ABSTRACT

Renal biopsy is notably used for diagnosis and therapy guidance of renal diseases. Percutaneous renal biopsy has crucially improved safety-wise after the routine use of spring-loaded needles and the use of real-time ultrasound guidance. Renal biopsy includes potential complications such as bleeding, infection, pain and loss of kidney. As percutaneous approach is contraindicated, laparoscopic or transjugular renal biopsy can be used as an alternative.

Key words: Renal biopsy; Percutaneous renal biopsy; Complications; Laparoscopic

INDICATIONS FOR RENAL BIOPSY

The analysis of a renal biopsy sample brings about a specific diagnosis and get information about planned treatment. Unexplained acute or rapidly progressive renal failure, nephrotic syndrome, persistent glomerular hematuria, systemic diseases with renal involvement and renal allograft dysfunction are indications for renal biopsy. Bleeding diathesis is one of the most important contraindications. Hypertension, solitary kidney, hypotension, perinephric abscess, pyelonephritis, hydronephrosis, severe anemia, large renal tumors, and multiple cysts are some other relative contraindications to renal biopsy. Shetye et al[2] explained in their study that biopsy adequate tissue was obtained in 96% of all patients. Percutaneous renal biopsy is usually performed in the prone position. Lower pole of the left kidney is preferred to reduce the risk of vessel complications. The transplant kidney biopsy is performed under real-time ultrasound guidance with use of an automated biopsy needle from anterior abdominal wall.

COMPLICATIONS

Percutaneous renal biopsy includes potential complications such as bleeding, infection, pain, loss of kidney and even death. Bleeding complications are classified as either major or minor. Hemorrhage requiring transfusion, bleeding with necessity of nephrectomy, even death are among major complications. Gross hematuria or subcapsular perinephric hematoma that will be resolved without a necessity of further intervention are minor complications.
There are some modifiable factors that influence the renal biopsy complications such as hypertension, abnormality of the coagulation and high serum creatinine. If it is necessary, exist and measures should be taken into account[3].

**ALTERNATIVE APPROACH**

The indications for transjugular renal biopsy (TJRB) are bleeding diathesis, severe hypertension, a solitary or horseshoe kidney, end-stage renal disease or bilaterally small kidneys and morbid obesity[4]. Levi et al[5] recognized TJRB as an alternative, safe and effective technique in patients with renal parenchymal disease in their study. Renal biopsy may be performed with an open incision or laparoscopic technique. This method ensures positive identification of kidneys for a macroscopic diagnosis, and biopsy is better succeeded under direct vision[6]. Laparoscopic renal biopsy is in fact that currently recommended procedure for pediatric cases. This approach is combined with a percutaneous needle biopsy[7].

**DISCUSSION AND CONCLUSION**

The overall incidence of serious complications is low after RB. However, risk factors for bleeding must be analyzed with great care. Tondel et al[8], in their study, shows that gross hematuria rate after biopsy is 1.9%. Corapi et al[9] carried out a study which encompasses the complication rate of macroscopic hematuria is 3.5%. In addition, in the study of Daram et al[10], it is explained that requiring blood transfusion in 3.6-9% of the patients and an incidence of gross hematuria of 3.6-17%.

According to the study of Kim et al[11], the use of 14-gauge versus 18-gauge in native kidney renal biopsies caused greater incidence of complications. Eiro et al[12] carried out a study which explained the frequency of the puncture was an independent risk factor for bleeding complications. Moreover, Pasquariello et al[13] showed that there was a relationship between the depth insertion of needle and the bleeding complications. Both studies of Maya et al[14,15] demonstrated that the use of the real-time ultrasound-guided technique alleviated the risk of major complications. Although these studies indicate that renal biopsy has became more secure, there is still risk.

On the first day of RB, patients need to be followed closely in case of the occurrence of complications such as gross hematuria, flank pain, hypotension and acute renal obstruction.

The RB is significant in the establishment of the diagnosis and management of kidney diseases. The overall incidence of serious complications is low. However, risk factors for bleeding must be analyzed with great care and if possible, they are corrected before the biopsy. TJRB and laparoscopic renal biopsy can be used as an alternative approach.

**CONFLICT OF INTERESTS**

The authors report no conflicts of interest.

**REFERENCES**