Systematic Review of the Oxford Classification of IgA Nephropathy: Reproducibility and Prognostic Value

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Systematic Review of the Oxford Classification of IgA Nephropathy: Reproducibility, Prognostic Value, and Immunosuppressive Guidance

Supplemental Table I

Details of 92 papers with Oxford classification of IgA nephropathy and multivariate analysis of outcome including clinical factors and at least one individual Oxford element

Reference number in Supple-mental Table 1 (listed below), first author, year	Number of patients	Number of observers [minimum number of glomeruli]	Age of patients	Exclusions apart from HSP, SLE, HIV, DM, liver disease, etc.	Outcome measure: number reaching outcome	Length of follow-up [min-imum* unless ESRD in that time]	Immuno-suppress-ion before / after biopsy	Factors in multivariate analysis	Factors related to outcome	Notes

1 Cattran 2009	265	3, 4, or 5 [8]	4y-73y, median 32y	eGFR <30; p'u <0.5	1: 50% decline in eGFR or ESRD (34): 22% 58/265; 2: rate eGFR decline	69m median, minim-um 12m	14% / 29%	A: initial eGFR, p'u, MAP; MST: B: initial eGFR, fup p'u, fup MAP; MST [**not l'supp; no clin stats]**	1: A: M1 p=0.01, T p<0.001: 1: B: M1 p=0.03, T p<0.001; 2: A: S1 p=0.005, T p<0.001: 2: B: S1 p=0.03, T p<0.001	E, crescents, arterial lesions not associated with outcome
2 Alamartine 2011	183	2 [8]	mean 43y	none	doubled scr or ESRD	68m median,	? / 31%	eGFR, p'u, BP; MEST [**not l'supp]**	**eGFR p<0.01**	crescents not analysed

					(30): 20% 36/183	77m mean				
3 El Karoui 2011	128 adults (only 121 followed); same cases as **7** El Karoui 2012	2 [8]	18-78y, mean 38.7y	?	1: doubled scr or dialysis (36): 34% 41/121; 2: rate eGFR decline	44m mean	1 patient / none	eGFR, p'u, MAP; MEST [**none l'supp]**	1: **eGFR** **p<0.0001**; M1 p=0.027: 2: **eGFR** **p=0.012**, T p<0.001	crescents not analysed
4 Katafuchi 2011	702	not said [10]	8y-82y, median 30y	?	ESRD 12% 84/702	62m median, minim- um 12m*	? / 32%	eGFR, p'u, MAP, **steroids**; MEST +/- C: also done on	**eGFR** **p<0.01,** **p'u** **p<0.01, no** **steroids**	crescents present or absent: in 416 meeting

								416 meeting Oxford criteria	**p<0.01**; without C: S1 p=0.01, T1 p<0.01, T2 p<0.01; with C: T1 p<0.01, T2 p<0.01, C p=0.04	Oxford criteria, only T significant
5 Shi 2011	410 (only 294 followed)	3 [8]	mean 31y	eGFR <30; p'u <0.5	ESRD 7% 30/410	38m median, minim-um 12m	? / 41%	eGFR, p'u, MAP, **l'supp**; MESTC	S1 p=0.03, T p<0.001 [**no clin stats]**	crescents present or absent
6 Yau 2011	54	2 [not said]	>15y, mean 41y	ESRD at biopsy	50% decline in eGFR or	5.8y mean	? / 19 patients 35%	age, sex, race, scr or eGFR,	T p=0.01 [**no clin stats]**	crescents not analysed

					ESRD (7): 19% 10/54			p'u, BP; MEST [**not l'supp]**		
7 El Karoui 2012	128 adults (only 121 followed); same cases as **3** El Karoui 2011	2 [8]	18-78y, mean 38.7y	?	1: doubled scr or dialysis (35) 40/121 33%; 2: rate decline eGFR	44m mean	1 patient / none	eGFR, p'u, BP; laboratory evidence TMA, morphologic TMA; MEST [**none l'supp]**	1: **eGFR p<0.0001**, lab evid TMA p=0.03; 2: **eGFR p=0.01**, lab evid TMA p=0.001, S1 p=0.04	crescents not analysed

8 Gutierrez 2012	141 with slight or no p'u	not said [not said]	5-71y, mean 23.7y	eGFR <61; p'u at least 0.5	1: scr increase >50% 5/141 4%; 2: clinical remiss-ion 38% 53/141	108m median	? / none	1: time averaged p'u, S; [**none l'supp]** 2: initial p'u, smoking, M [**none l'supp]**	1: **not p'u** S1 p=0.04; 2: **p'u p<0.001**, M0 p=0.02	crescents not analysed
9 Halling 2012	99 children (only 90 with Oxford scores)	1 [5]	children: mean 12y at first invest-igation	none	ESRD (15) or mGFR decline >50% 18/99 18%	13y mean, minim-um 5y*	2 patients / 11 patients 11%	A 74 pts: initial p'u; MESTC, global scl, **+/- l'supp**; B 44pts: p'u at 1y; MESTC,	A: none; B: M1 p=0.012, E1 p=0.002, T p=0.007, C p=0.002,	crescents present or absent; global sclerosis present or absent; **no**

								global scl, **+/- l'supp**	global scl p=0.014 [**no clin stats]**	**difference if l'supp in multivar-iate**
10 Kataoka 2012	43	2 [5]	15-65y, mean 40.0y	under 10y fup; eGFR <50	1.5-fold increase in scr 16/43 37%	all 10y	none / 22 patients 51%	age, sex, eGFR; MESTC, global scl score, artery score, maximum glomerular area [**not l'supp]**	**eGFR p=0.01**, M1 p=0.007, global scl p=0.04, max glom area p=0.0009	crescents present or absent
11 Le 2012	218 children	2 [10]	2-17.9y, median 14y	eGFR <30; p'u <0.5	50% decline in eGFR or	median 56m, minim-	? / 56%	eGFR, p'u, MAP; MEST [**not l'supp]**	T p=0.04 [**no clin stats]**	crescents present or absent

					ESRD 24/218 11%	um 12m*				
12 Lee 2012	69 adults	1 [not said]	over 18y, median 34y	eGFR decline >50% in 6m	50% decline in eGFR or ESRD (10) 16/69 23%	median 85m, minim-um 3y	none / 13 patients 19%	eGFR, p'u, MAP; ET [**not l'supp]**	E1 p=0.004, T p=0.044 [**no clin stats]**	crescents not done
13 Moriyama 2012	42 with nephrotic syndrome (only 35 with Oxford scores)	not said [8]	mean 34.2y	p'u <3.5; minimal change nephrop-athy	ESRD 24/42 57%	?	? / 27 patients 64%	sex, age, eGFR, p'u, BP, h't, **steroids**; MEST	male p=0.0241, **no stds p=0.0024**, **eGFR p<0.0001**,	crescents not done

									T p=0.0138	
14 Shima 2012	161 children	1 [8]	3-19.4y, median 11.7y	none	eGFR <60 7/161 4%	54m median, minim-um 12m	? / 16%	A: p'u; MT; B: p'u; M, modified E, modified T, modified C = no more than 30%, >30% [**not l'supp]**	A: **p'u p=0.007**, M1 p=0.03, T p=0.01; B: **p'u p=0.004**, C >30% p=0.02	crescents present or absent, not associated with outcome
15 Zeng 2012	1026 adults	2 [10]	18-73y, mean 34y	eGFR <30; p'u <0.5	1: 50% decline in eGFR or ESRD (90) 15%	median 53m, minim-um 12m*	1.5% / 31%	A: initial eGFR, p'u, BP; MST; B: initial eGFR, fup p'u, fup BP; MST	1: A: M1 p=0.01, T p<0.001; B: T p<0.001;	crescents present or absent, not associated

