

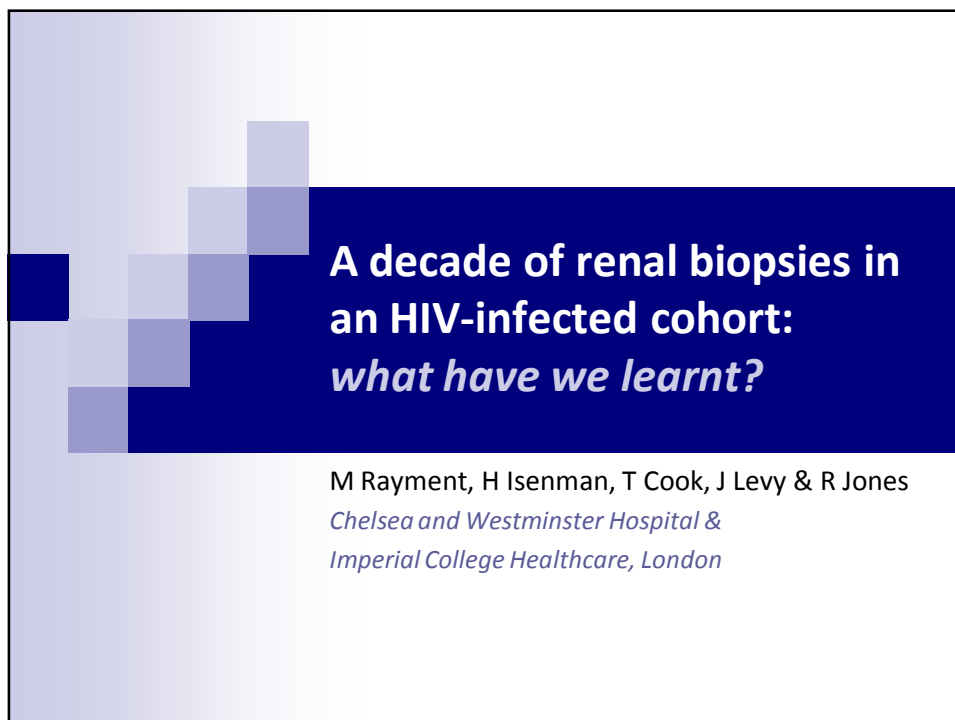


17<sup>TH</sup> ANNUAL CONFERENCE OF THE  
BRITISH HIV ASSOCIATION (BHIVA)

British HIV Association  
**BHIVA**

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**A decade of renal biopsies in  
an HIV-infected cohort:  
*what have we learnt?***

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## Background

- Renal disease is common in HIV-infected individuals
  - Prevalence CKD (eGFR <60 ml/min/1.73m<sup>2</sup>): **2-6%**
  - Multifactorial aetiology CKD with traditional risk factors observed, plus HIV-specific factors (HIVAN/ART)
  - ARF also more common, linked to late presentation
- Eleven years experience of multi-disciplinary approach to management of renal dysfunction in HIV-infected individuals in NW London
- *Do biopsy findings over this period shed any light on the pattern of renal dysfunction encountered?*

Mocroft A et al. AIDS 2007;**21**:1119–1127  
 Wyatt CM et al. AIDS 2007;**21**:2101-3  
 Campbell LJ et al. HIV Med 2009;**10**:329-336  
 Ibrahim F et al. 17<sup>th</sup> CROI, 16<sup>th</sup>-19<sup>th</sup> February, 2010  
 San Francisco, CA. P734

## *Who needs a renal biopsy?*

- Renal biopsy may provide a definitive histological diagnosis when glomerular or interstitial disease is suspected:
  - Acute renal failure or decline in renal function of unknown aetiology
  - Unexplained proteinuria or haematuria

## Methodology

- Renal service database was interrogated to identify all patients who had undergone non-transplant renal biopsy via West London Renal Service in the last eleven years
- Data were collected on:
  - Demographics
  - Referral diagnosis
  - HIV parameters
  - Histological findings
  - Management and clinical outcome

## Results – characteristics of cohort

39 patients underwent renal biopsy between 1999 and 2010

	Non-black patients (22/39 [56%])	Black patients (17/39 [44%])
Mean age (yrs) (range)	45.9 (19 – 65)	43.0 (27 – 60)
Sex	100% male	47% male
Median CD4 (cells/ $\mu$ l) at biopsy (IQR)	479 (329 – 663 )	151 (90 – 255)
Median VL (copies/ml)	<50	163
Proportion on ART at biopsy	95%	71%
Median duration since HIV diagnosis (yrs)	11	1.25

## Principal Histological Findings

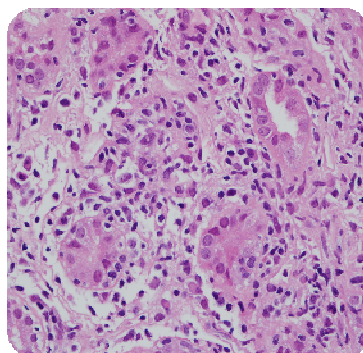
Histological diagnosis	Cases (% total)
<b>Acute tubulo-interstitial nephritis (ATIN)</b>	
- principal diagnosis	8 (21%)
- secondary diagnosis	5 (13%)
<b>Acute tubular damage</b>	6 (15%)
<b>HIV-associated nephropathy (HIVAN)</b>	5 (13%)
<b>IgA nephropathy</b>	4 (10%)
<b>Mixed immune complex disease</b>	4 (10%)
<b>Focal segmental glomerulosclerosis (FSGS)</b>	3 (8%)

