



A study on the role of transjugular liver biopsy in clinical decision-making

KEY WORDS

Transjugular liver biopsy (TJLB), Indications, Complications, Outcome

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ABSTRACT

BACKGROUND: Transjugular liver biopsy is an alternative procedure for patients who have contraindications to standard transthoracic procedure.

AIM: We report our experience with this procedure, its indications, efficacy and safety in Indian population over 4 years. **MATERIAL & METHOD:** A retrospective study on 57 consecutive patients who had undergone transjugular liver biopsy from March 2011 and April 2015.

RESULTS: The commonest indication for liver biopsy was work up for indeterminate chronic liver disease (58 %) and the most common reasons to biopsy by transjugular route were coagulopathy (57.9%), thrombocytopenia (40.3%) and ascites (36.8 %). Technical success was achieved in 96% cases and only two major complications were encountered. 49/57(86%) biopsies were adequate and yielded a histopathological diagnosis. Post biopsy diagnosis had a pivotal role in decision making on patient's treatment in 18/49(36.7%) cases.

CONCLUSION: Transjugular liver biopsy is a valuable tool for clinical decision making in a specific categories of patients in whom percutaneous biopsy is contraindicated. It is a safe procedure and provides adequate tissue for diagnosis which hugely impacts clinical decision making in patients with liver diseases.

Introduction

Liver biopsy is regarded as the "gold standard" for the evaluation of liver disorders and the most specific test to assess the nature as well as the grading and staging of certain liver diseases.¹ Percutaneous liver biopsy (PLB) and transjugular liver biopsy (TJLB) are most frequent techniques applied to obtain liver tissue specimens.²

PLB is usually used as the preferred method, because it is an easy to perform, cost efficient, and reliable method that produces biopsy cylinders of up to 4cm.

Trans-jugular liver biopsy (TJLB) is performed in patients with coagulopathy or ascites where percutaneous liver biopsy (PLB) is contraindicated. TJLB is an important and safer alternative to the traditional method of PLB.¹ Using a transvenous approach, the biopsy needle is inserted into the liver via the hepatic vein, avoiding the peritoneum and the liver capsule. Thus, if there is any bleeding post procedure, it will be back flow into the venous system. With the advent of the Tru-cut biopsy needles, TJLB specimens have been found to be of the same quality as the PLB specimens.²⁻⁴ A technical success rate of 96.8% has been reported in a recent meta-analysis that included more than 7500 cases.⁵

Though TJLB is increasingly being done in tertiary care centres of India but published data is few.⁵⁻⁷ Hence, this retrospective study was carried out at our tertiary care gastroenterology centre.

Aim

To evaluate the adequacy of sample obtained on TJLB and its role in altering the clinical management

Material and Methods

The present study was carried out on adult patients who underwent TJLB between March 2011 and April 2015. A total of 57 TJLB were performed in 57 patients. Tru-cut needle was used in all the biopsy attempts. Study design is retrospective, cross-sectional observational.

Biopsy was performed with Trans - jugular cutting needle device (Cook 18G -LABS 100) using two passes. All subjects signed an informed consent form approved by the Research Ethics Committee of the hospital.

Indications, technical success, complication and impact of histological diagnosis on the management were evaluated.

Inclusion criteria for TJLB

- Deranged INR (>1.5) and/or
- Thrombocytopenia (<75,000/cmm) and/or
- Ascites

The procedure was performed as an inpatient procedure. The clinical work up was done including USG abdomen for liver morphology and Doppler studies for hepato-portal system. Laboratory parameters including platelet count, PT, PTTK, INR and serum creatinine were obtained. Any severe coagulopathy or thrombocytopenia (platelets < 50,000/ μ L) was corrected prior to the procedure.

The procedure was carried out with the patient under conscious sedation, with hemodynamic and electrocardiographic monitoring and pulse oximetry. The patient was placed in the Trendelenburg position, and local anesthesia was injected in the cervical region using 1% lidocaine. The catheter was inserted into the right internal jugular vein (IJV) just above the clavicle during Valsalva maneuver – in one case, the left IJV was used. Guides, catheters, and the needle were advanced into the IJV using the Seldinger technique under fluoroscopic control; ultrasonography was frequently used to locate and puncture IJV. All biopsies were obtained from the right lobe. After each biopsy, contrast material was injected into the right hepatic vein (RHV) to assess possible complications. Intravenous fentanyl (50 to 100 micrograms) was used for sedation.

The "adequacy" of biopsy was defined as more than 1.0 cm in length or more than 6 portal triads per specimen.⁸ Biopsy slides were reviewed by single pathologist.

Percentages of various variables were calculated and depicted in results.