					159/ 1026; 2: rate eGFR decline			[**not l'supp, no clin stats]**	2: A: M1 p=0.005, T p<0.001; B: M1 p=0.02, T p<0.001	with outcome
16 Moriyama 2013	38 (only 34 with Oxford scores)	not said [8]	mean about 38y	?	50% decline in p'u ?n	all at 1y	? / ?	mean BP, p'u, h't, eGFR, EPA therapy; MEST	ONLY EPA p=0.0285	crescents not done [**not l'supp in multivar]**
17 Ochi 2013	41 = 26 tonsillect-omy + steroids, 15 steroids	not said [not said]	mean 31.1y	under 1y fup	clinical remiss-ion 21/41 51%	all at 1y	? / all	eGFR, BP, p'u, time from onset, tonsillex; MEST [**all l'supp]**	**eGFR p=0.0021**, tonsillex p=0.0002, T p=0.0374	crescents not done

18 Tanaka 2013	698 derivation cohort	not said [10]	mean 36.1y	none	ESRD 73/698 10%	median 4.7y	? / ?	eGFR, p'u; MST1T2 [**not l'supp]**	**p'u 1-3.5 p=0.01, p'u >3.5 p<0.001, eGFR 15-29 p=0.003, eGFR <15 p<0.001**, M1 p=0.03; S1 p=0.003; T1 p<0.001, T2 p<0.001	crescents not done

19 Coppo 2014 =VALIGA	1147	centrally reviewed [8]	mean 36y, 174 under 18y	none	1: 50% decline in eGFR or ESRD (135): 16%; 2: rate eGFR decline	median 4.7y, minim-um 12m*	10% / 46%	Initial eGFR, fup p'u, fup MAP; MST [**not l'supp]**	1: S1 p=0.02, T p<0.001; 2: M1 p=0.04, T p=0.01 [**no clin stats]**	E not predict any outcome, even in no l'supp: cf **1** Cattran: crescents present or absent
20 Espinosa 2014	283	locally at 11 centres / not said [not said]	mean 39.1y	none	ESRD 58/283 20%	6y median	? / 35%? Ambig-uous	age, eGFR, p'u, BP; C4d staining; ST1T2 [**not l'supp]**	**eGFR p<0.001, p'u p=0.01**, C4d staining	crescents not done

									p=0.01, T2 p=0.01	
21 Faria 2014	74 adults	not said [8]	18-78y, median 39y	?	50% decline in eGFR or ESRD (16): 20/74 27%	4y median	? / 22%	eGFR, p'u, MEST [**not l'supp]** [both logistic regression, Cox]	**eGFR [log p=0.018, Cox p<0.0005],** T1/2 [log p=0.011, Cox p=0.027]	crescents not done
22 Kfoury 2014	70	4 [not said]	mean 32.2y	?	50% decline in eGFR n?	3.5y median	? / ?	age, sex, eGFR, BP; MEST [**not l'supp]**	none of MEST significant [**no clin stats]**	crescents not done

23 Lee 2014	430 adults	1 [8]	19-73y, mean 34.9y	?	1: 50% decline in eGFR 59/430 14%; 2: rate eGFR decline	61m mean, minim-um 6m*	? / 10%? Ambig-uous	i: eGFR, p'u, MAP; C; ii: eGFR, p'u, MAP; MEST1T2; iii: eGFR, p'u, MAP; MEST1T2C [MESTC for rate decline] [**not l'supp]**	1: i-iii: **eGFR p<0.001, p'u p<0.001**; i not C; ii: T1 p=0.01, T2 p=0.001; iii: T1 p=0.003, T2 p=0.001, not C; 2: iii: S1 p=0.03, T	crescents present or absent, not associated with outcome [**no clin stats for rate eGFR decline]**

									p=0.04, not C	
24 Moriyama 2014	1012 (only 857 with Oxford scores)	not said [8]	32.9y mean	?	ESRD n?	mean 7.9y	? / 40%	age, sex, BMI, eGFR, p'u, MAP, salb, suric, chol, IgA/C3; T [**not l'supp]**	**eGFR p<0.0001**, suric p=0.0176, **p'u p=0.0116**; not T	crescents not in analysis
25 Park 2014	500 adults	not said [8]	at least 18y; mean 37.1y	?	doubled scr or ESRD (35) 10% 52/500	mean 68m, minim-um 12m	? / 11%	age, eGFR, BP, MAP, p'u; MEST1T2 [**not l'supp]**	**p'u p<0.001, eGFR p=0.002**; T1 p<0.001,	crescents not done

									T2 p<0.001	
26 Oshima 2015	31 aged at least 60y (only 26 with Oxford scores)	not said [8]	62-69y, median 64.5y	?	ESRD 8/31 26%	mean 4.85y, minim-um 6m	? / 16 patients 52%	MAP, salb, eGFR, p'u, sIgA, DM; M [**not l'supp]**	none, including clinical	crescents not done
27 Shen 2015	60 with 2 biopsies and i'supp after first biopsy	2 [10]	mean 28.9y at first biopsy	under 6m between 2 biopsies	30% decline in eGFR or ESRD after second biopsy 15/60 25%	median 32m (after first biopsy?)	? / all	A: initial eGFR, p'u, MAP; METC, necrosis; B: initial eGFR, fup p'u, fup MAP; METC, necrosis [**all**	on first biopsy: A: M1 p=0.023, T p=0.049; B: M1 p=0.017, T p=0.049; on second	crescents present or absent; capillary necrosis present or absent

								l'supp, no clin stats]	biopsy: A: T p=0.032; B: T p=0.011	
28 Barbour 2016	901 adults from other studies	differ between studies [differ between studies]	at least 18y; mean 38.1y	ESRD at biopsy	50% decline in eGFR or ESRD 162/901 18%	5.6y median, minim-um 2y	? / 36%	initial eGFR, p'u, MAP; combined MEST score; MEST1T2 [**not l'supp]**	**eGFR p=0.02, p'u p<0.0001, MAP p<0.0001**, MEST score p<0.0001, M1 p=0.018, T1	crescents not in analysis

									P<0.0001, T2 p<0.0001	
29 Caliskan 2016	111	1 [8]	16-75y, mean 35y	none	50% decline in eGFR or ESRD (37) 37% 41/111	mean 33m, minim-um 12m*	? / 47%	age, sex, BMI, eGFR, p'u, BP, Hb, salb, suric, C3 staining intensity; MEST [**not l'supp]**	**eGFR p=0.004**, Hb p=0.037, suric p=0.046, C3 intensity p=0.049; none of MEST	crescents not in analysis

30 Chakera 2016	147 adults	2 or 3 [8]	over 18y; median 39.93y	any l'supp treatment	1: ESRD 56/147 38% 2: rapid loss eGFR >5 ml/min/ 1.73m^2/y 42/147 29%	82m mean	none / none	eGFR, p'u; MESTC [**none l'supp]**	1: **eGFR p<0.001, p'u p=0.013**, E1 p<0.001; 2: **p'u p=0.006**, E1 p=0.025, T2 p=0.011	crescents present or absent [some p values differ between text and Abstract]
31 Iwasaki 2016	75 with heavy p'u, all i'supp (only 61	not said [8]	mean 32.3y	p'u <1g	ESRD n?	minim-um 12m	? / all	eGFR; T [**all l'supp]**	**eGFR p=0.006**	crescents not done

