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Hepatic Abscess in Adults: Integrated Approach and Surgical Considerations

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Abstract

Hepatic abscesses are suppurated cavities caused by the invasion and multiplication of microorganisms within the liver parenchyma. This condition is relatively uncommon, with an estimated incidence of 2.3 to 3.6 cases per 100,000 people yearly. However, the incidence is higher in specific populations, such as patients with underlying liver disease, diabetes, or other immune-compromising conditions. The most common cause of liver abscesses is the spread of infection from other parts of the body, such as the biliary tract or gastrointestinal tract. Other causes include trauma to the liver, such as from a penetrating injury or surgery or the presence of a foreign body in the liver. Liver abscesses are broadly divided into two types: amoebic and pyogenic. The clinical presentation might vary, including fever, abdominal pain, nausea and vomiting, jaundice, and weight loss. In some cases, there may be no symptoms. Diagnosis typically involves an ultrasound or CT scan, which can show the presence of a fluid-filled mass in the liver. CT is the standard modality for diagnosis. Blood tests may also evaluate liver function and identify any underlying infections. Treatment typically involves a combination of antibiotics to target the underlying infection and drainage of the abscess.

Supportive measures like hydration and pain management may also be necessary. In addition, close monitoring and follow-up are essential to ensure that the abscess has resolved and there are no complications. In some cases, surgical intervention may be necessary to remove the abscess or repair any damage to the liver. Liver abscess drainage is typically indicated in patients with significant, symptomatic abscesses or those who do not respond to medical treatment with antibiotics. In addition, abscesses at risk of rupturing or located close to vital structures, such as major blood vessels, may require drainage to prevent serious complications. Two drainage methods are presently available: non-surgical options, such as percutaneous needle aspiration or percutaneous catheter drainage, and surgical options, such as open drainage or laparoscopic drainage. This review identifies when these alternatives should be used, taking adverse effects, symptoms, and comorbidities into account.

Keywords: Hepatic abscess; Liver abscess; Infection; Etiology; Diagnosis; Classification; Management; Surgical treatment

Abbreviations: HA: Hepatic Abscess; US: Ultrasound; CT: Computed Tomography; FNA: Fine Needle Aspiration; HIV: Human Immunodeficiency Virus; AIDS: Acquired Immunodeficiency Syndrome; RUQ: Right Upper Quadrant; PNA: Percutaneous Needle Aspiration; PCD: Percutaneous Catheter Drainage; OD: Open drainage; LD: Laparoscopic drainage

Introduction

Hepatic abscess (HA) is a suppurated cavity caused by the invasion and multiplication of microorganisms within the liver parenchyma [1]. In the United States, liver abscess incidence is 2.3 per 100 000, predominantly in older men. Moreover, comorbidities such as diabetes and cancer are considered risk factors for developing hepatic abscess [2]. The etiology of HA is multiple, including biliary disease (cholecystitis, cholangitis), intra-abdominal collections (appendicitis, sigmoid diverticulitis, Crohn's disease), bile duct ischemia secondary to pancreatoduodenectomy, liver transplantation, interventional techniques (radio-frequency ablation, intra-arterial chemo-embolization), and liver trauma. Microbial pathogens that can

cause HA are gram-negative bacilli, gram-positive cocci, anaerobes, amebic infection, and fungal infection. Microbes can invade the liver parenchyma via the bloodstream (since the liver receives blood circulation from the systemic and portal circulations), bile ducts, or by contiguous spread, primarily via the gallbladder [1,3]. The most common symptoms of HA are fever, chills, night sweats, malaise, nausea or vomiting, right shoulder pain (due to phrenic nerve irritation), right upper quadrant pain, cough, dyspnea, anorexia, or recent unexplained weight loss.

On physical examination, a patient might present hepatomegaly with an enlarged mass and jaundice [3]. The initial test of choice is an abdominal ultrasound (US) showing hyper or hypoechoic lesions with occasional debris or septation. Computed tomography (CT) with contrast is the next step, and slightly more sensitive. Rim enhancement and edema are very specific for infection. However, fine needle aspiration (FNA) for culture is the gold standard for the diagnosis of HA [2,3]. The management of HA consists of antibiotics, percutaneous abscess drainage (image-guided or laparoscopic drainage), or open surgery, depending on the underlying disease or cause. This narrative review aims to identify when to use these options, considering the patient's adverse effects, symptoms, and comorbidities.