Also seen: Membranous glomerulopathy (2), advanced scarring (2), focal necrotising GN (2), and fibrillary, thin membrane and glomerulocystic dilatation (1 each)

Szczzech et al, *Kid Int* (2004) 66:1145-1152  
 Gertholtz et al, *Kid Int* (2006) 69:1885-1891  
 Connolly et al, *Q J Med* (1994) 88:627-634

## Acute tubulo-interstitial nephritis

- 27 year-old Black female. Diagnosed with miliary tuberculosis: new diagnosis HIV infection (CD4 98, VL 425 copies/ml)
- Abrupt deterioration in renal function (Cr 300  $\mu\text{mol/l}$ ) with haematuria and mild proteinuria
- **Bx:** ATIN
- **Mx:** Steroids, TB Rx, ART



*polymorphonuclear and lymphocytic infiltration of interstitium with tubular loss*

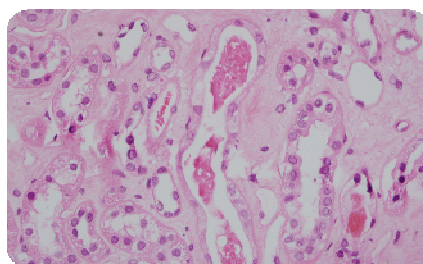
## Acute tubulo-interstitial nephritis

- 54% black patients
- Granulomatous cases x 2: empirical TB Rx
- All non-granulomatous cases on ART (AZT/ABC) with long median duration of infection
- Mean Cr at presentation: **307  $\mu\text{mol/ml}$**
- **Mx: Steroids, ART change, good prognosis**

N=13	
Mean age (yrs) (range)	41.6 (19 – 60)
Ethnicity	54% black
Median CD4 (cells/ $\mu\text{l}$ ) at biopsy (IQR)	163 (114 - 528)
Median VL (copies/ml)	163
ARV experienced	85%
Median duration HIV infection (yrs) (range)	10 (0 – 23)

## Acute tubular damage

- 52 year-old White male, diagnosed HIV-positive 1985. CD4 529; VL<50; history of ankylosing spondylitis
- **ART:** TAZ/r/TDF/ABC
- Gradual decline in Cr (peak 144  $\mu\text{mol/l}$ ), haematuria, proteinuria, low  $\text{PO}_4$
- **Bx:** Acute tubular damage
- **Mx:** Stopped TDF; stabilisation in renal function



*Sloughing of debris in tubular lumen; abnormal tubular epithelial cells*

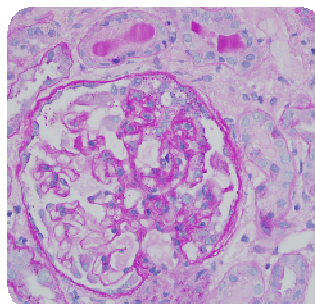
## Acute tubular damage

- All patients were receiving effective ART –
  - 100% PI-based regimens
  - 50% concurrently on TDF
  - multiple other drugs implicated
- Creatinine at presentation: **107 – 1689  $\mu\text{mol/ml}$**
- One required short-term dialysis, remainder recovered renal function with change of ART and medication changes
- All fully recovered

N=6	
Mean age (yrs) (range)	48.8 (19 – 60)
Ethnicity	0% black
Median CD4 (cells/ $\mu\text{l}$ ) at biopsy (IQR)	430 (190 - 529)
Median VL (copies/ml)	<50
ARV experienced	100%
Median duration HIV infection (yrs) (range)	14 (7 – 25 yrs)

## HIV associated nephropathy (HIVAN)

- 56 year-old Black African female, diagnosed HIV+ in 2000
- CD4 316; VL 84K (pre-treated with EFZ/ABC/3TC)
- Presents with oedema
- Creatinine at presentation: **231  $\mu\text{mol/l}$**
- Nephrotic syndrome
- **Bx:** HIVAN
- **Mx:** Restarted ART, ACEi, progressed to RRT over 14 months



*HIVAN: glomerulus with collapse of the capillary tuft and prominent epithelial cell proliferation in Bowman's space*

## HIVAN

- All cases in black patients with HIV viraemia
- Mean creatinine: **397  $\mu\text{mol/l}$**
- All nephrotic
- HIV indicator disease in one patient only
- 80% on RRT at 6 months; 100% at 14 months

N=5	
Mean age (yrs) (range)	44.1 (28 – 56)
Ethnicity	100% black
Median CD4 (cells/ $\mu\text{l}$ ) at biopsy (IQR)	157 (93 - 212)
Median VL (copies/ml)	14 845
ARV experienced	80%
Median duration HIV infection (yrs) (range)	8.63 (0 – 12 yrs)

## Other glomerular disease

- Focal Segmental Glomerulosclerosis (n=3)
  - all in patients established on successful ART, mean Creatinine 172 with heavy proteinuria (mean uPCR 634) Rx: ART change; ACEi – stable renal function
- IgA nephropathy (n=4)
  - heterogenous group, proteinuria and haematuria, variable prognosis
- Mixed immune complex
- Membranous

Flateau et al, IAS 2010, Vienna, Austria; Abstract WEAB0302

## Conclusions & Learning Points

- Biopsy series in stark contrast to previously reported series
  - Higher proportion of ATIN and acute tubular damage associated with effective ART
  - HIVAN infrequently seen
- Biopsy findings useful in clinical management in most cases
- Wide range of other pathologies encountered
- Collaboration with other centres required to identify patterns across cohorts