	with Oxford scores)									
32 Kaneko 2016	314	5 on 45 biopsies, 1 on 269 biopsies [8]	13-72y, median 36y	eGFR <30	50% decline in eGFR or ESRD 14% 43/314	106m median, minim-um 12m	? / 60%	only on 186 with p'u at least 0.5g: MAP, eGFR, p'u, age; Ex; arteriolar hyalinosis	**eGFR p=0.041** [**not l'supp in multivar]**	Ex = crescent in >10% of circum-ference of glomerulus
33 Li 2016	105	1 [not said]	median 34y	?	30% decline in eGFR 27% 28/105	13m median	none / 36%	vit D deficiency, sex, systBP, p'u, eGFR, salb; T	vit D deficiency p=0.008, **systBP p=0.036**	crescents not done [**not l'supp in multivar]**
34 Shin 2016	627 adults	1 [8]	at least 20y,	eGFR <30	1: 50% decline in	56.8m mean,	? / 7%	1: A: sex, age, MAP, eGFR,	1: A**: p'u p=0.01**, S1	crescents not done

			median 32y		eGFR or ESRD (47) 10% 62/627; 2: rate eGFR decline	minim-um 6m		p'u; MEST1T2; 1: B: sex, age, MAP, eGFR, p'u, MEST1T2, IgG deposit grades; 2: eGFR, MAP, p'u; MEST, IgG deposit grades [**not l'supp]**	p=0.001, T2 p<0.001; 1: B: **p'u p=0.04**, S1 p=0.002, T2 p<0.001, IgG grade1 p=0.03, grade 2/3 p=0.04; 2: S1 p<0.001, T2 p<0.001,	[**no clin stats in 2: rate eGFR decline]**

									IgG grade 2/3 p<0.001	
35 Stefan 2016	121	1 [8]	over 18y; mean 40.1y	?	doubled scr or ESRD 34/121 28%	59.7m mean	? / 49%	A: eGFR, p'u, BP; MESTC; B: age, sex, eGFR, p'u, BP, h't; IgG deposition; **l'supp**; MESTC	A: **eGFR p<0.01**, C p=0.03; B: **eGFR p=0.001**, S1 p=0.03, C p=0.004; **l'supp NS**	crescents present or absent [**not l'supp in A]**
36 Woo 2016 see **80** Woo 2021	102 with stored blocks from 1970-1983	1 [8]	mean 24.36y	?	ESRD at 5y 14% 14/102; at 20y 39%	mean 21.4y	none / ? not said: "non-random use of	age at last fup, sex, BP, eGFR, p'u, h't, MESTC, arterial int	at 5y: **p'u p=0.007**, h't p=0.001, T p=0.03,	crescents not associated with outcome **no**

					40/102; at 30y 47% 48/102		immuno-supp-ression"	thick, % of gloms global scl, seg scl [how different from S1?] [**not l'supp]**	seg scl? [NOT S1] p=0.02; at 20y: T p=0.04; at 30y: M1 p=0.03, global scl p=0.01	**clin signif at 20y or 30y**
37 Coppo 2017	261 in VALIGA	centrally reviewed [8]	all under 23y, mean 15.27y: 174 under 18y,	none	1: 50% decline in eGFR or ESRD (14) 23/261 9%; 2:	4.91y median: 4.63y median under 18y; minim-	? / 48%: 51% under 18y	1: fup p'u, fup BP, MST; [**not l'supp]** 2: age, sex, initial eGFR, fup p'u, fup	1: all: M1 p=0.016, S1 p=0.018, T p=0.008; under 18y: S1	crescents present or absent [**no clin stats in 1: RF or 2: rate eGFR decline]**

			mean 12.72y		rate eGFR decline	um 12m*		BP; MST [**not l'supp]**	p=0.016; 2: all and under 18y: none of MST	
38 Fabiano 2017	54 children	1 [6]	2-18y, mean 9.7y	eGFR <60	50% decline in eGFR 19% 10/54 (ESRD 5)	90m mean, minim-um 9m	? / 13 patients 24%	initial p'u, E [**not l'supp]**	**p'u p=0.003**, E1 p=0.002	crescents present or absent
39 Haas 2017	3096 from other studies = 234 Oxford, 1145	different between studies [8 or 10]	mean 35y	different between studies	50% decline in eGFR or ESRD (?264)	4.7y median, minim-um 12m*	? / 37%	initial eGFR, fup p'u, fup MAP; MESTC [**not l'supp]** [1950 no	All: **eGFR and p'u p<0.001, MAP p=0.001**,	crescents present or absent

	VALIGA, 700 Japanese, 1017 Chinese				?312/ 2396 13%			l'supp, 1146 l'supp]	M1 p=0.003, S1 p=0.03, T p<0.001, C p=0.01; No l'supp: **eGFR and p'u p<0.001**, M1 p=0.01, T p<0.001, C p<0.01; l'supp: **p'u and MAP**	

									p<0.001, T p<0.001	
40 Kaihan 2017	86 adults	7 [8]	at least 18y; median 36y	?	50% increase in scr 13/86 15%	6.8y median, minim-um 12m	1 patient / 57 patients 66%	age, sex, eGFR, p'u, BP, suric; T [**not l'supp]**	T p=0.04 **no clin signif**	crescents present or absent; **l'supp NS univariate**
41 Knoop 2017	145 "assumed benign" (only 123 with Oxford scores)	2 [not said]	mean 30.1y	eGFR <60; p'u at least 1g	1: 50% decline in eGFR or ESRD (4) 19% 27/145; 2: remiss-	22y median	? / none	1, 2: "clinical variables" at biopsy including p'u, BP, eGFR; MESTC [**none l'supp]**	**none of "clinical variables"**, none of MESTC	crescents present or absent; all biopsies T0

					ion 29% 42/145					
42 Lv 2017 see **88** Lv 2022	262 = TESTING randomised trial	not said [not said]	over 14y, mean 38.6y	eGFR <20 or >120; p'u <1	40% decline in eGFR or ESRD (14) or death kidney disease 28/262 11%	25m median	8%? / 126 placebo, 136 steroid	eGFR, p'u, maximum dose ARB/ACEi, treatment; E	treatment	crescents not done
43 Sevillano 2017	112	1 [not said]	mean 41.5y	?	ESRD 19% 21/112	mean 14y, minim-um 12m	? / 39%	time-aver-aged (TA) h't, TA p'u, age, eGFR, BP,	h't p=0.04, **p'u p=0.04, eGFR**	crescents not done **l'supp NS univariate**

								[**not i'supp**]; MEST	**p=0.03**; T p=0.001	not clear if in multivar.
44 Shu 2017	150 adults = 50 ESRD surviving <10y since biopsy, 100 surviving >10y since biopsy	not said [not said]	at least 18y, mean about 35y	usual	ESRD (50) 33%	all at 10y	? /?	MEST1T2; initial eGFR, sex, age, suric, Hb, salb, chol, p'u, BP, h't; fup TA suric, salb, Hb, chol [**not l'supp]**	M1 p=0.018, EST1T2 NS; **initial eGFR p=0.039;** TA suric p=0.026, TA Hb p=0.029	crescents not done
45 Yang 2017	919	not said [not said]	10-75y, mean 36.8y	eGFR <15	ESRD 13% 124/919	57.46m median, minim-um 12m	none / 57%	age, sex, eGFR, systBP, BUN, suric, low salb, trig,	age p=0.01, sex p=0.01,	crescents not done