Epidemiology

The incidence of hepatic abscess varies depending on the condition's underlying cause. In general, the incidence is higher in people with underlying liver disease, such as cirrhosis, and those with underlying biliary tract infections or infections in other parts of the body [4]. The incidence of hepatic abscesses may also be higher in people with weakened immune systems, such as those with HIV/AIDS or who are receiving chemotherapy. In addition, in regions with an increased incidence of liver diseases such as hepatitis B or C, the prevalence of hepatic abscess may be higher [5]. Additionally, the prevalence of hepatic abscess may be higher in populations with higher rates of alcohol consumption, as alcohol abuse is a risk factor for liver disease and subsequent hepatic abscess [5,6].

Hepatic abscess is typically caused by bacterial (pyogenic) infection, although parasitic and fungal infections can also be responsible, albeit rarely [4,7]. In the Western world, bacterial causes are the most common, with mortality rates reaching up to 15%, primarily due to the patient's debilitated state and the persistence of the underlying cause [7]. In contrast, amebic infection is the most frequent cause in Southeast Asia and Africa. In the United States, bacterial causes account for over 80% of all liver abscesses, with an estimated incidence rate of 4.1 per 100,000 people [8]. Other Western countries report similarly low incidence rates, ranging from 1.1 to 2.3 per 100,000 people, in population-based studies conducted in the United Kingdom and Denmark [8,9]. However, Southeast Asia has a higher incidence of pyogenic liver abscesses, with rates of 5.7 and 17.7 per 100,000 in mainland China and Taiwan, respectively [5,9]. The incidence of pyogenic liver abscess is higher in individuals with comorbid conditions, such as diabetes mellitus, malnutrition, and immunosuppression [10]. Men are more commonly affected than women, with an odds ratio of 1.8, and the incidence also increases with age. Individuals aged 65 to 84 years have an odds ratio of 11.8 for developing pyogenic liver abscess compared to those aged 18 to 34 [8,11]. Overall, the precise incidence and prevalence of hepatic abscess are challenging to estimate, as the condition is often associated with other underlying diseases and may go undiagnosed in some cases.

Etiology & Pathophysiology

Liver abscesses are broadly divided into two types: amoebic and pyogenic. The pathogenesis of amoebic and pyogenic abscesses is a vastly different process [12]. Entamoeba histolytica is a protozoan known to cause amebiasis, a parasitic gastrointestinal infection common in travelers returned from endemic regions [13]. Infection occurs in poor living conditions and spreads via contamination of drinking water. The most common extraintestinal manifestation is a liver abscess, where the parasite is carried to the liver via the portal vein. Extraintestinal spread is more prevalent in alcoholics and malnourished patients (low body mass and hypoalbuminemia). Either hepatocyte cell death, apoptosis, or necrosis characterize amoebic liver abscess pathogenesis. Inflammatory cells are absent due to the lysis of neutrophils by the protozoan, forming the non-purulent 'anchovy paste' abscess [12,14]. Cell death continues with progressive expansion of the abscess until the initiation of appropriate treatment.

A pyogenic abscess is a walled-off collection of pus consisting of tissue debris and numerous inflammatory cells, primarily neutrophils [15]. Persistent inflammation leads to necrosis of surrounding tissue. Microbiology varies by etiology and geography. Most cases are polymicrobial, commonly consisting of mixed enteric facultative and anaerobic species. In Western countries, the most commonly isolated organism is Escherichia coli, followed by Klebsiella pneumonia, Enterococcus, and Streptococcus. Staphylococcus aureus and other skin flora are typically isolated in cases of penetrating trauma [16]. Microbes invade the hepatic parenchyma via different sources of origin, such as the biliary tree (usually from an impacted gallstone), circulation (portal vein, hepatic artery), a contiguous focus of infection, and penetrating trauma. In the South–East Asian region, the infection commonly occurs with contact with contaminated soil and water. Transmission of the pathogen is either via ingestion, inhalation, or inoculation. Patients with diabetes mellitus, chronic alcoholism, and liver and renal failure are at an increased risk of developing gas-forming primary liver abscesses and infectious metastatic disease [17].

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Clinical Presentation

The onset of symptoms tends to be insidious in cases of a pyogenic liver abscess but more likely to be acute in amebic abscesses. Most patients present with nonspecific constitutional symptoms such as fever, chills, fatigue, malaise, and weight loss [18-20]. Fever of unknown origin frequently can be an initial diagnosis in indolent cases. While fever is one of the most common symptoms, afebrile presentations have also been documented [21]. Nausea and vomiting are present in approximately one-third to one-half of patients. They may also present with abdominal pain, but the absence of pain doesn't rule out the diagnosis of hepatic abscess [19].

