

Supplementary Table 1. Characteristics of individual patient data.

Authors	No. of cases	Demographic	Co-morbidities	Laboratory findings	Renal presentation	Biopsies	ISH	IHC	EM
Akilesh et al ¹⁶	14	Mean 54.8 years, median 58 years (range 34–77 years); M:F - 6:8; black 7, white 3, Hispanic 4	Present in 11 cases, HTN - 11, DM - 3	SCr - mean 6.8, median 6.3 (range 0.7–12); Proteinuria - UPCr in 10 cases (mean 12.2, median 12.4, range 2.1–21 g/g); 24 h proteinuria in 4 cases (mean 9.6, median 11.2, range 2.5–20 g/d); Hematuria 4/11 cases	-	Glomerular changes in 13 cases, collapsing FSGS in 6 cases, FSGS other than collapsing variant 3 cases, MCD - 1, PIGN - 1, DN - 2; ATI in 12 cases, AIN in 3 cases, Arteriosclerosis in 11 cases (minimal-1, mild-3, moderate-1, severe-6; vascular TMA in 5 cases (3 with co-existing glomerular TMA)	4 cases - negative	4 cases - negative	FPE in 13 cases, TRI - 3 cases, Endothelial cell injury - 4 cases, electron dense deposit 2 cases,
Deshmukh et al ¹⁷	1	42 year, male, Indian	None	SCr – 1 mg/dL, Proteinuria UPCr 8 g/g	-	Collapsing GN, focal ATI, mild IFTA, minimal interstitial inflammation, moderate vascular sclerosis	NA	NA	Viral particles in podocytes, FPE
Farkash et al ¹⁸	1	53 year old, male	Obesity, hyperlipidemia	eGFR 17	-	Mild autolytic changes, ATI	NA	NA	Viral particles within tubular epithelial cells
Fontana et al ¹⁹	2	50 year old, male and 71 year old, male, both white	1 st case - HTN, Brugada syndrome; 2 nd case - HTN, DM, hyperlipidemia, steatosis	1 st case – SCr - 5.85 mg/dL, Proteinuria 0.2 g/d; 2 nd case- SCr - 6.5 mg/dL, Proteinuria 1.2 g/d, hematuria	-	Focal segmental infl cells in GCLs in 1 case; diffuse ATI, calcium oxalate crystals and interstitial inflammation in both cases, focal tubulitis in 1 case; mild arteriosclerosis in 1 case	NA	NA	Performed in one case; no viral particles noted.
Gaillard et al ²⁰	1	79-year-old, male, African	H/o stroke, MGUS, CKD, HTN	SCr - 2.6 mg/dL, Proteinuria UPCr 11.4 g/g	-	Collapsing GN, ATI	NA	NA	Endothelial cell swelling, TRI, FPE

Continuation of Supplementary Table 1.

Authors	No. of cases	Demographic	Comorbidities	Laboratory findings	Renal presentation	Biopsies	ISH	IHC	EM
Golmai et al ¹¹	12	Mean 70.2 year, median 75 year (range 49–92); M:F 10:2; Hispanic 6, black 3, white 3	Present in 9 cases; HTN - 9 cases, DM - 3, CAD - 3, CKD - 1	SCr - mean 5.2, median 5.2 (range 2.35–11 mg/dL); proteinuria (11 cases on dipstick), 30 mg/dL in 8 cases, 100 mg/dL in 3 cases; Hematuria 6/11 cases.	-	Glomerular changes in 3 cases (DN - 1 case, mild mesangial expansion - 2 cases, glomerular hypertrophy - 1 case), ATI in 9 cases (mild - 3 cases, moderate - 3 cases, severe - 3 cases), muddy casts 3 cases, oxalosis 1 case, mild AIN 1 case, IFTA (minimal - 3 cases, mild - 8 cases, moderate 1 case); Vascular sclerosis (mild - 1, moderate - 6, severe - 4, absent - 1)	Four cases negative	12 cases - all negative	No viral particles
Gupta et al ²¹	2	71 year old, male, Asian and 54 year old, male African-American	1 st - DM-II, HTN, BPH; 2 nd - NA	1 st - SCr - 4.49 mg/dL, proteinuria 16 g/d (UPCR 18.46); 2 nd - SCr - 4.67 mg/dL, proteinuria UPCR 16 g/g	-	Collapsing GN and diffuse ATI in both cases, tubular microcysts - 1 case, IFTA (moderate - 1, severe - 1), interstitial inflammation - 1, severe fibrointimal thickening - 1 case	NA	NA	Endothelial cell swelling and diffuse FPE in both cases
Su et al ⁴	26	Mean 68.9 years; range - 39–87 years; median 66 years; M:F - 19:7; race - NA	HTN - 11, DM - 3, CKD - 2, Cancer - 6, NA - 6, none - 4	SCr (mean - 1.4, median - 0.94, range 0.35–5.2, NA - 8);	-	Glomerular changes - 4 cases, FSGS - 2 cases, glomerular capillary thrombus - 3 cases; ATI (mild - 4, moderate - 13, severe - 9), pigmented casts - 3 cases; Arteriosclerosis (mild - 8, moderate - 9, severe - 9)	NA	Performed in six cases - positive in 3 cases	Performed in 8 cases - CoV like particles in 7 cases, subendothelial lucent expansion - 5, electron-dense deposits - 2 cases
Huang et al ²²	1	65 year old, female, Chinese	HTN	SCr 1.1 mg/dL; Proteinuria 1.07 g/d (UPCR - 0.288 g/g); Hematuria	-	IgAN, focal ATI, moderate IFTA	NA	Negative	Electron dense deposits

