RENAL BIOPSY

DR O.A ADEJUMO
MBBS, FWACP, FMCP

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INTRODUCTION

- This is the process of taking tissue sample from the kidney
- First percutaneous renal biopsy was done in 1950s by Iversen, Brun and Alwall
- Franklin-modified Vim-Silverman needle was used for renal biopsy in 1954 by Kark and Meuhrcke

Relevance of Renal Biopsy

- Renal Biopsy has been reported to provide a different diagnosis from what was predicted based on clinical presentation in up to 50-60% of patients

- Also, changes in treatment were effected in 20-50% of patients following renal biopsy

TYPES OF RENAL BIOPSY

- PERCUTANEOUS
- OPEN
- LAPAROSCOPIC
- TRANSVENOUS e.g Transjugular or Transfemoral

INDICATIONS FOR RENAL BIOPSY

- Nephrotic syndrome in adults
- Nephrotic syndrome in children unresponsive to steroid
- Acute kidney injury of unknown cause where obstruction, reduced renal perfusion and acute tubular necrosis have been ruled out.
- Unexplained CKD with normal kidney sizes
- Non-nephrotic proteinuria (> 1g/24 hours)

INDICATIONS FOR RENAL BIOPSY

- Systemic disease with renal dysfunction e.g small vessel vasculitis, Anti-GBM disease, diabetes mellitus with renal complications having atypical features
- Unexplained microscopic haematuria of glomerular origin
- Familial disease such as Alport disease
- Graft dysfunction where ureteral obstruction, renal artery stenosis, urinary sepsis have been ruled out

Patient related Contraindications

- Uncontrolled Hypertension: Blood Pressure >160/95mmHg
- Bleeding Diathesis
- Uraemia
- Obesity
- Uncooperative patients
- Anaemia
- Skin sepsis around biopsy site

Kidney related Contraindications

- Solitary Kidney
- Multiple Cysts
- Renal Neoplasm
- Acute Pyelonephritis
- Perinephric Abscess

PRE-BIOPSY EVALUATION

- This focus on the aspects that may compromise safety and success of the procedure

PRE-BIOPSY EVALUATION

- Full blood count: To ensure patient is not anaemic or thrombocytopaenic (Platelet count should be > 100,000 cells/mm3)
- Urine MCS: To ensure urine is sterile. Treat UTI based on urine MCS if there is infection
- Clotting Profile: PT,PTTK, INR Bleeding Time, Exclude family hx of bleeding problem. Take hx of use of anticoagulant, antiplatelet
- Ensure both PT and PTTK are <1.2 X normal

PRE-BIOPSY EVALUATION

- Discontinue NSAIDs, antiplatelet 5 days prior to biopsy
- Administer DDVAP (desmopressin) if bleeding time is > 10 minutes, urea >20 mmol/l, creatinine >3mg/dl
- Renal USS to ensure patient has two normal sized non-obstructed kidneys
- Ensure blood pressure is controlled
- Take informed consent from patient before the procedure

BIOPSY ADEQUACY

- Inadequate renal tissue could lead to misdiagnosis e.g FSGS could be mistakenly diagnosed as MCD
- A typical biopsy sample will contain 10-15 glomeruli that will be diagnostically useful.
- Adequate biopsy should provide samples for light microscopy, Immunohistology (immunofluorescence/immunoperoxidase)

- Biopsy core can be viewed under an operating microscope immediately to ensure it contains adequate cortical glomeruli for tissue processing and diagnosis

REPEAT BIOPSY

- This may be necessary in

1. Diagnosis of evolving pathological changes such as in Lupus Nephritis

2. Non-response to conventional treatment

POST-BIOPSY MONITORING

- Place patient in supine position after the procedure to rest for about 6-8 hours
- However, if there is evidence of bleeding, best rest should be extended until bleeding subsides
- Examine vital signs regularly: pulse rate, blood pressure for early detection of significant bleeding
- Examine biopsy site for excess bleeding
- Examine every specimen of urine passed for evidence of macroscopic haematuria

COMPLICATIONS

- Pain
- Bleeding
- Haematoma
- Hypertension
- Arteriovenous fistula
- Page kidney

REFERENCE

- Comprehensive Clinical Nephrology. Fourth Edition by Drs. Jürgen Floege, Richard J. Johnson, John Feehally

THANK YOU