Evaluation of USG Guided Pigtail Catheter Placement for Drainage of Liver Abscess as a Minimally Invasive Procedure

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ABSTRACT

Introduction: Liver abscess refers to collection of pus in the liver. The objective of this study was to evaluate the advantages of USG guided pigtail catheter placement for drainage of liver abscess over open procedure.

Material and methods: This study was conducted in Nalanda Medical College and Hospital, Patna. It included 30 patients who were diagnosed with solitary liquefied liver abscess by us by ultrasound and were treated by us in association with the Surgery department. The effectiveness of pigtail drainage was evaluated by doing serial weekly ultrasonography scans.

Results: Age group varied from 25 to 55 years. Out of 30 patients 27 were men and 3 were women. The male to female ratio was 9:1. All the patients with solitary liver abscess underwent USG guided pigtail catheter insertion. Average hospital stays varied from 2–3 days. No complications occurred during the procedure.

Conclusions: We concluded that USG guided pigtail catheter placement for drainage of liver abscess as a minimally invasive procedure is a relatively easy, safe, and cheap procedure with much less morbidity and therefore more acceptable to the patients compared to the open procedure.

Keywords: Liver Abscess, Pigtail Catheter, Ultrasonography

INTRODUCTION

Aetiology of liver abscess being pyogenic, amoebic and rarely fungus.[1] They may be solitary or multiple involving either the right lobe or the left lobe or both lobes of liver.[2] Liver abscess could be caused by a single organism, but majority being polymicrobial.[3] Hippocrates observed that the type of fluid in the abscess cavity of the liver determined its prognosis.[4] Liver abscess is still an important cause of morbidity and mortality, at least in the tropical countries. Early diagnosis and treatment have improved patient's outcome with the advent of newer modalities in the diagnosis & treatment.[5]

The objective of this study is to study the efficacy and advantages of drainage of liver abscess cavity by placing a pig tail catheter under USG guidance.

MATERIAL AND METHODS

This retrospective study was conducted in the Department of Radiology, Nalanda Medical College and Hospital, Patna for a period of 6 months. All the necessary preoperative investigations were done which mainly included USG/CECT abdomen, CBP, RBS, Blood Urea, Serum Creatinine, LFT, HIV, HBsAg, HCV, CT, BT, PT, APTT, INR, Blood grouping and typing. All patients with abnormal coagulation profile were optimized for the procedure prior to intervention.

Patients with a solitary liquefied abscess cavity were admitted for the procedure in the department of General Surgery in our institute were included in the study. Patients with multiple liver abscess were excluded from the study.

After explaining the complications of the procedure, informed written consent was obtained and patients were subjected for the procedure.

1 unit of packed red blood cells was reserved for almost all the patients prior to intervention.

The procedure was performed in the USG suite. Under strict antiseptic conditions using USG guidance & local anesthesia (2% lignocaine) 10 Fr pigtail catheter was placed in the abscess cavity using Seldinger technique. After free drainage of pus commenced and the position of the catheter's tip in the cavity confirmed, the catheter was fixed and connected to urosac bag. Pus was also sent for culture and sensitivity. Patients were given Inj. Tramadol 50 mg in 100 ml NS IV twice & T^{O}, PR, BP were monitored hourly. A review USG of abdomen was done on the same evening and after confirming no free fluid in the peritoneal cavity and no signs of peritonitis / respiratory distress patient was discharged with Tab Metronidazole 400 mg TID, Tab Cefixime 200 mg BID, Tab Ultracet BID, Tab Pan OD for 1 week. Patients were counseled about the possibility and signs of peritonitis and to attend emergency department immediately if required. 1st review was done after the culture and sensitivity reports arrived and then after a week of catheter placement. USG abdomen was done to check for the decrease in the size of abscess cavity along with CBP.

USG of the abdomen and CBP was done at weekly interval. Drains were removed after confirming the collapse of the abscess cavity on USG.

RESULTS

In this study 30 patients underwent USG guided pigtail catheter insertion for solitary liver abscess.

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Patients presented with following signs and symptoms: Pain in right upper quadrant in was the most common complaint in 28 (93.3%) patients, followed by fever in 25 (83.33%) patients and generalized weakness in 25 (83.33%) followed by chills and rigors in 24 (80%), hepatomegaly in 15(50%), jaundice in 12 (40%), vomiting in11(36.67%) pallor in 10 (33.3%), anorexia in 10 (33.3%), pleural effusion in 5 (16.67%) and diarrhea in 3 (10%) respectively.

Significant Laboratory Investigations included leukocytosis in 27 (90%), raised total bilirubin in13 (43.33%) and anemia in 11 (36.67%). Right lobe was involved in 26(86.67%), followed by left lobe in 4 (13.33%). Culture and sensitivity report of pus after 48 hrs. of incubation showed: No growth in 21 (70%), E. coli in 4 (13.33%), S. aureus in 3 (10%) and Klebsiella pneumonia in 2 (6.67%).

Volume of the abscess cavity:100-150 ml in 10 patients (33.3%),151-200 ml in 8 patients (26.67%),201-250 ml in 7 patients (23.33%),251-300 ml in 4 patients (13.33%),301-350 ml in 1 patient (3.33%).

Complications included: Pain at the catheter site in 29 patients (96.67%), Blockage of catheter in 6 patients (20%), Displacement of the catheter tip in 2 patients (6.67%).

DISCUSSION

Liver abscess still continues to be a common & serious cause of morbidity and mortality among the low socio- economic population in India and needs adequate medical attention.[6] Liver abscess caused by various causes can be dealt by Percutaneous needle aspiration, Percutaneous catheter drainage or open drainage. Open drainage has been mostly replaced by percutaneous drainage (needle aspiration/ catheter drainage).[7] Clinical improvement in patients with abscess cavity after needle aspiration has been reported by Beger et al.[8] Incomplete drainage or failure to drain the abscess cavity adequately may require surgical drainage of liver abscess.[9] Percutaneous drainage of liver abscess by USG guidance is a relatively safe procedure in experienced hands with minimal complications such as hollow viscous perforation, bleeding, septicemia.[10] Percutaneous drainage is now considered as the treatment of choice in cases of intraabdominal collections and abscess cavities.[11]

USG guided pigtail insertion for drainage of solitary liquefied liver abscess cavity were included in our study. Complications included pain at catheter insertion site, blockage of the catheter, and also displacement of the catheter tip. Readmission and repositioning of the catheter tip was done under USG guidance in patients with displaced catheter tip. Catheters were regularly flushed with normal saline to avoid blockage. Longer duration of drainage was required for large cavities and especially cavities with thick pus. Wider bore catheter avoided this complication.

The main limitations of the study were that it included a small group of patients and secondly it did not differentiate the causes of liver abscess.

This study concludes that USG guided placement of pigtail catheter to drain a solitary liquefied liver abscess is a minimally invasive procedure is a relatively easy, safe, and cheap procedure with much less morbidity and therefore more acceptable to the patients compared to the open procedure.

Ideal patient selection and use of wide bore catheters for placement in the abscess cavity are the important factors that play a key role in successful drainage of the abscess cavity.

Similar results observed by Gupta et al and Malik et al in the drainage of liver abscess.[13,14]

CONCLUSION

We conclude that USG guided pigtail catheter placement for drainage of liver abscess as a minimally invasive procedure is a relatively easy, safe, and cheap procedure with much less morbidity and therefore more acceptable to the patients compared to the open procedure.

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