Section: Research Paper

Prospective study of clinical profile and various modalities of treatment in management of liver abscess

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ABSTRACT

Aim: To determine the clinical profile and treatment of liver abscess.

Material and methods: Patients who were admitted to the surgical ward were given a comprehensive examination, and a detailed clinical history was recorded for each patient. USG was performed on the same day as all of the other usual and pertinent investigations, such as a CBC, sugar level, urea level, creatinine level, LFT level, PT level, HIV level, and chest PA view X-ray.

Results: The most prevalent symptoms were pain in the abdomen (97% of cases) and fever (93% of cases). The most prevalent symptom, known as RHQ, was abdominal soreness, which was present in 98% of patients. There were also additional clinical symptoms, such as hepatomegaly (49%), jaundice (22%), and right intercostal pain (60%). In 83% of individuals diagnosed with liver abscess, alcohol use was the single most consistent etiological component. The results of the laboratory studies were examined. 71% of patients were found to have leucocytosis (>11000 white blood cells). In instances with liver abscesses, an elevated alkaline phosphatase level was found to be abnormal 82% of the time. This was the single most consistent abnormality seen in liver function tests. Sixty-one and a half percent of these seventy instances had an appearance of "anchovy sauce" on the pus, which indicated that there was no growth. while growths were seen in 38.57 percent of these patients. There were 8.57% of instances where Enterococcus was isolated, 11.43% of cases where E. coli was isolated, and 17.14% of cases where K. pneumoniae was isolated. Just 1.43 percent of cases had S. aureus isolated from them.

Conclusion: The presence of an amoebic infection in the liver is much more prevalent than a pyogenic one. The most critical factors that put a person at risk for developing a liver abscess are diabetes, an addiction to alcohol, and a lack of suitable hygienic conditions. The diagnostic accuracy of ultrasound is 89%, and it is a straightforward, low-cost, and speedy procedure to do.

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Keywords: Liver abscess, Percutaneous aspiration, Conservative treatment

Introduction

Even though Hippocrates characterized liver abscess between the years 460 and 377 B.C., the condition is still difficult to treat because of the extremely diverse form it may have, which leads to difficulty in diagnosis. In a tropical nation like India, where 400 million people are infected with E. histolytica, the bacteria that causes amoebic liver abscess, the disease is widespread. India has the second highest prevalence of liver abscesses among the developing nations found all over the globe.[1] An abscess in the liver is an accumulation of pus in the liver parenchyma that may be caused by a bacterial infection, a fungal infection, a parasite infection, or a mixed infection. Pyogenic liver abscesses are responsible for 45% of all liver abscesses in industrialized nations, while amoebic liver abscesses are responsible for 65% of all liver abscesses in underdeveloped countries. At the current time, amoebiasis is the third most prevalent cause of mortality resulting from a parasite illness. Overcrowding and a lack of adequate sanitation contribute to the widespread prevalence of the disease in India. Abscesses of the liver may develop in 3-9% of all cases of amoebiasis. It is possible that primary prevention, which includes enhancing sanitation and health education, obtaining an early diagnosis, and initiating treatment as soon as possible, may result in a decreased death and morbidity rate associated with the condition.[2] The first therapy, which consisted only of open surgical drainage, had a low chance of success. The success rate increased thanks to the efforts made to treat both the colonic infestation and the liver abscess simultaneously. 1 Amoebic (ALA) and pyogenic (PLA) liver abscess are two of the most common varieties of liver abscess. Hepatic abscesses are connected with a mortality rate of up to twenty percent and are classified into a variety of categories depending on etiology. A prevalence rate of as high as 55% has been found in multiple studies conducted in rural areas of Central and South America, India, and the tropical areas of Asia and Africa. The incidence of pyogenic liver abscess (PLA) ranges from around 1.1 to 2.3 cases per 100,000 person-years throughout the world.[3-5] The purpose of the current research was to investigate whether or not there have been any noteworthy changes in the clinical profile, microbiological etiology, or therapeutic outcomes of patients who have been diagnosed with liver abscess.

