

Menghini Needles are Superior to Tru-Cut Needles for Blind Percutaneous Liver Biopsy in Children

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1. Abstract

1.1. Background: Liver biopsy remains the criterion standard in the evaluation of the etiology and extent of disease of the liver. Various needles are available for use, depending on the approach and on physician experience.

1.2. Methods: We used in our service for three years Menghini needles and the last year Tru- cut needle and we compared the data.

1.3. Results: Of 34 patients in the first group (Menghini needle) we had 28 appropriate specimen and 6 patients had inadequate specimen. We had only two procedures which failed but the next was successful. In the second group (Tru-cut needle) of 14 patients we had 4 patients with adequate specimen and 10 patients with inadequate specimen. We have repeated the procedure in 6 patients

1.4. Conclusions: In our experience Menghini needles are more efficacious for obtaining liver biopsy specimen and failure of procedure is very rare. In both groups the complications has not a significant difference.

2. Introduction

Paul Ehrlich performed a percutaneous liver biopsy in Germany in 1883. In the late 1950s, Menghini developed a 1-second aspiration technique, which led to wider use of the procedure and broadened its applications. Percutaneous liver biopsy using the Menghini technique has been established as simple, reliable, and minimally invasive [1, 2]. A variety of approaches may be utilized for obtaining a liver

tissue specimen. These include a blind percutaneous approach after percussion of the chest wall, biopsy under the guidance of ultrasonography or computed tomography (CT) scanning, intravascular tissue sampling via the hepatic vein, and intra-abdominal biopsy at laparoscopy or laparotomy [3]. The choice of one technique over another is based on availability, personal preference, and the clinical situation. In general, a sample of 1.5 cm in length that is 1.2-2 mm in diameter and contains at least 6-8 portal triads is considered adequate. This represents approximately 1/50,000th of the adult liver. Some hepatologists have advocated for samples of 4 cm of tissue to minimize sampling error, while others have found samples of 1 cm to produce minimal interobserver variability [4].

3. Material and Method

We perform routinely liver biopsy in our service of pediatric gastro-hepatology in Mother Teresa Hospital Tirana. We have enrolled all patients since of 2015 until 2019. During three years we have used Menghini needle biopsy 16 G. We had 34 patients at the range of age from 1 to 14 year old. Last year we used Tru -cut needle biopsy 16 G. We had 14 patients from 2 year old to 13 years old. We compared the results of procedure, the quality of biopsy specimen (over 1 cm was evaluated as a adequate sample) and complications. We described as a failure procedure all cases where the procedure is repeated one or more time. The procedure is performed by the same doctor. All patients have been during the procedure under anesthesia with sevofluran. We performed percutaneous blind liver biopsy according to

all indications (normal prothrombine time, abdominal ultrasonography before the procedure, platelet count over 100.000) . The most frequent diagnosis in both groups was chronic hepatitis c and the second was cholestasis and cryptogenic hypertransaminasemia. All biopsies are performed in native livers.

4. Results and Discussion

The biopsy specimen may be used to identify or exclude possible etiologies for physical or laboratory abnormalities. Although various disease states may present similarly, diagnostic histologic patterns exist when used in the context of clinical presentation. For each disease state, histologic clues exist that distinguish one from the other [5-7].

Ultrasonographic or CT scan guidance may be useful, particularly if obtaining a biopsy of a particular region or mass within the liver is desired. Some have advocated that all biopsies be performed under ultrasonographic guidance; however, whether this reduces procedure-related morbidity or is cost effective is controversial [8-11]. Many systems exist for describing the microscopic findings, ranging from simplistic to complex.

In our patients we performed blind percutaneous liver biopsy. Of 34 patients in the first group (Menghini needle) we had 28 appropriate specimen and 6 patients had inadequate specimen. We had only two procedures which failed but the next was successful. In the second group (Tru-cut needle) of 14 patients we had 4 patients with adequate specimen and 10 patients with inadequate specimen. We have repeated the procedure in 6 patients. Despite the inadequate specimen for our pathologist it was possible a proper interpretation of biopsy. We compared both groups (Table 1) using Fisher's exact test which shows the two-tailed P value 0.0006 and 0.0048 respectively for specimen of biopsy and the failure of procedure. These results are considered to be statistically significant.

Table 1: Results of two procedures about specimen quality and the failure of procedure

	Menghini needle	Tru-cut needle
Patients	34	14
Adequate specimen	28	4
Failure of procedure	2	6

Complications of liver biopsy are usually considered to be “major” or “minor”. We consider “minor” complications to include pain, sub capsular bleeding that does not require transfusion or prolonged hospitalization, infection, minor bile leak or hemobilia, and arteriovenous fistula. “Major” complications include bleeding, including hemobilia that requires transfusion, surgery or intensive care management; pneumothorax or hemothorax and death [12].

We compared complications between two groups (Table 2). We had only minor complications such abdominal pain or shoulder pain. Fisher's exact test shows the two-tailed P value 0.7557 which is considered to be not statistically significant.

Table 2: Results of complications between two procedures

	Menghini needle	Tru-cut needle
Patients	34	14
Minor complications	14	6
Major complications	0	0

5. Conclusion

In our experience Menghini needle are superior to Tru-cut needle for obtaining a liver biopsy specimen and failure of procedure is very rare. In both groups the complications has not a significative difference.

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