Hepatomegaly with right upper quadrant tenderness may be present. The presence of RUQ pain indicates liver or gallbladder abnormality [20]. It commonly occurs with liver abscesses, although the absence of this finding does not exclude the diagnosis. Over one-half of the patients will have abdominal tenderness on the exam, and only a few will have jaundice [18,19,22]. Jaundice typically occurs late in the disease and is usually associated with biliary tract disease or multiple abscesses [20,21]. Midepigastric tenderness suggests left hepatic lobe involvement with or without a palpable mass [21]. Moreover, one-third of patients have respiratory symptoms such as cough, dyspnea, chest pain, hiccups, or even pleuritic pain, which may be referred to the right shoulder tip. These occur from diaphragmatic irritation or Glisson capsule inflammation [18,21]. There may also be signs of pleural effusion and atelectasis in the right lower zone on examination or radiographically. These include dullness to percussion, absent or decreased breath sounds, decreased tactile fremitus, decreased vocal transmission, etc. [19,21].

Multiple abscesses usually result in more acute presentations, with symptoms and signs of systemic toxicity. Rupture of hepatic abscess, a rare complication, may present with signs of shock that indicate severe illness, often with bacteremia or cholangitis [23]. Individuals with solitary lesions usually have a more insidious course with weight loss and chronic disease anemia; with these symptoms, malignancy is often the initial consideration [21]. The pyogenic abscess should be considered in all patients with pyrexia of unknown origin associated with abdominal pain or bloating [23].

Diagnosis

For the diagnosis of liver abscess, a combination of imaging with clinical correlation yields the definitive result in almost all cases. CT imaging is considered the standard modality of the diagnosis of hepatic abscess. Tri-phasic enhanced multi-slice CT scan is more sensitive than sonography. The sensitivity of CT imaging is over 97% [24]. However, CT findings are nonspecific. During the pre-suppurative stage, lesions with no defined capsule with nondistinctive borders may mimic neoplasm. Suppurative lesions have distinct borders with ring enhancement around Ring Sign, or some have another enhancement outside the capsule, giving Target Sign. Over 90 percent of lesions have ring enhancement [25]. MRI may be needed in case of suspected biliary obstruction causing the abscess. Colonoscopy may be necessary if the non-biliary source of infection is suspected [26].

Ultrasonographic evaluation (sensitivity 80-90%) reveals hypoechoic masses with irregularly shaped borders. Internal septations or cavity debris may be detected. It allows close evaluation of the biliary tree and simultaneous cavity aspiration. The major benefits of this modality are its portability and diagnostic utility in patients who are too critical to undergo prolonged radiologic evaluation or move out of a monitored setting. However, operator dependence affects its overall sensitivity [27]. Other imaging studies include radionuclide scanning. Gallium and technetium radionuclide scanning use the fact that the radiopharmaceuticals share the same uptake, transport, and excretion pathways as bilirubin and, thus, are effective agents in evaluating liver disease. However, sensitivity varies with the radiopharmaceutical utilized, technetium (80%), gallium (50-80%), and indium (90%). In addition, limitations include a delay in diagnosis and the need for confirmatory procedures; thus, they offer no benefit over other imaging modalities [28].

Medical Treatment

Medical management of pyogenic liver abscesses usually involves empiric broad-spectrum parenteral antibiotics, pending abscess aspiration, and microbiological analysis of the contents. The urgency for antibiotic therapy is pertinent, owing to the potentially life-threatening complications of these abscesses. Therefore, antibiotic therapy is often used as a stand-alone treatment method and as an adjunct to surgical or aspiration therapy [29,30]. Amoebic liver abscesses are often treated with metronidazole, with suggestions to use broad-spectrum antibiotics and/or Percutaneous Needle Aspiration (PNA) or Percutaneous Catheter Drainage (PCD) as adjuncts as the abscess sizes progress [29].

Preferred regimens often involve a third-generation cephalosporin plus metronidazole. Other regimens include beta-lactam + beta-lactamase inhibitor combinations such as piperacillin-tazobactam, with or without metronidazole. ampicillin + gentamicin plus metronidazole is also one possible combination [30]. Vancomycin is typically reserved for the patient in septic shock or cases where staphylococcus aureus may be a concern [30,31]. Fluconazole is commonly added in the rare event that the abscess is of fungal etiology [32].