Results

Indications and contraindications for percutaneous liver biopsy is summarized in table 1. The commonest indication for liver biopsy was evaluation for indeterminate chronic liver disease and the most common contraindications for percutaneous biopsy that led to biopsy by transjugular route were coagulopathy, thrombocytopenia and ascites.

Table 1 . Distribution of indications of transjugular liver biopsy TJLB and contraindications of PLB [N(%)]

Indications of TJLB	
Etiology or status of chronic liver disease	33 (57.8 %)
Etiology of portal hypertension	13 (22.8%)
Alcoholic hepatitis	7 (12.2 %)
Diagnosis of Acute on chronic liver disease	4 (7.0%)
Contra-Indications of PLB	
Deranged INR (>1.5)	33(57.9%)
Thrombocytopenia (<75,000/cmm)	23(40.3%)
Ascites	21(36.8%)
>One of above contra-indications	24(42.1%)

Among the 57 patients subjected to TJLB, specimens were obtained in 55 (96.4%) and histological diagnosis was made in 47(82.4%). There were 29 males and 28 females with age range 15-58 yrs. Adequacy of liver tissue was reported in 49(86%) and fragmentation in 16(33.3%). Histopathological diagnosis could be made in 46(80.7%) cases and in three cases biopsy was reported to be normal. Distribution of technical success and histological diagnosis is depicted in Table 2. The most common diagnosis was cirrhosis liver (57.1%) followed by chronic hepatitis (26.5%). Complications happened in five cases out of which two were major and three minor. The major complication was pneumothorax in one and post biopsy sepsis in another. Minor complication was self-limiting fever in three patients. No mortality occurred due to liver biopsy in this study.

Table 2. Distribution of technical success, complications and histopathologic diagnosis in 57 transjugular liver biopsy(TJLB)

S No	Characteristic	N (%)
1.	Males: Females	M 29(50.9%), F 28(49.1%)
2.	Specimen obtained	55 (96.4%).
3.	Adequate tissue acquisition	49 (86%)
4.	Fragmentation of tissue	16 (33%)
5.	Histopathologic diagnosis on adequate biopsies	
a.	Cirrhosis	28(57.1%)
b.	Chronic hepatitis	13(26.5%)
c.	Wilson's	1(2.0%)
d.	NCPF	3(6.1%)
e.	Hemochromatosis	1 (2.0%)
f.	Normal Bx	3(6.1%)
6.	Complications	5 (8.7%)
a.	Pneumothorax	1 (1.7%)
b.	Overwhelming Sepsis	1 (1.7%)
c.	Post-procedure fever	3 (5.3%)

Post TJLB change in clinical diagnosis having great impact on management occurred in 18/49(36.7%) patient's. The pre and post biopsy diagnosis in these patients are depicted in Table 3.

Table 3. Pre and post TJLB diagnosis with impact on clinical decision making

Pre-Biopsy diagnosis	Post biopsy diagnosis	
Portal hypertension cause unknown	Cirrhosis(9), NCPF(3)	12
Chronic hepatitis	Cirrhosis	03
ACLF	Non Hodgkin's Lymphoma	01
Chronic hepatitis unknown cause	Wilson disease (1), haemochromatosis(1)	02

Discussion

Experience of transjugular liver biopsy in the present study showed similar results and correlates well with various other studies. Earlier, the quality of the specimen obtained was deemed to be suboptimal, but this was due to the use of the aspiration biopsy needle; adequate specimens can be obtained if tru-cut needles are used. In the present study Trans-Jugular Liver biopsy with tru-cut needle provided adequate sample in 86% of cases which is in agreement with previous

studies that report success rates varying from 75% to 95%.² In a study from India, Rathod et al studied 145 patients who underwent transjugular liver biopsy and found a technical success rate of 95% and minor complications in 1.3% cases.⁶

Clinical diagnosis was confirmed by histology in 31/49(63.3%) patients and a change in clinical diagnosis was observed in 18/49 (36.7%) patients altering their subsequent management. Major complications happened in 2.4%. No mortality occurred due to liver biopsy. Reported complication rate in different series varies from 0.5 to 1% and as high as 15%.⁹ The reported total complication rate is 7.1%. Mortality rates of 0.09% (adults) and 0.1% (children) have also been reported.² Also, the rate of complications may be associated with the experience of the professional performing the procedure.¹⁰

Conclusion

Trans-Jugular Liver biopsy(TJLB) with tru-cut needle is safe, well tolerated and provides adequate sample in 86% for histological diagnosis. In many cases it provides valuable information which has a huge impact on clinical decision-making. TJLB is a relatively safe technique for liver biopsy in patients in whom PLB is not feasible.

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