

Original Research Paper

Radiodiagnosis

COMPARATIVE STUDY OF NEEDLE ASPIRATION VERSES PIGTAIL CATHETER INSERTION IN 50 CASES LIVER ABSCESS.

Dr. Ajay R Upadhyay

Associate Professor in Radiodiagnosis GCS Medical College, Hospital and Research Centre. Naroda Rd. Ahmedabad.380025

Dr. Nikunj C Desai*

Assistant Professor in Radiodiagnosis GCS Medical College, Hospital and Research Centre. Naroda Rd. Ahmedabad.380025 *Corrosponding Author

ABSTRACT Background: Liver abscesses are a common cause of morbidity and mortality in tropical countries due to poor socio economic living conditions. They are mainly divided into pyogenic and amoebic types based on causative organism. Treatment for liver abscesses has conventionally been use of oral and IV antibiotics, followed by surgical drainage in refractory cases. In last decade the use of percutaneous USG guided needle aspiration and pigtail catheter drainage has come forward as a viable alternative for drainage of abscesses rather than surgical approach.

Aim: To compare the effect and usefulness of needle aspiration Vs. Pigtail catheter drainage in treatment of liver abscesses.

Materials and Methods: Fifty patients with liver abscess were treated using either needle aspiration or pigtail catheter drainage and results compared and analyzed. All patients received same group of antibiotics.

Results:Forty patients were treated using needle aspiration and 10 using pigtail catheter drainage. Out of forty10 patients required repeat needle aspiration after one or two weeks because of residual pus. Out of 10 patients treated with pigtail catheter aspiration 3 patient develop catheter related problems like blockage, shivering, and leak surrounding catheter.

Conclusion: USG guided needle aspiration has 100 % success rate as compared to catheter aspiration with no procedural or post procedural complication and well accepted by patients and treating doctors as a short therapeutic OPD procedure.

KEYWORDS : Catheter drainage, liver abscess, needle aspiration.

Introduction

Liver abscesses are common cause of morbidity and mortality (Untreated cases)in tropical countries like us with poor socioeconomic status. Most of them are either pyogenic or amoebic in nature. These patients often present late when abscesses become large [1]. Fever, right upper quadrant pain, pain at RIF, loss of appetite with nausea and tender hepatomegaly are the usual presenting symptoms. In past, these lesions were treated with oral and IV antibiotics and surgical drainage if not responding to medical treatment. [2]. From last 2-3 decade with available USG modality liver abscesses are usually treated by oral and IV antibiotics along with USG-guided aspiration or Percutaneous catheter drainage with surgical drainage as the rarely usedmodality [3,4].Preference of choice of treatment among various specialists has been prevalent for a long time. The preferred treatment among clinicians is needle aspiration due to ease of performing procedure, less complication, less aggressive, no post procedure complications and less expensive. Repeated weekly USG follow up is required for needle aspiration [5, 6].In last few years emphasis has been placed onrelative efficacy of both procedures. Wehereby undertook a study to compare the two methods in their efficacy for treatment of aspiration of liver abscesses.

Materials and methods

A 2-year prospective study of 50 patients was undertaken fromDecember2014to January2016 after taking permission from ethical committee of our hospital, a tertiary care centre in Ahmedabad in Gujarat, India.

Diagnosis of liver abscess was made by ultrasonography with computed tomography and co-related with patients' symptoms (Fever, right hypochondrial pain, loss of appetite) and blood for WBC counts.

40 patients underwent USG-guided needle aspiration and 10 patients for USG guided percutaenous catheter drainage (PCD). The patients selected for needle aspiration were more than 5 c.m. in size , USG volume more than 50 cc and liquefied on USG. Priority was given to abscess which are close to dome of diaphragm as higher chances of rupture into pleural cavity. The catheter aspiration was done in admitted patients with large multiloculated,

interconnecting abscesses, abscess rupture in to peritoneal count and with other systemic problems.

All patient referred for aspiration are asked to go for pre procedure PT,INR, HBSAg,HIV with CBC and CXR. Written informed consent was taken from all patients.Coagulopathy profile of every patient waschecked before procedure.

USG guided Needle Aspiration

Under full aseptic and antiseptic precautions screening USG was done in sonography room. Patient was kept NBM for 4 hours before the procedure.Patient is positioned as per location of abscess mostly at left lateral decubitus position and the route selected to insert needle is away from diaphragm, lung, GB, and bowel. Marking was done at skin site. After applying Betadin and spirit, Skin was infiltrated with 2% xylocaine (Local anaesthesia and under USG guidance 16Gdisposable EPIDURAL curved needle was introduced in to liver abscess cavity. The tip of needle is seen as echogenic point moving into abscess cavity. With 20 cc syringe pus was aspirated. For multiple abscesses this procedure was repeated to all abscesses in same sitting. And pus was sent for laboratory examination. Repeat USG was done after a week and if found any residual significant abscess was aspirated.

Catheter Drainage

Under full aseptic and antiseptic precautions screening USG done in Minor operation theatre. Patient kept NBM for 4 hours before the procedure.Marking was done at skin site. Preferred site are sub costal or intercostal position for putting catheter. After applying betadin and spirit Skin was infiltrated with 2% xylocaine (Local anaesthesia and under USG guidance. The core needle was introduced into abscess cavity and confirm its tip into abscess by aspiration with 10 cc syringe. Then terumo guide wire was introduced into abscess cavity and needle was removed. A 12F multi holed pigtail catheter was glided over guide wire and introduced into the abscess cavity under USG guidance. The anaesthetic was kept stand by during the procedure. After catheter tip was placed in centre of abscess cavity Initial 10 cc of pus was aspirated via syringe and then after confirming pus aspiration catheter was fixed to the skin using sutures. We prefer intercostal /subcostal approach as easy movementwith patient in bed.Thedrainage tube was

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connected to urobag. Repeat USG was done 24 hours after procedure at bed side to check position of tip of catheter and size of abscess cavity. Catheter was removed after 3 days or reducedoutput whichever is early. The patients were monitored daily for various catheter complications like perforation, local haemetoma, blockage of catheter under USG

All patients werefollowed up for a 3 to 6months by way of repeat USG.