The efficacy of medical management is limited for various reasons: the lack of uniform treatment guidelines, limited use in large/complicated infective abscesses, and abscesses of non-infectious etiology. While medical management has gained a

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growing role in the early management of amoebic and pyogenic abscesses with luminal and tissue amebicide drugs, antibiotics, surgical intervention, and minimally invasive drainage remain the mainstay of therapy [30-32].

Image-guided Drainage

Liver abscess drainage is typically indicated in patients with large, symptomatic abscesses or those who do not respond to medical treatment with antibiotics. In addition, abscesses at risk of rupturing or located close to vital structures, such as major blood vessels, may require drainage to prevent serious complications [33]. Notably, patients who remain febrile 2 - 3 days after starting antibiotic therapy, those with an abscess > 6 cm, or those exhibiting signs of imminent rupture on imaging should be considered for percutaneous drainage as a treatment option. Contrarily, small abscesses (<3 cm) can be treated effectively with antibiotics alone, as evidenced by a recent study with a 99.7% success rate [34]. Yet, for abscesses measuring 3 to 6 cm, there is no clear consensus on the need for drainage. In a review of liver abscesses treated exclusively with antibiotics, abscesses larger than 5 cm had a 58% response rate to antibiotics alone, and the average duration of antibiotic therapy was 40 days [33,34].

The technique for liver abscess drainage typically involves image-guided placement of a needle or catheter into the abscess cavity. This may be performed under ultrasound, CT, or MRI guidance. Once the needle or catheter is in place, the contents of the abscess can be aspirated, and a drain may be left in place to allow for ongoing drainage [33,35]. Image-guided needle puncture and catheter drainage allow for culture specimen collection and removal of purulent collections. In a clinical trial, prolonged drainage with catheter placement was more effective than aspiration alone, with a success rate of 100% vs. 60% [36]. Nevertheless, a more recent randomized trial comparing repeat aspiration and catheter drainage showed similar response rates, with 60% of patients undergoing needle aspiration requiring at least one repeat aspiration [37]. Another randomized trial compared needle aspiration and catheter drainage and encountered success rates of 67% with needle aspiration, but 40% required repeat aspirations, whereas all patients receiving catheter drainage were healed [38]. Therefore, needle aspiration may be suitable for abscesses smaller than 5 cm, although repeat procedures may be necessary. Percutaneous drainage is suggested for abscesses larger than 5 cm [38,39]. If a drainage catheter is inserted, it should be irrigated with saline three times daily and removed when the output drops below 10 mL daily. In cases where a pyogenic abscess is caused by biliary obstruction, dedicated biliary imaging should be performed, and relief of obstruction should be achieved through endoscopic retrograde cholangiopancreatography (ERCP) or percutaneous transhepatic cholangiography [39]. If the abscess culture indicates Klebsiella or polymicrobial growth, patients should undergo colonoscopy, as Klebsiella is highly associated with colon cancer, and polymicrobial abscesses suggest colonic disorders such as tumors, diverticulitis, appendicitis, or inflammatory bowel disease [39,40].

There are several risks and potential complications associated with drainage [33,34]. These may include bleeding, infection, injury to surrounding structures, and incomplete drainage of the abscess cavity. In rare cases, the procedure may lead to a new abscess or the spread of infection to other areas of the body [35,36]. It should be noted, however, that image-guided drainage may allow for smaller incisions or puncture sites, reducing the risk of bleeding or other complications.

Although catheter drainage of abscesses may seem to deviate from conventional surgical practices, it is under established principles of managing abscesses [37,40]. Catheter drainage is often an effective and safe method of draining abscesses for appropriately chosen patients. Compared to surgical drainage, catheter drainage has the benefit of avoiding general anesthesia, resulting in less morbidity and costing less [33,35]. Since catheter drainage does not rule out surgical drainage, it is advisable to initially consider percutaneous drainage as a definitive therapy for appropriate patients [35,37,39]. Ultrasonography and CT are now the preferred means of detecting abdominal abscesses and guiding percutaneous catheter drainage. Real-time sonography is advantageous because it is low-cost, portable, and can offer concurrent imaging during catheter placement. CT is more precise in guiding the drainage of small, deep abscesses, provides a more accurate outlining of the extent and position of the collection, and better defines the relationship between abscesses, bowel, and blood vessels [40].