Continuation of Supplementary Table 1.

Authors	No. of cases	Demographic	Comorbidities	Laboratory findings	Renal presentation	Biopsies	ISH	IHC	EM
Izzedine et al ²³	2	49 year old, female, Antilles and 38 year old, female, west African	1 st -CKD, heart transplantation, HTN, DM, obesity; 2 nd - CKD, SLE, HTN, Obesity	1 st - SCr 8.6, proteinuria 6.6 g/d, 2 nd - SCr 11.7, proteinuria NA; Leukocyturia in 2 cases	-	Collapsing GN in both cases, minimal mesangial expansion in 1 case, ATI and tubular microcyst in both cases, IFTA (minimal - 1, moderate - 1), interstitial inflammation	NA	Negative	NA
Jhaveri et al ²⁴	1	69 year old, female, Caucasian	Asthma	SCr - 4.07 mg/dL. Proteinuria 1.4 g/d, hematuria	-	Renal cortical necrosis due to TMA; arteriole thrombi	NA	NA	Fibrin deposits in glomerular capillary loops
Kadosh et al ²⁵	1	56 year old, male, African-American	CKD, heart tx	SCr - 7.78 mg/dL, Proteinuria 1.97 g/d,	-	Collapsing GN, ATI	NA	NA	Viral particles within tubular epithelial cells
Kudose et al ²⁷	14	Median 54 years, mean 51.3 years (range 25–72 years); M:F - 10:4; 11 black, 2 white, Asian 1	Present in 13 cases, HTN - 8, Obesity -7, OSA - 1, cancer - 3, DM - 3, HCV - 1, hyperlipidemia - 4, gout - 2, tobacco use - 2, AF - 2, vascular disease - 3, Heart tx - 1, GERD - 2, SLE - 1	SCr mean 7.8, median 6.1 (range 0.8–20); Proteinuria 24 h UP estimation in 10 cases (mean 9.84, median 8.9, range 0.5–21 g/d); dipstick in 4 cases; hematuria in 6 cases	-	Glomerular changes 10 cases (Collapsing GN - 5 cases, MCD - 1, MGN - 2, Lupus nephritis - 1, Anti-GBM GN - 1); ATI in 11 cases, tubular microcysts in 7 cases, pigment casts - 1, RBCs casts - 1, IFTA (mild - 5, moderate - 3, severe - 2, absent - 1), interstitial inflammation - 9 cases, vascular sclerosis (mild - 5, moderate - 5, severe - 3, none - 1)	Negative in all cases	Negative in all cases	Performed in 13 cases (of these glomeruli absent in 3 cases) - variable FPE in 10 cases, TRI -6 cases,
Kissling et al ²⁶	1	63 year old, male, black	HTN	SCr - 8.4 mg/dL, Proteinuria 5 g/L,	-	Collapsing GN, ATI	NA	NA	Viral particles within podocytes
Larsen et al ²⁸	1	44 year old, female, African-American	DM - II, HTN, dyslipidemia, DKD	SCr - 11.4, BUN - 34; proteinuria - 500 mg/dL (UPCR-25g/g); hematuria	-	Collapsing GN; minimal mesangium expansion, ATI, interstitial inflammation, IFTA-moderate	DIF-negative		FPE, TRIs

Continuation of Supplementary Table 1.

