(e) ISSN Online: 2321-9599

(p) ISSN Print: 2348-6805

ORIGINAL ARTICLE

Prospective Study of Clinical Profiles and Treatment Modalities in Liver Abscess Management

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ABSTRACT:

Background: Hippocrates, between 460 and 377 B.C., documented the presence of liver abscess. A liver abscess is defined as the accumulation of pus within the liver tissue, typically caused by bacterial, fungal, parasitic, or mixed infections.To investigate the clinical characteristics of patients with liver abscess, explore the factors contributing to its occurrence, analyze diverse treatment approaches, and assess the morbidity, mortality, and overall prognosis linked to this condition. **Methods**: A prospective observational study was carried out over a span of two years within the Department of General Surgery. The study encompassed 100 cases of liver abscess, serving as the sample size. **Results**: Out of the 100 patients studied, the age distribution revealed that the highest percentage, 36%, fell within the 21-30 years age group, with a predominant male representation of 74%. A significant majority of patients, 68%, presented with symptoms of fever accompanied by chills. Alcoholic consumption was identified as a risk factor in 68% of the cases, and amoebic liver abscess was the more prevalent type. Furthermore, it was observed that the right lobe of the liver was affected more frequently than the left lobe. The most commonly employed treatment approach was a combination of percutaneous aspiration and antibiotic therapy, which accounted for 36% of cases. **Conclusion**: Liver abscess is notably more prevalent in young males within the age group of 21-30 years. The primary symptom observed is fever accompanied by chills, affecting the majority of cases. Chronic alcohol consumption is a clear-cut risk factor for developing this condition. In patients with a single abscess larger than 5 cm, particularly in superficial segments of the liver, the preferred treatment approach is percutaneous needle aspiration in combination with antibiotics.

Keywords: Liver abscess, alcohol, percutaneous aspiration

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This article may be cited as: Gupta SK. Prospective Study of Clinical Profiles and Treatment Modalities in Liver Abscess Management. J Adv Med Dent Scie Res 2016;4(6):455-459.

INTRODUCTION

Hippocrates documented liver abscess back in 460-377 B.C., but even today, it poses a significant challenge due to its highly variable clinical presentation, making diagnosis a complex task. In countries like India, characterized by a tropical climate, amoebic liver abscess is a substantial concern, given that approximately 400 million people carry the E. histolytica parasite responsible for this condition[1]. Notably, among developing nations globally, India ranks second in terms of the incidence of liver abscess.Liver abscess refers to the accumulation of purulent material within the liver parenchyma, resulting from bacterial, fungal, parasitic, or mixed infections. In developed countries, pyogenic abscesses account for the majority, around four-fifths, of liver abscess cases[2,3]. On the other hand, in developing nations, amoebic liver abscess makes up around two-thirds of all liver abscess cases. Amoebiasis, caused by E. histolytica, currently ranks as the third leading cause of death among parasitic diseases.

The endemic nature of this condition in India can be attributed to overcrowding and suboptimal sanitation conditions. Notably, 3-9% of all cases of amoebiasis lead to the development of a liver abscess. To combat this public health issue, primary prevention strategies involving improved sanitation, health education, early diagnosis, and timely treatment hold the potential to reduce the mortality and morbidity associated with the disease[4].

Historically, early treatment relying solely on open surgical drainage for liver abscesses had limited success. It was discovered that addressing both the liver abscess and any concurrent colonic infestation significantly improved the success rate of treatment . Liver abscesses, which can be associated with mortality rates as high as 20%, are categorized into various types based on their underlying causes. The major types are amoebic liver abscess (ALA) and pyogenic liver abscess (PLA). Studies conducted in rural areas of Central and South America, India, as well as tropical regions of Asia and Africa have reported a prevalence rate as high as 55%. The global incidence of pyogenic liver abscess (PLA) is estimated to be around 1.1-2.3 cases per 100,000 person-years[5,6].

The objective of the current study is to assess the evolving trends in the clinical profile, microbiological causes, and treatment outcomes of patients diagnosed with liver abscesses.