								Hb, sC3, nephrotic range p'u, nonB blood group, **steroids**; T	**eGFR p<0.001**, low salb p=0.01, Hb p=0.02, nonB blood group p=0.002, **steroids p=0.048**; T p<0.001	
46 Yoon 2017	377 at "early stage"	1 [not said]	18-75y, mean 38.5y	eGFR<50; p'u at least 3.5g/gcr; persistent	1: persis-tent p'u = Upr/cr >1g/g	43.5m median	? / 18%	1: age, sex, eGFR, p'u, MAP; MEST1; [**not l'supp**];	1: M1 p<0.001; 2: M1	crescents not done

				p'u at bx = Upr/cr >1g/g; severe fibrosis = T2	48/377 13%; 2: 30% decline in eGFR 52/377 14%			2: age, sex, eGFR, p'u, MAP; RASB, **steroids**; MEST1	p=0.02 [**no clin stats]**	
47 Zhang 2017 Medicine compare **57** Zhang 2018	538 with crescents	3 [10]	at least 14y; mean 32y	eGFR <15	doubled scr or ESRD (59) 69/538 13%	51m median	? / "approx-imately 40%"	eGFR, p'u, BP; MESTC [C by 5% increase of any crescents, including fibrous] [**not l'supp]**	**eGFR p<0.001, p'u p<0.001, BP p=0.02**, M1 p=0.001, S1	crescent = more than 2 cell layers involving >10% of circum-ference of Bowman's capsule

									p<0.001, C p=0.02	
48 Zhang 2017 Oncotarget	672	3 [not said]	28-45y, median 36y	eGFR <15	50% decline in eGFR or ESRD (30) 13% 90/672	36m median, minim-um 6m	none / 85%? Ambig-uous	sex, age, chol, trig, HDL, LDL, scr, p'u, salb, suric, Hb, systBP, diastBP, sfibrinogen quartiles; MT1T2C [**not l'supp]**	salb p=0.008, suric p=0.011, fibrin Q3 p=0.047, fibrin Q4 p=0.018, T2 p=0.004	crescents present or absent
49 Zhu 2017	742	at least 2 [7]	mean 32.7y	eGFR <30	50% decline in eGFR or ESRD ?n	at least 3y	? / 40% "treat-ment" =	MEST, initial p'u, "treatment"	T p=0.000, **p'u p=0.000**	crescents not done

							l'supp OR RASB			
50 Cambier 2018	82 children (only 77 followed)	2 [not said]	under 18y, median 11.3y	none?	10% decline in eGFR or stage 3CKD at 6m 9/77 12%	all at 6m	? / 51/82 62%	A: initial eGFR & p'u, age at diagnosis, S, P = tip lesion / podocyte-opathy; B: as A = fup p'u, **l'supp**	A: S1 p=0.029, P1 p<0.001; B: only P1 p=0.004 [**no clin stats]**	crescents present or absent
51 Chen 2018	506 adults with mild proteinuria	not said [8]	at least 18y; mean 34.7y	p'u at least 1; eGFR <60	50% increase in scr 54/506 11%	50m median, minim-um 12m	none / 14%	age, sex, chol, trig, **steroids**, ACEi/ARB; p'u, BP, CKD2; MESTC	age p=0.001, **p'u p=0.003**; none of MESTC	crescents absent C0 or not over 25% C1 **steroids NS multivar**

52 Deng 2018	988	2 [10]	at least 14y; median 32y	eGFR <15	doubled scr or ESRD (91) 107/988 11%	48.6m median, minim-um 12m	? / 32%? Ambig-uous	age, eGFR, p'u, BP; global scl, ST [**not l'supp]**	Male: **p'u p=0.032, eGFR p<0.001**, global scl p=0.028, S1 p=0.002; Female: **p'u p=0.023, eGFR p<0.001**, S1 p=0.012	crescents present or absent

53 Palamuthus-ingam 2018	45	not said [8]	mean 48y	none	50% increase in scr or ESRD ?n	2.6y mean	? / 18 patients 40%	**l'supp**, eGFR <50, >1g/24h p'u, MTC	ESRD: T; 50% rise scr: none **no clin sig**	crescents present or absent
54 Pan 2018 HumPath	365 = 73 glomerular necrosis, 292 matched controls	2 [not said]	mean 39.1y	?	50% decline in eGFR or ESRD 10% 35/365	median about 32m, minim-um 3m	? / 56%	sex, eGFR, p'u, salb, Hb, sfibrinogen, h't, systBP, diastBP, ARB, **steroids**, glom necrosis, METC	**eGFR p<0.001**, fibrinogen p=0.018, h't p=0.02, **steroids p<0.001**, none of METC	crescents not associated with outcome
55 Pan 2018 ImmRes	712	2 or 5 [not said]	mean 37.36y	eGFR <15	50% decline in eGFR or	mean 40m,	none / 86%?	Basic model: sex, C3/C4 ratio, scr, p'u,	Basic: C3/C4 p=0.02, **scr**	on univariate, C1

					ESRD (58) 84/712 12%	minim-um 3m	Ambig-uous	suric, systBP, diastBP, Hb, salb, MT1T2; Optimal model: C3/C4 ratio, scr, p'u, suric, systBP, T1T2 [**not l'supp]**	**p=0.011**, suric p=0.019, **systBP p=0.026**, T1 p=0.019, T2 p=0.003; Optimal: C3/C4 p=0.007, **scr p=0.007**, suric p=0.005,	favourable but C2 no effect; not consistent with Trimarchi 2017, so C excluded from multivariate

									systBP p<0.001, T1 p=0.034, T2 p=0.001	
56 Schimpf 2018	70 whose renal biopsy was available from 162 in STOP-IgA randomised trial	1 [8]	18-70y; mean 43.4y	p'u <0.7 or >3.5; BP <140/90; eGFR at least 90 or <30	1: remiss-ion 8/70 11%; 2: eGFR loss at least 15 23/70 33%; 3: ESRD 8/70 11%	median 9.4m from biopsy to random-ization, then 3y trial phase	none / 38 patients 54%	eGFR, p'u, **treatment arm**; MEST	1: remission, none; 2: eGFR loss none; 3: ESRD: T p=0.01 [**no clin stats]**	crescents present or absent, not in Cox

57 Zhang 2018 compare **47** Zhang 2017 Medicine	1152	2 [8]	mean 35.4y	?	ESRD 13% 144/ 1152	median 45m, minim-um 12m*	? / 53%	age, sex, eGFR, MAP, p'u, MESTC1C2, +/- **l'supp**	all, or with l'supp, or without l'supp: not C [**no clin stats]**	crescent: extracap-illary lesion of any size containing more than two cell layers
58 Barbour 2019	2781 adults in derivation cohort, from other studies = 1192 VALIGA,	different between studies [8 or 10]	at least 18y; median 35.6y	ESRD at biopsy	50% decline in eGFR (420) or ESRD (372) 492/	median 4.8y	9% / 43%	Limited model: eGFR, p'u, MAP; MEST; [**not l'supp]**; Full model: age, sex, BMI, eGFR, p'u,	Limited: **eGFR p<0.001, p'u p<0.001**, M1 p=0.002, T1	crescents not in multivariate analysis **l'supp NS**

	568 Japanese, 1021 Chinese				2781 18%			MAP; RASB at bx, **I'supp** at bx; MEST; +/- race; + various interaction terms	p<0.001, T2 p<0.001; Full: age p<0.001, **eGFR p<0.001**, T1 p<0.001, T2 p<0.001; plus others	
59 Duan 2019	412	2 [8]	at least 14y,	eGFR <15	50% decline in eGFR or	mean 80.6m,	? / 79%? Ambig-uous	p'u, MAP, eGFR;	**p'u p=0.035, MAP**	crescents not associated

			mean 34.95y		ESRD (44) 17% 70/412	minim-um 36m		MEST2C [**not l'supp]**	**p<0.001**, M1 p=0.001, T2 (vs T0/1) p<0.001	with outcome
60 Kamiyama 2019	87 with T1/2, only 44 studied = matched 22 anti-platelet agents vs 22 RAS inhibitors	not said [not said]	over 16y, median 32.5y APA, 48y RASI	?	ESRD 59% 26/44?	Mean 8.5y APA, 10.5y RASI	none / none	APA vs RASI, BMI, MAP, eGFR, salb, suric, p'u; M **none l'supp**	treatment without RASI p=0.0039 **no other clin signif**	crescents not associated with outcome