Laparoscopic Drainage

Medical management with or without percutaneous drainage aspiration remains the mainstay of treatment for most liver abscesses, but when this fails, the next alternative is minimally invasive laparoscopic drainage. Other indications for this method include rupture of the abscess, multiloculated abscess, caudate lobe abscess, or associated biliary disease (lithiasis or stricture) [41]. Laparoscopic drainage is preferred because it provides faster recovery, shorter hospital stay, less surgical-site infection, a low recurrence rate, and better cosmetics than open surgical drainage. It also has the added advantages of open surgery and the minimal invasiveness of percutaneous drainage, making it a better alternative after a failed percutaneous drainage attempt and just before considering open surgery [42]. It, however, requires the expertise of the laparoscopic hepato-biliary surgical technique, which requires trained radiologists that may not be readily available in certain countries or situations. In addition, the absence of tactile sensation could make the breakdown of septations and perihepatic adhesions difficult [41,43].

Overall, this approach allows safe, direct visualization of catheter placement for adequate drainage of the abscess and the concurrent treatment of other underlying abdominal pathology.

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Laparoscopic drainage of liver abscesses, in combination with systemic antibiotics, is a safe and viable alternative in all patients who require surgical drainage following failed medical management or US-guided percutaneous drainage [42,43].

Open Surgery

The surgical treatment of liver abscesses is indicated when conservative management with antibiotics or percutaneous drainage is unsuccessful or when there is a high risk of rupture or complications. Open surgery or laparotomy is recommended in cases with multiple abscesses, a thick wall, abscesses in the deep parenchyma, or a need for a biopsy to rule out malignancy [44]. To effectively resolve large pyogenic abscesses, drainage, in addition to antibiotics, is typically necessary. Medical treatment alone is inadequate due to the high bacterial load, antibiotic inactivation, and ineffective medium for eliminating bacteria [45]. In addition, the duration of antibiotic therapy can be reduced through successful drainage. Two drainage methods are presently available: non-surgical options such as percutaneous needle aspiration (PNA) or percutaneous catheter drainage (PCD) and surgical options such as open drainage (OD) or laparoscopic drainage (LD) [44,46]. OD involves a large incision in the abdominal wall to expose the liver, identify the abscess, and drain the pus. Surgical treatment carries certain risks and potential complications, including bleeding, infection, organ damage or failure, reaction to anesthesia, blood clots, and pneumonia. Additionally, open surgery may result in a more extended hospital stay, a more prolonged recovery period, and more scary than laparoscopic drainage [46].

Much discussion has been regarding whether percutaneous or surgical drainage is the preferable clinical intervention. Some studies have described percutaneous drainage as equally safe and more tolerable than surgery in specific cases [46,47]. In most retrospective studies comparing the two methods, percutaneous catheter drainage (PCD) appears to have similar outcomes and mortality rates, which is why it is the preferred drainage method [47]. PCD also causes less morbidity and is generally more acceptable to patients than surgery. However, it is important to interpret these findings cautiously, as poor prognostic factors for mortality are linked to the systemic effects of sepsis, advanced age, and comorbidities [48]. Therefore, surgery may be the prudent choice for initial urgent treatment in patients with ruptured abscesses, complicated concomitant biliary disease, or intraabdominal disease [48,49]. In some cases, the failure of percutaneous drainage has resulted in uncontrolled sepsis, which has led to death. However, this is frequently inappropriately reported as surgical mortality when salvage surgical drainage is performed [49]. Even though PCD may be the first drainage line to stabilize these conditions in high-risk patients, definitive surgery may still be required [47,49].

OD can effectively break down the locules of the abscess and insert large-bore drains into the cavity. A recent study suggested that OD may be superior to percutaneous drainage [44,50]. In their series, which included 80% multiloculated abscesses > 5cm, OD had fewer treatment failures, less need for secondary procedures, and shorter hospital stays [44-46]. Size and multiloculation appear to be predictors for percutaneous drainage failure, and multiloculation is also a statistically significant prognostic factor for morbidity [46,49]. Therefore, conducting a randomized trial may be worthwhile to determine whether all large, multiloculated abscesses should be surgically drained [49]. OD also offers better access to complex sites, such as the dome, and improves hemostasis in patients with severe coagulopathy [45,46].

