RENAL BIOPSY COMPLICATION RATES AND TRANSFUSION REQUIREMENTS IN A TERTIARY TEACHING HOSPITAL

INTRODUCTION AND AIMS: Renal biopsies are a necessary diagnostic test, essential skill for trainee nephrologists to acquire and must be done safely regardless of setting. This study sought to evaluate renal biopsy complication rates between inpatient and day-case patients. Patients suitable for day-case biopsy are risk-stratified according to specified criteria. Comparatively those not satisfying criteria are admitted for biopsy and monitored overnight. Thus, the aim of the study was to ascertain whether our institution’s performance is comparable to nationally quoted risk rates.

METHODS: A retrospective analysis was conducted of 989 consecutive percutaneous renal biopsies between Aug 2013 and Aug 2015 using data from electronic medical records and contemporaneous audit data. All were performed under real time ultrasound guidance, either by consultants or consultant-supervised trainees. Study outcomes included number of passes, biopsy adequacy, hypotension/postural symptoms, failure to acquire an adequate sample, urinary retention, nephrostomy, visible haematuria requiring no intervention, haematoma on imaging, haemorrhage requiring red cell or platelet transfusion, embolisation and/or nephrectomy.

RESULTS: 989 biopsies were carried out over the two-year period. 55.7% (n=551) were carried out as inpatient, 42.4% (n=420) in day case and 1.8% (n=18) in radiology. Mean number of passes were 2 (Range 1-9) and mean cores 1.5.  54.3% (n=537) were performed by a nephrology trainee, 43.6% (n=431) by a consultant (of which 28 were initially attempted by a trainee) and 2.1% by radiologists. Glomerular yield was sufficient for analysis in 98.6% for consultants’ biopsies compared to 93.6% for trainees’. 4% (40 patients) had bleeding complications of any sort; 1.5% (n=15) had isolated visible haematuria post procedure and 2.6% had a haematoma (n=25 perinephric and n=1 mesenteric). 8 went to interventional radiology for embolization and one was not successful requiring nephrectomy. Of these 40 patients with bleeding, 1% (10) were given red cell transfusions (haemoglobin 65-88g/dL) and 3 received platelets (platelets <100× 109/L). The complication rates of haematuria, haematoma and transfusion requirement were significantly higher for inpatient vs outpatient biopsies.

CONCLUSIONS: Despite 54.3% of biopsies being undertaken by renal trainees, we demonstrate a comparable complication rate to the consensus standard with adequate biopsy samples. Only 2.6% of patients had serious complications as evidenced by haematoma on imaging, requirement of transfusion or intervention for bleeding. Furthermore, we evidence an effective risk stratification with our day-case criteria since significantly more complications occur in inpatient compared to outpatient biopsies. This indicates outpatient biopsies can be safely undertaken when appropriately stratified and estimates a saving of between £876-3016 based on the cost of a day-case vs non-elective/elective inpatient bed.