61 Park 2019	3380	not said [8]	?	?	50% decline in eGFR or ESRD (417) 700/ 3380 21%	median 8.74y	? / 24%	age, sex, MAP, eGFR, p'u, global scl, int fibrosis, t atrophy, SC [**not l'supp]**	age p<0.001, sex p<0.001, **eGFR p<0.001, p'u p<0.001**, global scl p<0.001, int fib severe p=0.02, S1 p=0.03, C1 p=0.002,	MET not Oxford

									C2 p<0.001	
62 Peng 2019	1328	2 [8]	at least 14y, mean 34.2y	?	50% decline in eGFR or ESRD (171) 17% 221/ 1328	mean 46.1m, minim- um 12m*	? / 61%	sex, BP, nephrotic at bx, scr, **l'supp**, MESTC1C2, global scl G1 26-50%, G2 >50%	**BP** **p<0.001,** **NS** **p=0.002,** **scr** **p<0.001,** **l'supp** **p<0.001**, E1 p=0.045, T p<0.001, C2 p=0.001, G1	

									p<0.001, G2 p<0.001	
63 Champtiaux 2020	32 adults with spondylo-arthritis (only 27 with Oxford scores)	1 [8]	median 37y	?	doubled scr (13) or eGFR <30 (9) 22/32 69%	median 5.9y	? / 14 patients 44%	eGFR <60 at bx, p'u, T, global scl, rate eGFR loss [**not l'supp]**	**eGFR p=0.018**	crescents not associated with outcome
64 Coppo 2020	1130 in VALIGA	centrally reviewed [8]	mean 35y	eGFR <15	1: 50% decline in eGFR or ESRD (212) 279/	median 7y	? / 48%	age, sex, BMI, eGFR, MAP, p'u; MESTC, arterio-sclerosis [**not l'supp]**	1: All: **eGFR p<0.001, MAP p=0.005, p'u**	

					1130 25%; 2: rate eGFR decline				**p<0.001**, M1 p=0.037, S1 p=0.01, T p<0.001; 1: 582 no l'supp: **eGFR** **p=0.001,** **MAP** **p=0.03,** **p'u** **p<0.001**, M1 p=0.003, T P<0.001;	

									2: All: **eGFR p<0.001, MAP p<0.001**, **p'u p=0.02**, T P<0.001; 2: 582 no l'supp: **p'u p=0.004**, T p=0.003, C p=0.01	
65 Jebali 2020	50 adults	1 [8]	at least 18y,	?	ESRD 20% 10/50	median 30.5m	none / 21	BP, p'u, eGFR, **steroids**, T	T p=0.038 **no clin signif**	crescents not associated

			mean 35.6y				patients 42%			with outcome
66 Jullien 2020	168 with 2 biopsies	2 [8]	adult: mean 33.6y at first biopsy, 40.0 at second biopsy	?	ESRD 37/168 22%	18.4y median after first biopsy	? / 26% after first biopsy, 46% after second biopsy	Model 1: eGFR, p'u, BP at time of second biopsy; MESTC on first biopsy; Model 2: eGFR, p'u, BP at time of second biopsy; MESTC on second	all 168 bxs: Model 1: **eGFR p<0.05, p'u p<0.05**, none of MESTC; Model 2: **eGFR p<0.05, p'u p<0.05**, T	**use of steroids between biopsies associated with worse outcome** (data not shown)

								biopsy: +/- **steroids between biopsies**	P<0.05: 112 protocol bxs: Model 1: **p'u p<0.05**, M1 P<0.05; Model 2: **p'u p<0.05**, M1 P<0.05, T P<0.05	

67 Moriyama 2020	871	not said [8]	median 31y	?	ESRD 115/871 13%	median 8y, minim- um 12m*	? / 49%	sex, age, BMI, eGFR, MAP, p'u, h't; MESTC [**not l'supp]** [445 no i'supp, 426 i'supp]	All: **MAP p=0.0046, eGFR p<0.0001, p'u p<0.0001**, T p=0.0085; No i'supp: male p=0.0394, **eGFR p=0.0002, p'u p<0.0001**; I'supp:	

									eGFR p<0.0001, p'u p<0.0001, T p=0.0287	
68 Neves 2020 KidBPRes	111 (only 101 followed)	1 [8]	median 32y	?	doubled scr or ESRD (31) 30% 33/111?	median 64m	? / 66%	sex, p'u, BP, eGFR, h't, STC **[not l'supp]**	S1 p=0.04, T p=0.027, C p=0.031 [**no clin stats]**	
69 Neves 2020 PLOSOne	118	1 [8]	median 33y	solid organ tx, bmtx, pregnant, cancer, drugs	ESRD 36/118 31%	median 65m	? / 63%? Ambig-uous	sex, BP, scr, morphologic TMA; MESTC **[not l'supp]**	female protective p=0.03, T p=0.002,	crescents not associated with outcome

				associated TMA					TMA p=0.01	
70 Park 2020	453 adults	1 [not said]	18-74y; mean 40.3y	?	30% decline in eGFR (46) or increase p'u to at least 3.5 (17): 50/453 11%	median 33m	? / 19%	1: age, sex, BP; MSTC, mesangial C3; [**not l'supp]** 2: age, sex, eGFR, p'u, MAP; MSTC, C3 [**not l'supp]** 3: age, sex, eGFR, p'u, MAP; **steroids**; MSTC, C3	1: M1 p<0.001, S1 p=0.007, T p<0.001, C3 p<0.001; 2: M1 p=0.021, S1 p=0.002, T p<0.001, C3 p=0.003;	crescents not associated with outcome [**no clin stats]**

									3: M1 p=0.020, S1 p=0.002, T p<0.001, C3 p=0.003	
71 Wu 2020	1243 children	at least 2 [8]	not over 18y, mean 14y	eGFR <15	50% decline in eGFR or ESRD (82) 171/ 1243 14%	median 7.2y, minim-um 12m	? / 64%	eGFR, MAP, p'u; STC [**not l'supp]**	S1 p<0.001, T p<0.001 [**no clin stats]**	(C only without l'supp)

72 Aratani 2021	149 = 110 steroids + tonsillect-omy, 39 conservat-ive	not said [not said]	median 39y	previous steroids; only steroids or only tonsil-lectomy	progress-ion of CKD stages n?	3y	none / 74%	**treatment = l'supp + tonsilleX**, p'u, CKD1/2, MST	**treatment** p=0.039, **p'u p=0.023**	only 25/149 given C score
73 Bobart 2021	125 (only 72 followed)	1 [8]	mean 44.8y	eGFR <15	ESRD 9/72 13%	median 3.69y	none / ? not clear how many	age, sex, scr, eGFR, systBP, diastBP, p'u, h't, RASB; MESTC [**not l'supp]**	**scr p=0.001, eGFR p=0.004, systBP p<0.001, p'u p<0.001**, T p=0.018	crescents not associated with outcome: not clear if uni or multi variate

74 Canney 2021	1864 adults in "remiss-ion" of p'u, from 6 studies = 659 Nanjing, 561 VALIGA, 293 Japan, 185 Beijing, 110 Oxford, 56 North America	different in different studies	at least 18y, median 36.8y at remiss-ion	eGFR <15; p'u at least 1, and without 25% reduction in p'u from at least 1	50% decline in eGFR or ESRD (46) 15% 274/ 1864	median 3.9y from remiss-ion	? / 42%	each 3m in remission, to 4y, over 4y; eGFR, p'u, MAP, all at remission; peak p'u before remission; MESTC; age; sex; race; time to remission; RAAS at remission; **l'supp at or**	each 3m in remission to 4y, p<0.001, **eGFR p<0.001**; T1 p=0.04, T2 p=0.002; age p=0.02; race: Chinese >24m fup p<0.001, Japanese	crescents not associated with outcome **l'supp NS**

								before remission	p=0.01; RAAS p=0.01	
75 Hwang 2021	545 adults	not said [not said]	at least 20y; median 39y	?	50% decline in eGFR or ESRD (37) 53/545 10%	median 3.6y	2 patients / 22%	age, eGFR, MAP, p'u, RASB; MEST1T2 C1C2 [**not l'supp]**	age p=0.028, **p'u p=0.045, eGFR p<0.001**, M1 p=0.043, T1 p=0.005, T2 p<0.001	