The success of drainage techniques relies heavily on the skills and experience of interventional or subspecialist surgeons. Minimal access surgery is revolutionizing the treatment of surgical diseases, and LD provides all the advantages of OD with minimal stress and invasion [51]. A recent comparative review indicated that the LD group had shorter surgery time, less blood loss, faster recovery, and shorter hospital stays than those who underwent OD [51,52]. Improvements in laparoscopic techniques, instruments, and imaging may make LD a worthy competitor to the percutaneous modality. Nevertheless, surgery still plays a role in treating large and complicated liver abscesses [52]. While the percutaneous approach is preferred as the initial drainage modality, patients must be carefully selected and closely monitored. Ultimately, these modalities are complementary in managing liver abscesses.

In conclusion, adequate drainage plays a crucial role in reducing the duration of sepsis and preventing mortality, and open surgery is an effective surgical option for this purpose. However, the choice of surgical approach should be based on individual patient factors, surgeon expertise, and the location and size of the abscess [50,51]. In addition, the surgeon should discuss the risks and benefits of both procedures with the patient to make an informed decision. Open surgery and laparoscopic approach have similar success rates in treating liver abscess, but the later is associated with fewer complications, less postoperative pain, and a shorter recovery time. Percutaneous image-guided drainage is usually recommended as the first-line intervention without urgent surgical indications, such as peritonitis. However, surgical drainage may be more suitable for large, multiloculated abscesses or those with concomitant biliary pathology [53]. In the future, advancements in laparoscopic techniques and other surgical equipment are expected to improve the surgical management of liver abscesses.

Conclusion

Hepatic abscess is a serious medical condition that requires prompt diagnosis and treatment to avoid life-threatening complications. Causes of hepatic abscess may vary, but most cases are caused by bacterial infection. Symptoms can range from mild to severe, including fever, abdominal pain, and jaundice. Accurate

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diagnosis of hepatic abscess requires a combination of clinical evaluation, laboratory tests, and imaging studies. Ultrasound and abdominal CT are often the modalities of choice for imaging studies. CT scan provides better sensitivity than abdominal ultrasound, but the latter is readily available, especially in low-income settings. In the case that abdominal imaging does not provide an accurate diagnosis, a CT scan can be used to characterize the abnormalities further. The attempt to obtain an ultrasound or CT-guided specimen of the suspected liver abscess should be made to confirm the diagnosis and identify the pathogens. All specimens should be sent for Gram stain and culture. For small abscesses, needle drainage may be sufficient for therapeutic management. Antibiotic therapy should be coupled with source control via abscess drainage. A percutaneous approach should be the treatment of choice whenever feasible, with the placement of a catheter. Open or laparoscopic approaches are recommended when an underlying process is suspected, or the patient does not respond to less invasive measures.

A comprehensive evaluation of patient elements is crucial in determining the most appropriate surgical treatment for hepatic abscess. Factors such as age, comorbidities, and anatomical considerations must be considered to ensure the best possible outcome for the patient. While hepatic abscess can be challenging to diagnose and treat, advances in surgical techniques and a thorough examination can lead to successful outcomes and improved quality of life for affected individuals.