The primary objectives of this study are threefold. First, it aims to delve into the clinical profile of patients afflicted with liver abscess, shedding light on the various characteristics and symptoms associated with this condition. Second, the research seeks to

uncover the causative factors that lead to the development of liver abscess, providing valuable insights into the underlying triggers. Finally, the study will comprehensively explore the diverse treatment modalities available for managing liver abscess, encompassing options such as conservative approaches, aspiration procedures, pigtail catheterization, and open surgical drainage[7]. By achieving these objectives, the research endeavors to enhance our understanding of liver abscess, its origins, and the most effective methods for its treatment.

MATERIALS AND METHODS

In this study, specific inclusion and exclusion criteria were established to ensure the research focused on a well-defined patient population. The inclusion criteria encompassed all cases of liver abscess diagnosed through clinical evaluation or ultrasonography, regardless of the abscess's bacterial or parasitic origin. It also encompassed cases at various stages of development, including evolving, liquefied, and ruptured abscesses, with or without associated peritonitis[8]. To maintain the study's clarity and relevance, certain groups were excluded, including individuals below 12 years of age, pregnant women, patients with compromised immune systems or those reliant on chronic steroid treatment, and individuals currently undergoing chemotherapy[9]. These criteria were implemented to refine the patient cohort and ensure that the research outcomes were specific to the intended population.

In the course of conducting this study, we established a set of rigorous inclusion and exclusion criteria to carefully delineate the characteristics of the patient population under investigation. The inclusion criteria were intentionally designed to encompass a broad spectrum of liver abscess cases, ensuring that the research captured a comprehensive overview of the condition.[10] Patients diagnosed with liver abscess through clinical evaluation and ultrasonography were eligible for inclusion, irrespective of whether the abscess was caused by bacterial or parasitic factors. Additionally, we deliberately included cases across different stages of development, spanning from evolving abscesses to fully liquefied ones, as well as those that had progressed to the ruptured stage, with or without concurrent peritonitis.

In contrast, the exclusion criteria were instrumental in maintaining the study's focus on the targeted patient population[11]. Patients under the age of 12 were excluded to streamline the research, as this group may exhibit distinct clinical characteristics. Pregnant females were omitted from the study to eliminate potential confounding factors related to pregnancy and its effects on liver abscess. Furthermore, individuals with compromised immune systems or those dependent on chronic steroid therapy were not part of the study, as their medical conditions might significantly influence the disease course and treatment outcomes. Similarly, patients currently undergoing chemotherapy were excluded due to the potential interactions between chemotherapy and liver abscess management. By meticulously defining these criteria, the study was able to ensure the accuracy and relevance of its findings within the selected patient cohort.

RESULTS

Among the 100 patients included in the study, the distribution according to age revealed noteworthy trends. The largest group, comprising 36% of the total, fell within the 21-30 years age bracket, indicating a substantial prevalence among this demographic. Following closely, the 31-40 years age group accounted for 28% of the cases, underlining the significance of this age range. In contrast, the 61-70 years age group had the fewest cases, with only 2% of the total. Importantly, statistical analysis demonstrated that these age group differences were significant, with a p-value of less than 0.05, indicating the presence of a statistically meaningful distinction in the distribution of cases among various age groups.

Table 1: Distribution of patients according to age

Age Group	Number of patients
12-20	06
21-30	36
31-40	28
41-50	16
51-60	12
61-70	02
Total	100