Authors	No. of cases	Demographic	Co-morbidities	Laboratory findings	Renal presentation	Biopsies	ISH	IHC	EM
Magoon et al ¹³	2	28 year old, female, African-American, 56 year, male, African-American	1 st -Asthma, 2 nd HTN, CKD	1 st case - SCr 6.5 mg/dL, proteinuria UPCR 2g/g; 2 nd case - SCr - 7.7 mg/dL, proteinuria UPCR >21 g/g	-	Collapsing GN, diffuse ATI, mild IFTA and interstitial inflammation in both cases, Mild arteriosclerosis in 1 st case while severe AS in 2 nd case	NA	NA	Diffuse FPE in both cases
Malhotra et al ²⁹	1	64 year old, male, African-American	DM, HTN, CKD, HIV	SCr - 2.3 mg/dL, Proteinuria UPCR 2.75 g/g, 500 mg/dL, hematuria	-	Collapsing GN; ATI, focal pyelonephritis and oxalosis, IFTA-30%			FPE
Malik et al ³⁰	1	57 year old, male, African-American	NA	SCr - 10.2; BUN - 100; Nephrotic range proteinuria (UPCR-14.8 g/g)	-	Collapsing GN; Diffuse ATI, mod interstitial inflammation, moderate to severe arteriolosclerosis	DIF-negative		NA
Moeinzadeh et al ⁴¹	1	25 year old, male, Iranian	None	SCr - 5.5 mg/dL, Proteinuria 2.9 g/d, hematuria	-	ANCA associated GN			Not done
Nlandu et al ³²	1	48-year-old, male, African	DM - II, HTN	SCr - 15.98; BUN - 222; Anuric	-	Collapsing GN; Diffuse ATI, tubular microcysts, casts, patchy IFTA, patchy interstitial inflammation, no vascular sclerosis	NA	NA	NA
Nasr et al ³¹	13	Median 55.2 years, Mean 52 years (range 30–81 years); M:F - 12:1; black 9, Hispanic 2, white 2	NA	SCr – mean 8.0, median 8.9 (range 1.5–14); Proteinuria median 5.5, mean 7.5 (range 2.9–14 g/d); Hematuria 10 cases	-	Glomerular changes in all cases - collapsing GN - 8 cases (among these IgAN in 1 and DN in 1), MGN - 2, HSP nephritis - 1, DN - 3; diffuse ATI in 11 cases, tubular microscyst - 7 cases, IFTA (mild - 8, moderate -1, severe - 3, none - 1), interstitial inflammation in 12 cases, Arteriosclerosis (mild - 3, moderate - 5, severe - 2, none - 3)	Performed in 1 case-negative	NA	Performed in 12 cases- FPE in all cases, TRI - 4 cases.

Continuation of Supplementary Table 1.

Authors	No. of cases	Demographic	Co-morbidities	Laboratory findings	Renal presentation	Biopsies	ISH	IHC	EM
Papadimitriou et al ¹⁰	2	52 year old, male, and 64 year old, male,	1 st case - HIV, HTN, CAD, Factor V deficiency; 2 nd case - AF, hyperlipidemia, gout	SCr - 7.5 and 4.31; BUN - 30 and 130; Proteinuria - UPCR 1.85 and 7.4; 2 nd case-4.37 g/day	-	1 st case - minimal mesangial expansion; 2 nd case - Perihilar FSGS; Diffuse ATI, mild IFTA and PTC endothelial injury in both cases; no vascular changes	ISH-Negative in both cases		PTC injury
Peleg et al ³³	1	46 year old, male, West-African	Obesity, OSA	SCr - 19.9; BUN - 135; Proteinuria-10.37 g/d (UPCR - 5.8g/g)	-	Collapsing GN; diffuse ATI, moderate interstitial inflammation, IFTA - 10%; moderate arteriosclerosis	DIF-negative		Injured cortical tubules, no viral particles
Xia et al ⁴²	10	Mean 69.1 years, median 66 years (range 62–86 years); M:F - 8:2,	Present in 7 cases, HTN - 5, CAD - 2, DM - 1, HBV - 1	SCr - mean 2.07, median 1.65, (range 1.4–4.8); Proteinuria NA	-	Non-specific glomerular changes in 4 cases - glomerular hypertrophy in 1 case, focal ischemic sclerosis - 2 cases, Endothelial swelling - 1 case; Focal ATI in all cases, vascular changes in form of intimal hyperplasia (7 cases) with hyalinosis (4 cases), venous thrombosis in 1 cases (APLA positive)	NA	Negative	No viral particles
Rossi et al ³⁴	1	49 year old, male	None	NA	Oligoanuric AKI	No specific glomerular lesions; extensive ATI; mild diffuse mixed interstitial inflammation; focal lymphocytic tubulitis;	DIF-negative		No viral particles

Continuation of Supplementary Table 1.