References

1. Lardière-Deguelte S, Ragot E, Amroun K, Piardi T, Dokmak S et.al. (2015) Hepatic abscess: Diagnosis and management. J Visc Surg 152(4): 231-243.
2. Khim G, Em S, Mo S, Townell N (2019) Liver abscess: diagnostic and management issues found in the low resource setting. Br Med Bull. 11;132(1): 45-52.
3. Akhondi H, Sabih DE (2022) Liver Abscess. In: StatPearls [Internet]. Stat Pearls Publishing.
4. Nepal P, Ojili V, Kumar S, Kaur N, Nagar A (2020) Beyond pyogenic liver abscess: a comprehensive review of liver infections in emergency settings. Emerg Radiol. 27(3): 307-320.
5. Chattopadhyay B (1983) Pyogenic liver abscess. J Infect 6(1): 5-12.
6. Siu LK, Yeh KM, Lin JC, Fung CP, Chang FY (2012) Klebsiella pneumoniae liver abscess: a new invasive syndrome. Lancet Infect Dis 12(11): 881-887.
7. Stanley SL Jr (2003) Amoebiasis. Lancet 361(9362): 1025-1034.
8. Shi SH, Zhai ZL, Zheng SS (2018) Pyogenic Liver Abscess of Biliary Origin: The Existing Problems and Their Strategies. Semin Liver Dis 38(3): 270-283.
9. Moinuddin M (1987) Pyogenic liver abscess. Compr Ther 13(3): 26-31.
10. Reid-Lombardo KM, Khan S, Sclabas G (2010) Hepatic cysts and liver abscess. Surg Clin North Am 90(4): 679-697.
11. Rustgi AK, Richter JM (1989) Pyogenic and amebic liver abscess. Med Clin North Am 73(4): 847-58.
12. Sifri CD, Madoff LC (2015) Infections of the liver and biliary system (liver abscess, cholangitis, cholecystitis). In: Bennett JE, Dolin R, Blaser MJ (eds.). Principles and Practice of Infectious Diseases, 8th edn. Philadelphia: Elsevier Saunders.
13. Herbinger KH, Fleischmann E, Weber C, Perona P, Löscher T, et al. (2011) Epidemiological, clinical, and diagnostic data on intestinal infections with Entamoeba histolytica and Entamoeba dispar among returning travelers. Infection 39(6): 527-535.
14. Wuerz T, Kane JB, Boggild AK, Krajden S, Keystone JS, et al. (2012) A review of amoebic liver abscess for clinicians in a nonendemic setting. Can J Gastroenterol 26(10): 729-733
15. Andrade-Filho Jde S (2012) Analogies in medicine: anchovy paste in the liver. Rev Inst Med Trop Sao Paulo 54(4): 234.
16. Longworth S, Han J (2015) Pyogenic liver abscess. Clin Liver Dis (Hoboken) 6(2): 51-54.
17. Khim G, Em S, Mo S, Townell N (2019) Liver abscess: diagnostic and management issues found in the low resource setting. Br Med Bull 132(1): 45-52.
18. Mohsen AH, Green ST, Read RC (2002) Liver abscess in adults: ten years experience in a UK centre. QJM 95(12):797-802.
19. Rahimian J, Wilson T, Oram V, et al. Pyogenic liver abscess: recent trends in etiology and mortality. Clin Infect Dis 39: 1654-1659.
20. Kaplan GG, Gregson DB, Laupland KB. (2004) Population-based study of the epidemiology of and the risk factors for pyogenic liver abscess. Clin Gastroenterol Hepatol2: 1032-1038.
21. Webb GJ,Chapman TP, Cadman PJ, Gorard DA (2014) Pyogenic liver abscess. Frontline Gastroenterol 5(1): 60-67.
22. González JJ, Baldonedo RF, J A Alvarez Pérez L Sanz, G Carreño, A Junco, et al. (2001) Clinical course, treatment, and multivariate analysis of risk factors for pyogenic liver abscess. Am J Surg 181(2):177-186.
23. Reid-Lombardo KM, Khan S, Sclabas G (2010) Hepatic and liver abscess. Surg Clin North Am 90(4): 679-697.
24. Halvorsen, R. A (1984) The variable CT appearance of hepatic abscesses." American journal of roentgenology 1425(1984): 941-946.
25. Amroun K, Piardi T, Dokmak S, Bruno O, Appere F, et al. (2015) Hepatic abscess: Diagnosis and management. J Visc Surg 152(4): 231-243.
26. Sarah Longworth, Han J. Pyogenic liver abscess. Clin Liver Dis (Hoboken) 6(2): 51-54.
27. Fontanilla T, Noblejas A, Cortes C, Minaya J, Mendez S, et al. (2013) Contrast-enhanced ultrasound of liver lesions related to arterial thrombosis in adult liver transplantation. J Clin Ultrasound 41 (8): 493-500.
28. Cavailloles FA, Mure A, Nasser H, Lecapitaine AL, Granier F (2014) Multiple liver amoebic abscesses detected on FDG PET/CT. Clin Nucl Med 39 (1): 79-80.
29. Jindal A, Pandey A, Sharma MK, Mukund A, Vijayaraghavan R, et al. (2021) Management Practices and Predictors of Outcome of Liver Abscess in Adults: A Series of 1630 Patients from a Liver Unit. J Clin Exp Hepatol 11(3): 312-320.
30. Nyabera A, Shaban L, Hijazin K, Tumarinson T (2021) Community-Acquired Methicillin-Resistant Staphylococcus Aureus Hepatic Liver Abscess. Cureus13(1): e12560.

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31. Cherian J, Singh R, Varma M, Vidyasagar S, Mukhopadhyay C (2016) Community-Acquired Methicillin-Resistant Pyogenic Liver Abscess: A Case Report. J Investig Med High Impact Case Rep 4(3): 2324709616660576.

32. Hasan S, Fearn R (2018) Fungal liver abscess in an immunocompetent patient who underwent repeated ERCPs and subtotal cholecystectomy. BMJ Case Rep 2018: bcr2017222013.