Fig 1: Distribution of patients according to gender

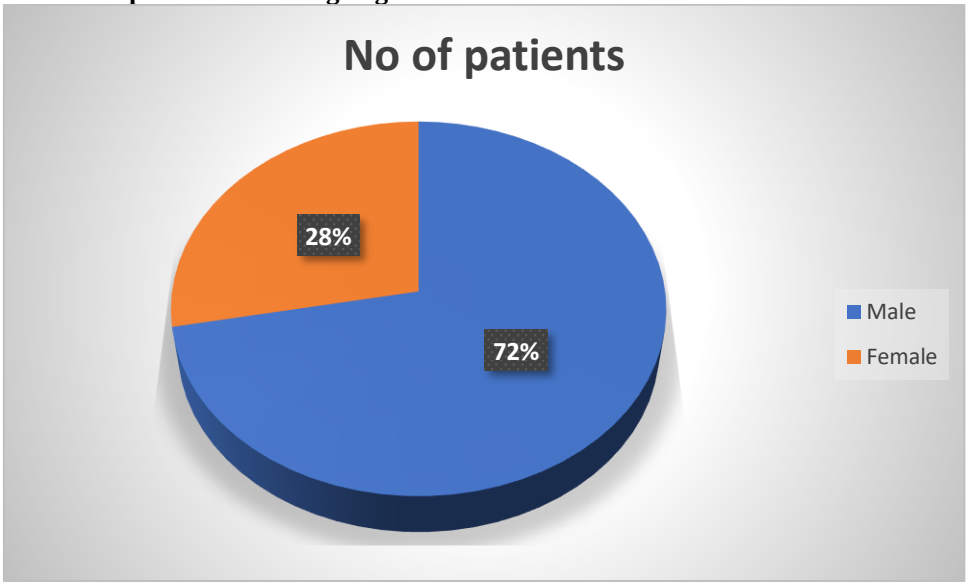

Table 2: Distribution of Signs among the liver abscess patients

Sign	Number of patients	Percentage
Fever	68	68%
Icterus	12	12%
Pallor	16	16%
Hepatomegaly	8	08%
Abdominal tenderness	62	62%
Dyspnea	10	10%

In the current study encompassing 100 cases of liver abscess, it's essential to acknowledge that patients often exhibit overlapping symptoms, which explains why the percentages may not total 100%. Out of the 100 cases, 52 (52%) are diagnosed as amoebic liver abscess (ALA), while the remaining 48 (48%) are classified as pyogenic liver abscess (PLA). A substantial portion of the patients, specifically 68 (68%), have a history of alcohol consumption, designating them as alcoholic cases, while the remaining 32 (32%) are considered non-alcoholic cases. These findings highlight the diversity in the etiology of liver abscess cases within the study population, reflecting the multifaceted nature of this medical condition.

Table 4: Distribution of cases by type of abscess

Etiology	Alcoholic	Non-Alcoholic	Total
Amoebic liver abscess (ALA)	40	12	52
Pyogenic liver abscess (PLA)	28	20	48
Total	68	32	100

When analyzing the liver abscess cases in the present study based on the size of the abscess, several notable trends emerge. The data reveals that the largest proportion of patients, constituting 44%, had liver abscesses in the size range of 5-10 cm. This group represents the majority of cases and indicates the prevalence of moderately-sized abscesses in the study cohort.[12] On the other hand, the smallest category, with abscesses smaller than 5 cm, accounted for the least number of cases, totaling 20%. This data sheds light on the distribution of liver abscess sizes in the study, with the majority falling into the 5-10 cm range and a smaller group presenting with smaller abscesses, below 5 cm in size.

In the study encompassing 100 cases of liver abscess, the findings reveal that complications arose in a relatively small subset of patients, specifically in 14 cases[13]. Among these complications, the most prevalent occurrence was the rupture of the abscess into the peritoneal cavity, which transpired in 10 cases. In the remaining 4 cases, the abscess ruptured into the pleural cavity. Tragically, out of the 10 cases in which the abscess ruptured into the peritoneal cavity, 4 patients sadly succumbed to this complication, highlighting the gravity of such events. These results underscore the significance of identifying and managing complications promptly in patients with liver abscess, as they can have serious consequences on patient outcomes.