Authors	No. of cases	Demographic	Co-morbidities	Laboratory findings	Renal presentation	Biopsies	ISH	IHC	EM
Sharma et al ³⁵	10	Mean 65 years, median 66.5 years, range 45–77 years; M:F - 1:1; black - 5, Hispanic - 3, white - 3	HTN - 7, DM - 3, none - 2	SCr mean - 6.64, median - 6.15, range 2–13.1 mg/dL; proteinuria (9 cases) - mean 3.5, median 2.8 (range 0.9–7.6 g/d); hematuria-6		Glomerular changes - 8 cases (1 - healed collapse, TMA - 2, Global glomerulosclerosis, 70% - 2, cortical necrosis - 1, chronic sclerosis - 1, diabetic kidney disease - 1); tubular pathology 9 cases - ATI (mild - 2, moderate - 5, widespread- 2), myoglobin casts - 1, Interstitial inflamm - 1 (mild); IFTA (mild - 7, moderate - 3); vascular sclerosis (mild - 2, moderate - 5, severe - 4)		Negative in all cases	Fibrin thrombi - 2, endothelial injury - 4, subendothelial widening - 4, FPE -1, thin GBM - 1, thick GBM - 1
Sharma et al ³⁶	2	67 year old, female, and 49 year old, male; both African-American	One case - HTN, dyslipidemia, DM - 2, OSA, GERD; 2 nd case - HTN, PVD, arthritis, cardiomyopathy	SCr - 2.2 and 4.85; BUN - 33 and 45 mg/dL; Proteinuria - UPCr 3.27 and 2.6 g/g, dipstick (100 mg/dL and >500 mg/dL); Leukocyturia in both		Collapsing GN in both cases; glom RBCs congestion - 1 st case; Diffuse ATI and mild IFTA - both cases; minimal to mild interstitial inflammation; mild vascular sclerosis - 1 st case	NA	NA	FPE and endothelial TR structures in both cases
Shetty et al ³⁷	5	Mean 57.4 years, median 56 years (range 49–64 years), M:F - 3:2, African ancestry	4 cases - HTN - 4 cases, CKD - 3, DM - 2, cancer - 1, hyperlipidemia - 1, MGUS - 1	Mean SCr - 8.47, median SCr - 8.82 (range 2.35–13.52); Proteinuria mean - 7.9, median - 8 .3, range 0.6–12.06 g/d; hematuria - 1 case		Collapsing GN - 2 cases; mesangial expansion and HC - 3 cases (2 mild, 1 moderate); tubular and vascular pathology-NA	NA	NA	Podocytopathy - 5 cases, protein overload tubulopathy - 5, increased phagolysosomal activity - 4
Suso et al ³⁸	1	78-year-old, male	HTN, alcoholic, dyslipidemia, cancer, AV stenosis	SCr - 1.35 mg/dL, Proteinuria 10.7 g/d, hematuria		HSP nephritis	NA	NA	FPE, electron-dense deposits

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Uppal et al ³⁹	2	64-year-old, male African-American, 46 year old, male, South Asian	1 st case - none; 2 nd case - DM	1 st case – SCr - 7.87 mg/dL, Proteinuria UPCR 5g/g, hematuria, leukocyturia; 2 nd case - SCr – 4 mg/dL, Proteinuria 100 mg/dL, hematuria	-	Both cases - ANCA associated GN, segmental thrombi in GCL - 1 case along with ATI; mild IFTA, and moderate arteriosclerosis in one case	NA	NA	Rare mesangial deposits in one case
Wu et al ⁴⁰	6	Mean 54.8 years (range 37–65), M:F - 4:2, Black	CKD - 3, HTN - 4, DM - 2, solitary kidney - 1	Mean SCr - 6.84, median 5.8 (range 2.9–11.4); Proteinuria - Dipstick 3+ in all; UPCR in 5 cases (mean 11.9, median 12.7, range 3.6–25g/g); Hematuria - 2 cases; leukocyturia - 2 cases	-	Collapsing GN in all; DN-1 case; ATI - all (diffuse - 5, focal - 1); interstitial inflammation in 1 case; focal AIN and tubulitis in 1 case (drug induced HS); IFTA (mild - 3, moderate - 3)	Performed in 6 cases- all negative	ND	Performed in 5 cases- FPE in all cases, reticular aggregates in 3 cases

AKI: Acute kidney injury, AIN: Acute interstitial nephritis, APLA: Anti-phospholipid antibodies, ATI: Acute tubular injury, BUN: Blood urea nitrogen, CAD: Coronary artery disease, CKD: Chronic kidney disease, DIF: Direct immunofluorescence, DM: Diabetes mellitus, DN: Diabetic neuropathy, F: Female, FPE: Foot process enhancement, FSGS: Focal segmental glomerulosclerosis, GCL: Glomerular capillary loops, GERD: Gastro-esophageal reflux disease, HTN: Hypertension, IgAN: IgA nephropathy, IFTA: Interstitial fibrosis and tubular atrophy, M: Male, MGN: Membranous nephropathy, MGUS: Monoclonal gammopathy of uncertain significance, OSA: Obstructive sleep apnea, PTC: Peritubular capillary, PVD: Peripheral vascular disease, SLE: Systemic lupus erythematosus, SCr: Serum creatinine, TMA: Thrombotic microangiopathy, TRIs: Tubule-reticular inclusions, UPCR: Urine protein creatinine ratio.