The symptoms of pyogenic and amoebic liver abscesses are quite similar to one another. In clinical practice, the first condition for making a diagnosis is the presence of an abscess, which is then evaluated to determine its type, including whether it is pyogenic or amoebic. In the beginning, the diagnosis relied on a variety of clinical criteria and the specific characteristics of the pus that was aspirated. The diagnosis of liver abscess may now be done simply, swiftly, and reliably because to the development of imaging tools such as USG and CT scans, as well as serology testing.

Material and methods

After receiving approval from the institutional ethics committee, this research project was carried out at the department of general surgery.

Inclusion criteria

- Individuals who exhibit the clinical signs of a liver abscess and have an ultrasound that reveals an abscess in the liver.
- Age of patients >20 years

Exclusion criteria

- Patients less than 20 years of age
- Cases of hepatic abscess that are rather old
- Abscess of the liver caused by trauma

Patients who were admitted to the surgical ward were given a comprehensive examination, and a detailed clinical history was recorded (with special emphasis on alcohol abuse, diabetes, HIV). USG was performed on the same day as all of the other usual and pertinent investigations, such as a CBC, sugar level, urea level, creatinine level, LFT level, PT level, HIV level, and chest PA view X-ray. The following management strategies were implemented: (A) If the abscess size was greater than >3 cm or >100 ml, percutaneous aspiration under antibiotic coverage was performed; (B) If the abscess size was 3 cm / 100 ml, patients were placed on conservative therapy (antibiotics only); and (C) laparotomy was reserved for complications such as rupture of liver abscess and peritonitis.

Results

Patients in their third to sixth decades made up 80% of the total cases of liver abscess. The majority of patients with liver abscess were in the middle years of their lives. The mean age of patients who presented was 47.88 years. According to the findings of our research, males had a much higher frequency of liver abscesses (75%).

Table 1 Gender and age of the patients

Gender	Number	**%**
Male	75	75
Female	25	25
Age		
Below 30	16	16
30-40	30	30
40-50	20	20
50-60	30	30
Above 60	4	4

Table 2: Clinical signs and symptoms

Symptoms	**No. of patients**	**Percentage %**
Abd. pain	97	97
Fever	93	93

Cough	34	34
Jaundice	24	24
Diarrhoea	17	17
Signs		
Tenderness	100	100
Temp >38.5°c	93	93
Resp. finding	60	60
Hepatomegaly	49	49
Icterus	23	23
Pallor	22	22

The most prevalent symptoms were pain in the abdomen (97% of cases) and fever (93% of cases). The most prevalent symptom, known as RHQ, was abdominal soreness, which was present in 98% of patients. There were also additional clinical symptoms, such as hepatomegaly (49%), jaundice (22%), and right intercostal pain (60%). In 83% of individuals diagnosed with liver abscess, alcohol use was the single most consistent etiological component. The results of the laboratory studies were examined. 71% of patients were found to have leucocytosis (>11000 white blood cells). In 22% of the patients, anemia (Hb levels below 10 g%) was discovered. RBS levels over 200 mg% were discovered in 28 of the patients. In twenty percent of the patients, elevated amounts of B. urea were found. In instances with liver abscesses, an elevated alkaline phosphatase level was found to be abnormal 82% of the time. This was the single most consistent abnormality seen in liver function tests. It was shown that 83% of patients had hypoalbuminemia, whereas 28% of patients had a prolonged prothrombin time (>20 seconds), and 51% of patients had high SGOT and 44% had raised SGPT. In our research, we considered the following to be predictive variables of difficult (ruptured) liver abscess: a raised white blood cell count (>20,000 cells/cu.mm), a high alkaline phosphatase level (>300 IU/l), diabetes, low albuminaemia (2.0 g/dl), and a prolonged prothrombin time (>20 seconds). 61.43% of these 70 instances exhibited an appearance of the pus that resembled anchovy sauce, which is indicative of amoebic aetiology. These patients did not demonstrate any growth. while growths were seen in 38.57 percent of these patients. There were 8.57% of instances in which Enterococcus was isolated, 11.43% of cases in which E. coli was isolated, and 17.14% of cases in which K. pneumoniae was isolated. Nevertheless, S. aureus was only isolated in 1.43% of cases.