76 Lin 2021	305 adults "without obvious chronic lesions"	2 [not said]	over 18y, median 31y	global scl at least 25%, T2, C2	decline in eGFR >15% in 1y, or >30% in 2y 34/305 11%	median 34.8m, minim-um 12m*	? / 36%	Model 1: ALL: [NOT eGFR] sex, MAP, trig, T1, seg C1, global C1; [**not l'supp]** Model 2 ALL = Model 1 + **l'supp**; Model 3, no l'supp = [NOT eGFR] sex, MAP, trig, T1, seg C1, global C1; Model 4, **l'supp** = same	Model 1: female p=0.003, **MAP p=0.017**, trig p=0.011; global C1 p=0.036; Model 2: female p=0.001, **MAP p=0.013**, trig p=0.025;	global crescent = extracapill-ary lesion of more than 2 cell layers in >50% of glomerular circum-ference; segmental crescent = in <50%

								as Model 3 **no clin signif in Model 3**	**l'supp p=0.037**; Model 3: global C1 p=0.047; Model 4: female p=0.009	
77 Moreno 2021	89	2 [10]	at least 15y, 16-83y, median 45y	none	50% decline in eGFR or ESRD ?n	mean 52m, minim-um 12m*	? / 45%	p'u, mac h't, ET2C2 [**not l'supp]**	C2 p=0.03, T2 p=0.03 **no clin signif**	
78 Schena 2021	948 adults = 876	not said [not said]	at least 18y:	?	ESRD 210/948 22%	median 89m	? / 27%	age, sex, BP, p'u, scr, RASB, **l'supp**;	**p'u p<0.001, scr**	crescents not associated

	VALIGA + 72 Greece		mean 40.6y					M1E1S1T1T2C	**p<0.001**, RASB p=0.03, **l'supp p=0.002**, S1 p=0.007, T1 p<0.001, T2 p<0.001	with outcome
79 Tang 2021	501 with "renal vasculitic lesions" = thrombi in	not said [10]	at least 14y, median 31y	eGFR <15	doubled scr or ESRD ?n	mean 49m	? / 28%? Ambig-uous	age, sex, BP, duration, Hb, p'u, salb, suric, LDL, eGFR, global	**p'u p=0.041**, Hb p=0.015, **eGFR**	all with "vasculitic lesions"; C1/2 in 85%

	arteries +/- arterioles, capillary loop necrosis, crescents, fibrinoid necrosis of small blood vessels							scl; M1E1S1T [**not l'supp]**	**p=0.001**, gscl p=0.001, S1 p=0.004	
80 Woo 2021 see **36** Woo 2016	A 102 from 1976-1986 SAME AS WOO 2016, B 177 from 2008-2018	1 [8]	mean A 26.4y B 42.6y	?	ESRD at 10y A 14/102 14% B 34/177 19%	mean A 51m B 61.3m	A none / how many? B ? / 54%	age, sex, BP, initial scr, final scr, initial eGFR, final eGFR, h't, p'u,	A **BP p=0.002, init scr p=0.04**, last scr p<0.0001,	crescents not associated with outcome; AMBIG-

								M1E1S1TC, arterial int thick, global scl, seg scl [**not l'supp]**	last eGFR p<0.001, p'u p<0.001, E1 p=0.03, S1 p=0.04, T p=0.001, global scl p<0.0001, seg scl p=0.01; B **BP p=0.02, init scr p=0.013**, last scr p<0.0001,	UOUS COX not clear if uni or multi variate

									init eGFR p<0.0001, last eGFR p=0.03, p'u p=0.001, S1 p=0.03, T p<0.0002, global scl p<0.008, seg scl p=0.0003	
81 Wora-wichawong 2021	101	not said [5]	mean 37.3y	eGFR <15	50% decline in eGFR or	mean 51.6m	? / ?	MEST1T2C, eGFR, BP, p'u at least 3,	**p'u p=0.03**, T1 p<0.001,	crescents not associated

					ESRD (20) 26% 26/101			mesangial C4d [**not l'supp] [no mention eGFR stats]**	T2 p=0.028, C4 p=0.034	with outcome
82 Wu 2021	98 children	2 or 3 [8]	under 18y; median 9.7y	?	50% decline in eGFR or ESRD (1) 6/98 6%	median 25m, minim-um 12m	? / 78 patients 80%	MAP, scr; ST; mesangial C3 and low sC3 [**not l'supp]**	C3 p=0.029 **no clin signif**	too few events
83 Yang 2021	384 with crescents	2 [8]	13y-68y, mean 32y	none?	30% decline in eGFR 12% 46/384	mean 32.3m, minim-um 6m	? / 19%? Ambig-uous	eGFR, systBP, p'u, **nonstd l'supp**, circumfer-ential crescents in	**eGFR p=0.001, systBP p=0.026**, circ cresc p=0.004,	circum-ferential crescent = at least 50% of glomerular

								>20% gloms, MESTC	**other l'supp p=0.018**	circum-ference: steroids?
84 Caliskan 2022	47	1 [8]	mean 37y	none	ESRD 17/47 36%	median 6y, minim-um 12m*	? / 38 patients 81% [**not l'supp in Cox]**	sex, scr, eGFR, mesangial C3, mesangial C4d; MES	**eGFR p=0.011**, E1 p=0.001	crescents not associated with outcome
85 Chen 2022	144	2 [8]	at least 14y, mean C0 34.3y, C+ 36y	?	50% decline in eGFR or ESRD 12% 17/144	median C0 21m, C+ 16m, minim-um 6m	? / ?	A: MAP, eGFR, p'u, ESTC; [**not l'supp]** B: MAP, eGFR, p'u, EST, C >10% [**not l'supp]**	A: **MAP p=0.046, eGFR p=0.004**, S1 p=0.04, T p=0.036, C p=0.026; B: **eGFR**	no mention of treatment

									p=0.009, S1 p=0.043, T p=0.036, C >10% p=0.019	
86 Joh 2022	946	5 [10]	2.8 - 87.5y, median 37.1y	none	rate eGFR decline	median 66m	? / 64%	eGFR, MAP, p'u, **steroids**; MESTC	**eGFR, p'u, steroids,** T; each p<0.05	only direct effects considered
87 Kang 2022	4151	not said [8]	at least 18y, median 37y	none	ESRD 7% 304/ 4151	median 6.1y	? / ?	1: eGFR, MAP, p'u, ST; 2: eGFR, MAP, p'u, age, sex, DM,	1: **eGFR p<0.001**, S p=0.009, T p=0.024; 2: **eGFR p<0.001**,	E not done; included own chronicity grading; crescents

								MSTC **[not l'supp]**	**DM p=0.031**, S p=0.009, T p=0.022	not associated with outcome
88 Lv 2022 see **42** Lv 2017	1: 262 = original; 2: 241 = low dose TESTING randomised trial	not said [not said]	original, over 14y; low dose, over 17y; mean 38y	1: eGFR <20 or >120; p'u <1; 2: eGFR <30 or >120; p'u <1	40% decline in eGFR or ESRD or death kidney disease 74/257 29% steroid, 106/246	median 3.5y: 6.1y original, 2.5y low dose	7%? / original = 126 placebo, 136 steroid; low dose = 120 placebo, 121 steroid	eGFR, p'u, ethnicity, time biopsy to random-ization, treatment; E	treatment	crescents not done; MEST "reviewed by each site"; signif-icantly higher eGFR, more T0 in low dose

