



THE CLINICAL QUESTION

Is indwelling pleural catheter (IPC) safe to use for patients with refractory hepatic hydrothorax (HH)?

TAKE HOME MESSAGE

The incidence of infection and death secondary to IPC placement in cirrhotic patients with HH is higher than the IPC insertion in different patient population. On the other hand, the time to achieve spontaneous pleurodesis and catheter removal were shorter than in patients with malignant pleural effusion (MPE) with a median of 55 days.



BACKGROUND

Patients with liver cirrhosis with hydrothorax is a very high-risk population for infection in general. Patients with refractory HH have a lot of respiratory symptoms that compromise their quality of life and mandate frequent thoracentesis or placement of IPC. IPC used in congestive heart failure patients with HH showed variable rate of infection from 0.25-10% in different studies with no mortality secondary to IPC infection. Similarly, The rate of IPC infection in patient with malignant pleural effusion ranges from 1-24% with no death reported secondary to IPC infection. The rate of infection were lower comparing with cirrhotic patients with HH treated with chest tube which in one series reached 48% in this population and the mortality rate was 27%.

STUDY DESIGN



Study design: A multi-institution retrospective study

Subjects: 79

Primary outcome: Safety of IPC for HH reflected by incidence of infection and mortality

Secondary Outcome: Time to catheter removal

Intervention: None

POPULATION

Inclusion criteria

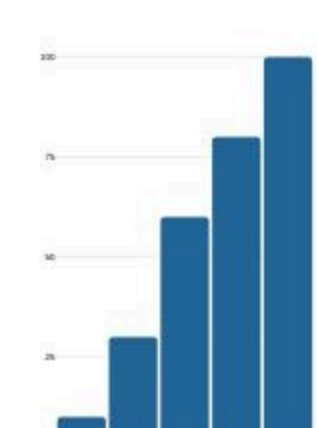
- Placement of an IPC for refractory HH,
- Refractory HH was defined as pleural effusion not responding to
 1. maximized sodium restriction and diuresis
 2. requiring repeated thoracenteses for symptom management
- Adult (> 18 years of age)
- Underlying diagnosis of cirrhosis in patients with partial or no response to TIPS or those with a contraindication to TIPS as judged by the treatment team in the corresponding centers

Baseline characteristics

- Age: 60+/- 10
- Gender: Female (46) Male (54)
- 20% of the patients had TIPS and 19% of the patient underwent liver transplant after IPC placement.
- Etiology of cirrhosis: Hepatitis C 24%, alcohol-related 49% and NASH 27%.
- Indications for IPC: Palliative in 73% and as a bridge to liver transplant in 27% of the patients.



OUTCOMES



Primary outcomes:

- Eight patients (10%) develop catheter related infection, and two of eight patients (2.5%) died because of catheter-related infection

Secondary outcomes:

- Median time to catheter removal was 156 days. The primary cause for catheter removal was death. The second most common reason for IPC removal was spontaneous pleurodesis for which the median time was 55 days

Adverse events:

Death and infection

COMMENTARY

Study Strength:

- This is the first multicenter study that examined clinical outcomes related to the placement of IPC in cirrhotic patients with HH.
- Despite the large volume pleural effusion in HH due to cirrhosis, the study observed a rate of spontaneous pleurodesis of 28% with median time of removal was 156 days.
- The study identified the risk of infection reaching up to 10% and mortality secondary to infection was 2.5% which are higher than the rates reported for IPC use in the setting of MPE or refractory congestive heart failure
- This study proposes that drainage of pleural effusion can be performed with a schedule which minimized the risk of electrolyte imbalance and kidney injury by limiting the fluid drainage to no more than 1L every other day.

Study Limitations

- As a retrospective study, there was no randomization or control group
- There was no long term follow up data due to the retrospective design.
- The predictors of spontaneous pleurodesis was not able to be identified due to the low power.
- The spontaneous pleurodesis was confounded since 11 out of 22 patients that developed spontaneous pleurodesis underwent liver transplant following the IPC placement. IPCs were considered to have been "removed" if present at the time of death
- The study might not represent the general population since the centers that included in the study were tertiary care hospitals, academic institutions or referral centers for complex diseases.

FUNDING

None



SUGGESTED READING

1. Davies HE, Mishra EK, Kahan BC, et al. Effect of an indwelling pleural catheter vs chest tube and talc pleurodesis for relieving dyspnea in patients with malignant pleural effusion: the TIME2 randomized controlled trial. JAMA. 2012;307(22):2383-2389.
2. Orman ES, Lok AS. Outcomes of patients with chest tube insertion for hepatic hydrothorax. Hepatol Int. 2009;3(4): 582-586.
3. Tremblay A, Michaud G. Single-center experience with 250 tunnelled pleural catheter insertions for malignant pleural effusion. Chest. 2006;129(2):362-368.
4. Bramley K, DeBiasi E, Puchalski J. Indwelling Pleural Catheter Placement for Nonmalignant Pleural Effusions. Semin Respir Crit Care Med. 2018 Dec;39(6):713-719
5. Silva Cruz C, Tosatto V, Nascimento PO, Barata Moura R. Hepatic hydrothorax: indwelling catheter-related Acinetobacter baumannii infection. BMJ Case Rep. 2019 Mar 15;12(3):6.
6. Aboudara M, Maldonado F. Indwelling pleural catheters for benign pleural effusions: what is the evidence? Curr Opin Pulm Med. 2019 Jul;25(4):369-373

ARTICLE CITATION



Shojaee S, Rahman N, Haas K, Kern R, Leise M, Alnijoumi M, Lamb C, Majid A, Akulian J, Maldonado F, Lee H. Indwelling tunneled pleural catheters for refractory hepatic hydrothorax in patients with cirrhosis: a multicenter study. Chest. 2019 Mar 1;155(3):546-53.

If you would like to become a reviewer for the "AABIP Journal Club," Please contact **Christian Ghattas** at christian.ghattas@osumc.edu