Table 3. Laboratory investigations

laboratory investigations	Number	Percentage
S. ALB (3G %)	83	83
ALP>150IU/L	82	82
SGOT>40IU	51	51

SGPT>40IU	44	44
PT>20sec	28	28
S. BIL>2.4mg %	22	22
WBC>11000	71	71
RBS>200mgm%	28	28
Hb<10gm%	22	22
B. Urea>45mgm%	20	20
S. Creat>1.4mgm%	15	15

Table 4: Pus culture analysis

Pus culture	**No. of patients (n=70)**	**%**
Enterococcus	6	8.57
Klebsiellapneumoniae	12	17.14
E. coli	8	11.43
S. aureus	1	1.43
Sterile (anchovy sauce)	43	61.43

Table 5: USG findings

USG findings	**Number**	**%**
Solitary abscess	77	77
A. RT lobe abscess	73	73
B. LT lobe abscess	4	4
Multiple abscess	23	23
A. Both lobe	6	6
B. Right lobe (multiple liver abscess)	17	17
Volume		
A.<100ml	25	25
B. >100ml	75	75

Table 6: Treatment modalities

Treatment	**Number**	%
Antibiotic coverage only (conservative)	27	27
Asp (aspiration under antibiotic coverage)	70	70
Laparotomy	3	3

Discussion

Patients in their third to sixth decades made up 80% of the total cases of liver abscess. The majority of patients with liver abscess were in the middle years of their lives. The median age at presentation was 47.88 years, which is consistent with findings from previous studies such as Kamble R.[4] The frequency of liver abscesses was significantly higher in males in our research (75%) compared to previous studies (96%) such as the one published in the Indian journal of surgery.[5] The most prevalent pattern of presentation was an abrupt onset of symptoms (within seven days) in 63 percent of cases. The most prevalent symptoms were pain in the abdomen (97% of cases) and fever (93% of cases). The most prevalent symptom, known as RHQ, was abdominal soreness, which was present in 98% of patients. There were also additional clinical symptoms, such as hepatomegaly (49%), jaundice (22%), and right intercostal pain (60%). According to the findings of Seeto and Rockey, sixty percent of patients exhibited either right upper quadrant soreness or hepatomegaly.[6]The majority of these clinical aspects were similar to earlier investigations, with the exception of jaundice, which occurred in a much higher percentage of patients (23%) than it did in Hyo Min Yoo et al (7%). In contrast to Mathur S. and colleagues' findings, our research found that alcohol was the single most consistent etiological component in liver abscess in 83% of patients.[7] 91.30 percent of male patients were found to have ingested alcohol. Every single one of these patients had a drinking history that extended back further than a year. According to the findings of this research, alcohol use is substantially associated with liver abscess.

The results of the laboratory studies were examined. 71% of patients were found to have leucocytosis (>11000 white blood cells). In 22% of the patients, anemia (Hb levels below 10 g%) was discovered. RBS levels over 200 mg% were discovered in 28 of the patients. In twenty percent of the patients, elevated amounts of B. urea were found. In instances with liver abscesses, an elevated alkaline phosphatase level was found to be abnormal 82% of the time. This was the single most consistent abnormality seen in liver function tests. It was shown that 83% of patients had hypoalbuminemia, whereas 28% of patients had a prolonged prothrombin time (>20 seconds), and 51% of patients had high SGOT and 44% had raised SGPT. In our research, we considered the following to be predictive variables of difficult (ruptured) liver abscess: a raised white blood cell count (>20,000 cells/cu.mm), a high alkaline phosphatase level (>300 IU/l), diabetes, low albuminaemia (2.0 g/dl), and a prolonged prothrombin time (>20 seconds). Streptococcus milleri Lancefield group F was the most prevalent bacterium that was recovered in one series conducted by JC Moore and colleagues. It was found in 13/16 (81.25%) of the patients. It is generally agreed that ascending infection via the biliary system is the most common cause of hepatic abscess.[8] It is believed that an infection of the portal tract is responsible for the formation of hepatic abscess. In one study conducted by Sabbaj and colleagues, it was shown that 45 percent of the pus cultures recovered from hepatic abscesses included anaerobic bacteria.[9]In another research, conducted by Wang J et al [10], it was shown that 160 out of 182 (87.91%) pus cultures recovered from pyogenic liver abscess were caused by a single microbe called Klebsiellapneumoniae. The remaining 22 (13.75%) were found to be polymicrobial. In the presence of weaknesses in the host's defense mechanisms, bacterial seeding may take place.[11]

