
<tr>
<td>Lobe</td>
<td>Right</td>
<td>Right</td>
<td>Right</td>
<td>Right</td>
<td>Left</td>
<td>Right</td>
</tr>
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