					43% placebo					
89 Ruan 2022	458	2 [8]	over 14y, mean 33.2y	eGFR <15	50% decline in eGFR or ESRD 12% 54/458	mean 54.7m	? / 33%? Ambig-uous	age, eGFR, MAP, ET, C1, C2 [**not l'supp = NS univariate]**	**eGFR p=0.002**	crescents not associated with outcome
90 Rui 2022	101	not said [not said]	mean 31y to 36y dep-ending on resp-onse	p'u <1; Oxford score M0E0S0T0 C0; minimal change nephro-pathy	1: 50% decline in eGFR or ESRD 22% 22/101 2: remiss-	mean 26m to 37m depend-ing on resp-onse,	? / all	1: eGFR, p'u, Hb, chol, trig, M1T1T2; 2: diastBP, eGFR, p'u; M1S1T1T2 [**all l'supp]**	1: **eGFR p=0.028**, trig p=0.01, M1 p=0.036, T2 p=0.005;	crescents not associated with outcome

					ion or not n?	minim-um 12m			2: **eGFR p=0.008**, M1 p=0.041, S1 p=0.01	
91 Tang 2022	988	not said [10]	at least 14y, median 32y	eGFR <15	doubled scr or ESRD ?n	median 49m	? / 51%? Ambig-uous	age, sex, duration, BP, p'u, salb, Hb, LDL, suric, MEST; **[not l'supp; no clin stats]**	T p=0.001	clinical statistics for outcome only given for T1/T2 group; in this, cresc-ents not significant

92 Xie 2022	821	2 [8]	18-75y, median 34y	ESRD	50% decline in eGFR or ESRD 18% 145/821	median 24m, minim-um 12m*	none / 53%	sex, age, Hb, scr, suric, salb, p'u, treatment, glomerular C3; MST1T2C	**scr p<0.001, suric p<0.001, Hb p=0.013**; C3 p=0.044; T2 p<0.001	l'supp, crescents not associated with outcome

Abbreviations: Oxford scores: C, (fibro)cellular crescents; E, endocapillary hypercellularity; M, mesangial cellularity; S, segmental sclerosis; T, interstitial fibrosis/tubular atrophy. Others: ACEi, angiotensin converting enzyme inhibitor; APA, anti-platelet agents; ARB, angiotensin 2 receptor blocker; BMI, body mass index; bmtx, bone marrow transplant; BP, blood pressure; BUN, blood urea nitrogen concentration; chol, serum cholesterol concentration; CKD, chronic kidney disease; clin stats, clinical statistics; diastBP, diastolic blood pressure; DM, diabetes mellitus; eGFR, estimated glomerular filtration rate, units ml/min per 1.73m^2; EPA, eicosapentanoic acid; ESRD, end stage renal disease; Ex, crescent in >10% of circumference of glomerulus; fup, follow-up; g,

glomerulus; Hb, hemoglobin concentration; HDL, serum high density lipoprotein concentration; HIV, human immunodeficiency virus; HSP, Henoch Schoenlein purpura; h't, hematuria; IgA/C3, ratio of serum concentrations of IgA and C3; int, intimal; I'supp, immunosuppression; LDL, serum low density lipoprotein concentration; m, month; mac, macroscopic; MAP, mean arterial pressure; max, maximum; no clin stats, no statistics given for clinical features in multivariate analysis; nonstd, immunosuppression other than steroids; not I'supp, immunosuppression not included in multivariate analysis; NS, not significant; p'u, proteinuria, units g/24h; RASB, renin-angiotensin system blockers; RASI, renin-angiotensin system inhibitors; salb, serum albumin concentration; sC3, serum C3 concentration; scl, sclerosis; scr, serum creatinine concentration; sfibrinogen, serum fibrinogen concentration; sIgA, serum IgA concentration; signif, significant; SLE, systemic lupus erythematosus; suric, serum uric acid concentration; systBP, systolic blood pressure; t, tubule; TA, time averaged; TMA, thrombotic microangiopathy; tonsillex, tonsillectomy; trig, serum triglyceride concentration; tx, transplant; UPr/cr, urine protein/creatinine concentration ratio; vit D, vitamin D; y, year

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Supplemental Table 2

Studies combining clinical factors with Oxford scores in multivariate analysis of outcome:

end point: end stage renal disease:

plus summary of counts

reference in Supplemental Table 1	number of patients: proportion at end point	clinical factors related to end point in multivariate study	Oxford elements studied	Oxford elements related to end point in multivariate study
4	702: 12%	eGFR, p'u, i'supp	MEST1T2	ST1T2
4	702: 12%	eGFR, p'u, i'supp	MEST1T2C	CT1T2
4	416: Oxford criteria: not said	eGFR, p'u, i'supp	MEST+/-C	T
5	294*: 7%	not said	MESTC	ST
13	35*: 57%	eGFR, i'supp, other	MEST	T
18	698: 10%	eGFR, p'u	MEST1T2	MST1T2
20	283: 20%	eGFR, p'u, other	MEST1T2	T2
24	857*: not said	eGFR, p'u, other	MEST	none
26	26*: 26%	none	MEST	none
30	147: 38%	eGFR, p'u	MESTC	E
31	61*: not said	eGFR	MEST	none
36, 80	102: 14% 5y, 39% 20y, 47% 30y	at 5y, p'u, other; at 10y, cr, BP; at 20y and 30y, none	MESTC	at 5y, T; at 10y, EST; at 20y, T; at 30y, M
43	112: 19%	eGFR, p'u, other	MEST	T
44	150: 33%	eGFR, other	MEST	M
45	919: 13%	eGFR, i'supp, other	MEST	T
53	45: not said	none	MESTC	T

56	70: 11%	not said	MEST	T
57	1152: 13%	not said	MESTC1C2	not C; others not said
60	44: 59%	other	MESTC	none
65	50: 20%	none	MESTC	T
66	168: second biopsy: 22%	eGFR, p'u: worse after i'supp	MESTC	T
67	871: 13%	eGFR, p'u, MAP	MESTC	T
67	445 no i'supp after biopsy: not said	eGFR, p'u, other	MESTC	none
67	426 i'supp after biopsy: not said	eGFR, p'u	MESTC	T
69	118: 31%	other	MESTC	T
73	72*: 13%	eGFR, p'u, BP	MESTC	T
78	948: 22%	cr, p'u, I'supp, other	MEST1T2C	ST1T2
80	177: 19%	cr, BP, other	MESTC	ST
84	47: 36%	eGFR	MESTC	E
87	4151: 7%	eGFR, other	MSTC	ST

Summary: number of analyses 34, analyses with C 22; Oxford scores associated with outcome (end stage renal disease) 44 = M 3, E 3, S 7, T 24, C 1, none 6.