In cases with pyogenic liver abscess, the results of an abscess culture are more likely to be positive than those of a blood culture. 61.43% of these 70 instances exhibited an appearance of the pus that resembled anchovy sauce, which is indicative of amoebic aetiology. These patients did not demonstrate any growth. while growths were seen in 38.57 percent of these patients. There were 8.57% of instances where Enterococcus was isolated, 11.43% of cases where E. coli was isolated, and 17.14% of cases where K. pneumoniae was isolated. Just 1.43% of cases had S. aureus isolated from them. E. coli is the bacterium that is isolated the most of the time from western series. There is a possibility that Klebsiella pneumonia will be the prevalent bacterium in oriental series. Throughout the course of our research, Klebsiella pneumonia was the bacterium that was cultivated the most of the time. In a study conducted by Rubin et al.[12] on 50 patients diagnosed with pyogenic liver abscess, it was shown that 55% of the samples included anaerobic bacteria. Mycobacterium is a potential cause of hepatic abscess, however this is an exceedingly uncommon occurrence. Mycobacterium tuberculosis is, nonetheless, a frequent infecting pathogen seen in acquired immunodeficiency syndrome individuals who present with hepatic abscess.

The findings of the chest X-rays were abnormal in 39% of the patients, which was similar to the findings of another research by Rustam Khan.[13] The diagnostic accuracy of ultrasonography is 90%, and the procedure is straightforward, low-cost, and fast to conduct.[14] In addition to being able to be utilized for percutaneous aspiration, ultrasound is helpful in detecting the number of abscesses, their size, and their location. In 77% of the patients, ultrasonography indicated a single abscess, whereas 23% of the cases showed evidence of multiple abscesses.

In 73% of instances, an isolated right lobe abscess was seen, while in 4% of cases, an isolated left lobe abscess was observed. In 17 percent of patients with multiple liver abscesses, there was involvement in the right lobe. Six individuals were found to have several abscesses that included both lobes of the lung. In 25% of the instances, the volume of the abscess was less than 100 cc, and in 75% of the cases, the size of the abscess was more than 3 cm. In 25% of patients, those who had several minor abscesses or single abscesses that were less than 100 cc or less than 3 cm were handled conservatively. Bertelet al.[12] described a series of 39 patients who were diagnosed with pyogenic hepatic abscess. Of those patients, 23 got surgical treatment, and 16 underwent percutaneous drainage. Since the abscess content was thick, surgical drainage was necessary for three of the patients in the group that had been treated percutaneously. Wong[15] presented 21 patients who were treated for pyogenic liver abscess with percutaneous drainage. This treatment was effective in 85% of patients, and death was less than 10%. This treatment is now considered to be the treatment of choice for patients who present with hepatic abscess. Many authors confirmed the safety the safety and efficacy of percutaneous aspiration or drainage, and it is now considered to be the treatment of choice. It seems that percutaneous needle aspiration is not as successful as percutaneous drainage (PCD), despite the fact that both procedures have been demonstrated to be safe and have not been associated with any serious complications or fatalities.[16] Patients who need open surgical drainage also have the option of undergoing laparoscopic drainage

instead.[17]Percutaneous aspiration was performed on 71% of the instances when the size of the liver abscess was more than 100 ml or 3 cm. One patient had complications such as intraperitoneal rupture and peritonitis, which necessitated the surgical procedure of laparotomy. Patients were monitored once every month for three months, and then once every six months after that. Repeat USG scans were performed whenever they were deemed necessary.

Conclusion

The presence of an amoebic infection in the liver is much more prevalent than a pyogenic one. The most critical factors that put a person at risk for developing a liver abscess are diabetes, an addiction to alcohol, and a lack of suitable hygienic conditions. The diagnostic accuracy of ultrasound is 89%, and it is a straightforward, low-cost, and speedy procedure to do.

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