Table 1: Division of total number of cases according to procedure chosen.

Needle aspiration 40

Catheter drainage 10



Table 2 Success rate



Needle aspiration 100%

Catheter aspiration 70%

Results

Out of 50 patients 40 patient treated with percutaeneous USG guided needle aspiration and 10 patient with percutaenous catheter guided aspiration. The age of patients was from 8 to 40 years . 40 patient were have single large asbcess more than 5 cm in size and 250-300 cc pus. Out of them 30 patient needed single needle Catheter aspiration 70%

Results

Out of 50patients, 40patient treated with percutaneous USG guided needle aspiration and 10 patient with percutaneous catheter guided aspiration. The age of patients was from 8 to 40 years. 40 patient were have single large abscess more than 5 cm in size and 250-300 cc pus. Out of them 30 patient needed single needle aspiration and 10 patient require 2nd time aspiration when came for subsequent follow up as we could not aspirate significant amount in same sitting because of thick pus. No post procedure complication observed in needle aspiration. All needle aspiration done with single puncture insertion and track was closed after aspiration. In 40 patients 5patient were having multiple small abscesses more than 3 in number but less than 5 cm in diameter and less than 100 cc of pus.

Out of 10 patient treated with catheter drainage 7 patient were having large single abscess with more than 400 cc of pus and rupture started into peritoneal as well as right pleural cavity. Other 3 patient were not having leak in peritoneal or pleural cavity. 3 patient after subsequentfollow updevelop minor complication on 2nd day. One develop blockage of catheter whichwas flushed with normal saline. Another develop per catheter leak so the catheter was removed. 3rd patient develop fever with rigor so catheter was removed.

Percutaneous USG guided needle was successful in all patients whereas PCD was successful in 70 % cases. Overall needle aspiration is an OPD procedure does not require hospital stay or stay is only for giving IV antibiotics whereas catheter aspiration require hospital stay of at least 3 days with close observation of catheter related complication.

Discussion:

Both amoebic and pyogenic liver abscesses area major cause of morbidity involving gastrointestinal system in tropical countries [2, 7].Even though the mode of treatment for abscesses is now USG guided percutaneous drainage (either needle aspiration or catheterdrainage) supplemented with IV antibiotics. we found that if abscess are single, less than400 cc of pus than 1st approach is to take patient for needle aspiration and aspirate as much as possible than ask for follow up after a week and if anything significant residual remaining than repeat aspiration is done. Multiple small abscess can be taken care by same needle aspiration. As needle aspiration as an OPD procedure, patient can go home after 6 hours of observation but require hospitalization for IV antibiotics. We close the track after needle aspiration so that chances of local complication are nil. The catheter approach is better for critically ill admitted patients with large or multiple, interconnecting abscess ruptured in to pleural or peritoneal cavity and other systemic problems so that proper nursing care of catheter is required to avoid catheter related complication as outer infection can transmit to abscess cavity to peritoneum. Effectiveness of needle aspiration and catheterdrainage has been debated to a large extent byvarious authors. In one of the first ever studies Authors concluded that PCD was moreeffective than needle aspiration [3]. However another group of authors later concluded that both the methods are equally effective if multiple attempts for needle aspiration are made [4]. Later it has been suggested that needle aspiration should be the first line of treatment of choice followed by catheteraspiration in cases where as desired results are not achieved even after three attempts [2].In our study we found needle aspiration is 1st line of treatment and catheter drainage is reserved for critically illadmittedpatient with abscess rupture into peritoneal and pleural cavity. The needle aspiration is less expensive, OPD procedure, require short time to complete the procedure and can be repeated any time whereas catheter drainage required hospitalization, longer procedural time, close observation of catheter drainage and nursing care to prevent catheter related complications.

Reasons for failure of needle aspiration arethick pus, developing abscess without liquefaction which is difficult to evacuate, deep location of abscess cavity. Patient acceptability is less for PCD as compared to needle, aspiration because it is quite unpleasant, traumatic and carries with it, some routine bed care modification. Complications of the procedures include haemorrhage, pleural effusion/ empyema, persistent bile drainage, catheter displacement, sepsis etc. These arecommonly seen with PCD ratherthan with, needle aspiration [2, 9, 10].One of our patient, also developed subcutaneous hematoma postPCD.

Various organisms have been associated with liver abscesses e.g., Klebsiella, Stayphylococcus aureus etc. along with amoebic organisms (most commonly Escherichia colli) [9, 10, 11]. Some of the previous studies have also demonstrated indeterminate culture reports with main reasons being early administration of antibiotics (prior to sampling) use of high titres for diagnosis has been suggested to exclude false positive results (9,12,) Reasons for failure of needle aspiration are thick pus, which is difficult to evacuate and rapid accumulation of pus in the abscess [13].

We hereby believe that both the procedures, carry their own merits and demerits like better, results with needle aspiration with easier acceptability & lesser complications and post procedure stay Needle aspiration along with IV antibiotic cover, can be taken up as the first line treatment of, choice for all abscesses because of better, patient acceptability whereas PCD require proper nursing care for catheter, chances of slipped catheter while changing position of patient, The chances of introducing outer infection to peritoneum is higher in PCD. Whereas needle aspiration patient is completely ambulatory with no nursing care require and patient can freely move in and outside hospital.



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