DISCUSSION

The findings of this study align with those of Abhay TS et al. and Jha AK et al.[14], indicating that the majority of patients, specifically 36%, fell within the 21-30 years age group. Male involvement was also consistent with the present study, with 72% of cases involving males, as seen in Abhay TS et al.[15]. In contrast, Shanthi PS et al. reported the commonest age group for liver abscess as 41-50 years, differing from the current study.Moreover, the preponderance of males in liver abscess cases was a shared finding among Abhay TS et al. , Jha AK et al.and Shanthi PS et al[15,16]., where males also predominated, with percentages ranging from 85% to 90.22%.The predominant symptom in the present study was fever, with 68% of patients presenting with this complaint. This finding differs from Maheswari et al., where abdominal tenderness was the most common sign, noted in 100% of their cases. Additionally, Pal N et al. observed abdominal tenderness as the most common sign in their study, consistent with the findings in Maheswari et al. These variations in symptom presentation might be attributed to differences in patient demographics, geographic regions, or specific diagnostic criteria used in each study.The present study reveals that amoebic liver abscess accounts for the majority of cases, with 52% of patients diagnosed with this condition. Similar results have been observed in several other studies. For instance, Narwade NK et al. reported an even higher prevalence, with 78% of their cases being diagnosed as amoebic liver abscess. Malik P et al. found an even more significant proportion, with 94% of their cases attributed to amoebic liver abscess. Dr. Sharmila SK et al.[17] noted that 74% of their patients suffered from amoebic liver abscess.

These consistent findings across multiple studies highlight the prevalence of amoebic liver abscess in the studied populations. The prevalence may vary in different regions or populations, but it underscores the significance of understanding and effectively managing this specific type of liver abscess.

In the present study, the data indicates that the majority of patients had liver abscesses in the size range of 5-10 cm, accounting for 44% of cases. Amin AB et al. [18] reported a mean abscess size of 6.87 cm in the aspiration group and 11.5 cm in the percutaneous drainage group, showing a similar distribution in terms of abscess size and treatment approaches. Kumar SK et al.[18] found that 15.4% of their patients had abscesses smaller than 6 cm and were treated with drug therapy, while abscesses in the size range of 6 cm-10 cm were managed through needle aspiration and drug therapy. The remaining 56.4% of patients with abscesses larger than 10 cm were treated with pigtail drainage and drug therapy.

Furthermore, the present study indicates that the right lobe of the liver was involved in 60% of the cases. This distribution is consistent with findings in Narwade NK et al[19]., where right lobe liver abscesses accounted for 94% of cases, and in Shanthi PS et al. , where the right lobe was involved in 78.33% of cases. These consistent findings suggest a higher prevalence of right lobe involvement in liver abscess cases, which may have clinical implications for diagnosis and management.The distribution of treatment modalities for liver abscess in the present study is reflective of several other studies in the field. In the current study, Percutaneous Aspiration combined with Antibiotics was the most frequently employed treatment, accounting for 36% of cases. This is in line with findings from Maheswari et al.[20], where 40% of cases required pigtail catheterization. Similarly, Shanthi PS et al. reported that 51.66% of their cases were treated with ultrasound-guided aspiration.In another study by Sharadseth et al., 50% of patients underwent needle aspiration as part of their treatment regimen. Tejas NH et al.[21] observed that a significant number of patients were treated with closed aspiration.These consistent trends across multiple studies highlight the effectiveness of percutaneous aspiration and various image-guided or closed aspiration techniques as primary treatment modalities for liver abscess. The choice of treatment modality may depend on factors such as abscess size, location, and the patient's clinical condition.

CONCLUSION

Liver abscesses tend to predominantly affect male patients within the age group of 21-30 years. Among the various clinical presentations, fever accompanied by chills is the most common symptom reported by liver abscess cases. Chronic alcohol intake stands out as a definitive risk factor contributing to the development of liver abscess.In terms of abscess location, the right lobe of the liver is most commonly involved. Among the different types of liver abscess, amoebic liver abscess prevails as the more common form. When it comes to treatment strategies, percutaneous needle aspiration is the preferred approach for patients with a single abscess exceeding 5 cm in size and located in superficial segments. For patients with ruptured abscesses or those at risk of impending rupture, laparotomy and drainage procedures were performed. In cases of very small, single-cavity abscesses, conservative management involving antibiotics has proven to be an effective treatment approach. These strategies emphasize the importance of individualized management based on abscess characteristics and clinical status.

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