33. Hernandez-Calleros J, Tellez-Avila FI, Torre A, Uribe M (2009) Image-guided percutaneous procedure plus metronidazole versus metronidazole alone for uncomplicated amoebic liver abscess. Cochrane Database Syst Rev (1): CD004886.

34. Babikir TB, Alnehmi FS, Abdalrahman HH, Abdelmalik MAA, Ali AM, Fadlalmola HA, et al. (2022)Percutaneous needle aspiration versus catheter drainage in the management of liver abscess: an updated systematic review and meta-analysis. ANZ J Surg.

35. Harclerode TP, Gnugnoli DM. Percutaneous Abscess Drainage. In: StatPearls [Internet].

36. Men S, Akhan O, Köroğlu M (2002) Percutaneous drainage of abdominal abcess. Eur J Radiol. 43(3): 204-218.

37. Hayashi Y, Uchiyama M, Inokuma T, Torisu M (1989) Gas-containing pyogenic liver abscess--a case report and review of the literature. Jpn J Surg 19 (1): 74-77.

38. Zerem E, Hadzic A (2007) Sonographically guided percutaneous catheter drainage versus needle aspiration in the management of pyogenic liver abscess. AJR Am J Roentgenol 189(3): W138-142.

39. Mortelé KJ, Segatto E, Ros PR (2004) The infected liver: radiologic-pathologic correlation. Radiographics. 24(4): 937-955.

40. vanSonnenberg E, Wittich GR, Goodacre BW, Casola G, D'Agostino HB (2001) Percutaneous abscess drainage: update. World J Surg 25(3): 362-369.

41. Ndong, Abdourahmane, et al. "Efficacy of Laparoscopic Surgery in the Treatment of Hepatic Abscess: A Systematic Review and Meta-Analysis." Annals of Medicine and Surgery 75: 103308.

42. Cemalettin Aydin, Turgut Piskin, Fatih Sumer, Bora Barut, Cuneyt Kayaalp (2010_) Laparoscopic Drainage of Pyogenic Liver Abscess. JSLS: Journal of the Society of Laparoendoscopic Surgeons 14(3): 418-420.

43. Tak, Nikhil, Rajendra Bagree, Gaurav Jalendra, Hetish M. Reddy (2021) Laparoscopic Management of Liver Abscess: A Viable Alternative in USG Guided Percutaneous Drainage Failure Cases." International Surgery Journal (8): 637-640.

44. Tan L, Zhou HJ, Hartman M, Ganpathi IS, Madhavan K, et al. (2013) Laparoscopic drainage of cryptogenic liver abscess. Surg Endosc 27(9): 3308-3314.

45. Reid-Lombardo KM, Khan S, Sclabas G (2010) Hepatic cysts and liver abscess. Surg Clin North Am. 90(4): 679-97.

46. Frey CF, Zhu Y, Suzuki M, Isaji S (1989) Liver abscesses. Surg Clin North Am 69(2): 259-271.

47. Liew KV, Lau TC, Ho CH, Cheng TK, Ong YS, (2000) Pyogenic liver abscess--a tropical centre's experience in management with review of current literature. Singapore Med J 41(10): 489-492.

48. Romano G, Agrusa A, Frazzetta G, De Vita G, Chianetta D et al. (2013) Laparoscopic drainage of liver abscess: case report and literature review. G Chir 34(5-6): 180-182.

49. Leggieri N, Marques-Vidal P, Cerwenka H, Denys A, Dorta G, et al. (2010) Migrated foreign body liver abscess: illustrative case report, systematic review, and proposed diagnostic algorithm. Medicine (Baltimore) 89(2): 85-95.

50. Ghosh JK, Goyal SK, Behera MK, Tripathi MK, Dixit VK, et al. (3015) Efficacy of aspiration in amebic liver abscess. Trop Gastroenterol 36(4): 251-255.

51. Garcea G, Rajesh A, Dennison AR (2012) Surgical management of cystic lesions in the liver. ANZ J Surg 83(7-8): E3-E20.

52. Ch Yu S, Hg Lo R, Kan PS, Metreweli C (1997) Pyogenic liver abscess: treatment with needle aspiration. Clin Radiol 52(12): 912-916.

53. Kodama T, Yokoyama T (1995) [Liver abscess (solitary liver abscess, multiple liver abscess, subcapsular liver abscess]. Ryoikibetsu Shokogun Shirizu 7: 100-103.

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