Abbreviations: BP, hypertension; C, (fibro)cellular crescents; cr, serum creatinine concentration; E, endothelial hypercellularity; eGFR, estimated glomerular filtration rate; i'supp, immunosuppression; M, mesangial cellularity; MAP, mean arterial pressure; p'u, proteinuria; S, segmental sclerosis/capsular adhesion; T, tubular atrophy/interstitial fibrosis: * number followed

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Supplemental Table 3

Studies combining clinical factors with Oxford scores in multivariate analysis of outcome:

end point: end stage renal disease combined with 50% decline in estimated glomerular filtration rate ("combined"), or end stage renal disease with another end point:

plus summary of counts

reference in Supplemental Table 1	number of patients: proportion at end point	end point with ESRD	clinical factors related to end point	Oxford elements studied	Oxford elements related to end point
1	265: 22%	combined	eGFR, p'u, MAP	MESTC	MT
2	183: 20%	doubled cr	eGFR	MEST	none
3	121*: 34%	doubled cr	eGFR	MEST	M
6	54: 19%	combined	not said	MEST	T
7	121*: 33%	doubled cr	eGFR, other	MEST	none
9	74*: 18%	combined	not said	MESTC	none
11	218: 11%	combined	not said	MESTC	T
12	69: 23%	combined	not said	MEST	ET
15	1026: 15%	combined	not said	MESTC	MT
19	1147: 16%	combined	not said	MESTC	ST
21	74: 27%	combined	eGFR	MEST	T
25	500: 10%	doubled cr	eGFR, p'u	MEST1T2	T1T2
27	60 on first	30% eGFR	not said	MESTC	MT

	biopsy: 25%	decline			
27	60 on second biopsy: 25%	30% eGFR decline	not said	MESTC	T
28	901: 18%	combined	eGFR, p'u, MAP	MEST1T2	MT1T2
29	111: 37%	combined	eGFR, other	MEST	none
32	186*: 14%	combined	eGFR	MESTC	not C; others not said
34	627: 10%	combined	p'u	MEST1T2	ST2
35	121: 28%	doubled cr	eGFR	MESTC	C without, SC with i'supp in analysis
37	261 under 23y: 9%	combined	not said	MESTC	MST
37	174 under 18y: not said	combined	not said	MESTC	S
39	3096: 13%	combined	eGFR, fup p'u, fup MAP	MESTC	MSTC
39	1950 no i'supp: not said	combined	eGFR, fup p'u	MESTC	MTC
39	1146 i'supp: not said	combined	fup p'u, fup MAP	MESTC	T
41	123*: 19%	combined	none	MESC: all biopsies T0	none
42	262: 11%	40% eGFR decline	i'supp	MEST	none
47	538: 13%	doubled cr	eGFR, p'u, BP	MESTC	MSC
48	672: 13%	combined	other	MEST1T2C	T2
49	742: not said	combined	p'u	MEST	T
52	988: 11%	doubled cr	eGFR, p'u	MESTC	S
54	365: 10%	combined	eGFR, i'supp, other	MESTC	none
55	712: 12%	combined	cr, BP, other	MEST1T2C	T1T2
58	2781: 18%	combined	eGFR, p'u	MEST1T2	MT1T2
59	412: 17%	combined	p'u, MAP	MEST1T2C	T2
61	3380: 21%	combined	eGFR, p'u, other	MESTC1C2	SC1C2
62	1328: 17%	combined	cr, p'u, BP, i'supp	MESTC1C2	ETC2

64	1130: 25%	combined	eGFR, p'u, MAP	MESTC	MST
64	582 no i'supp: not said	combined	eGFR, p'u, MAP	MESTC	MT
68	101*: 30%	doubled cr	not said	MESTC	STC
71	1243: 14%	combined	not said	MESTC	ST
74	1864: 15%	combined	eGFR, other	MEST1T2C	T1T2
75	545: 10%	combined	eGFR, p'u, other	MEST1T2C	MT1T2
77	89: not said	combined	none	MEST1T2C1C2	T2C2
79	501: not said	doubled cr	eGFR, p'u, other	MEST	S
81	101: 26%	combined	p'u, other	MEST1T2C	T1T2
82	98: 6%	combined	other	MESTC	none
85	144: 12%	combined	eGFR, MAP	MESTC	STC
88	503:36%	40% eGFR decline or death from renal failure	i'supp	MEST	none
89	458: 12%	combined	eGFR	MESTC	none
90	101: 22%	combined	eGFR	MEST1T2C	MT2
91	988: not said	doubled cr	not said	MEST	T
92	821: 18%	combined	cr, other	MST1T2C	T2

Summary: number of analyses 53, analyses with C 37; Oxford scores associated with outcome (end stage renal disease combined with something else) 85 = M 14, E 2, S 14, T 34, C 10, none 11.

Abbreviations: BP, systemic hypertension; C, (fibro)cellular crescents; cr, serum creatinine concentration; E, endothelial hypercellularity; eGFR, estimated glomerular filtration rate; ESRD, end stage renal disease; fup, time-averaged values at follow-up; i'supp, immunosuppression; M, mesangial cellularity; MAP, mean arterial pressure; p'u, proteinuria; S, segmental sclerosis/capsular adhesion; T, tubular atrophy/interstitial fibrosis; y, years of age: * number followed

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Supplemental Table 4

Studies combining clinical factors with Oxford scores in multivariate analysis of outcome:

outcome: something other than end stage renal disease, alone or combined:

plus summary of counts

reference in Supplemental Table 1	number of patients: proportion at end point	end point or other measure	clinical factors related to end point or other measure	Oxford elements studied	Oxford elements related to end point or other measure
1	265	rate eGFR decline	eGFR, p'u, MAP	MESTC	ST
3	121*	rate eGFR decline	eGFR	MEST	T
7	121*	rate eGFR decline	eGFR, other	MEST	S
8	141: 4%	50% cr increase	none	MEST	S
8	141: 38%	remission	p'u	MEST	M
10	43: 37%	50% cr increase	eGFR, other	MESTC	M
14	161: 4%	eGFR under 60	p'u	MESTC	MT
15	1026	rate eGFR decline	not said	MESTC	MT
16	34*: not said	50% p'u decline	other	MEST	none

17	41: 51%	remission	eGFR, other	MEST	T
19	1147	rate eGFR decline	not said	MESTC	MT
22	70: not said	50% eGFR decline	not said	MEST	none
23	430: 14%	50% eGFR decline	eGFR, p'u	MEST1T2C	T1T2
23	430	rate eGFR decline	not said	MESTC	ST
30	147: 29%	rapid eGFR decline	p'u	MEST1T2C	ET2
33	105: 27%	30% eGFR decline	BP, other	MEST	none
34	627	rate eGFR decline	not said	MEST1T2	ST2
37	261	rate eGFR decline	not said	MESTC	none
38	54: 19%	50% eGFR decline	p'u	MESTC	E
40	86: 15%	50% cr increase	none	MESTC	T
41	123*: 29%	remission	none	MESC: all biopsies T0	none
46	377: 13%	persistent p'u	not said	MEST	M
46	377: 14%	30% eGFR decline	not said	MEST	M
50	77*: 12%	10% eGFR decline	not said	MESTC	S without, none with i'supp in analysis
51	506: 11%	50% cr increase	p'u, other	MESTC	none
53	45: not said	50% cr	none	MESTC	none

		increase			
56	70: 33%	decline eGFR >15	not said	MEST	none
56	70: 11%	remission	not said	MEST	none
63	27*: 69%	cr doubled or eGFR <30	eGFR	MESTC	none
64	1130	rate eGFR decline	eGFR, p'u, MAP	MESTC	T
64	582 no i'supp	rate eGFR decline	p'u	MESTC	TC
70	453: 11%	30% eGFR decline or p'u increase	not said	MESTC	MST
72	149: not said	progression CKD stage	p'u, i'supp [with tonsilleX]	MESTC	none
76	305: 11%	decline eGFR 15% in 1y or 30% in 2y	MAP, i'supp, other	MESTC	none
83	384: 12%	30% eGFR decline	eGFR, BP, i'supp [nonsteroid]	MESTC	only circumfer-ential crescents
86	946	rate eGFR decline	eGFR, p'u, steroids	MESTC	T
90	101: not said	remission	eGFR	MESTC	MS

Summary: total number of analyses 38, analyses with C 25; Oxford scores associated with outcome (something other than end stage renal disease, alone or combined) 49 = M 9, E 2, S 8, T 15, C 2, none 13. **Remission or decline in proteinuria** number of analyses 6, analyses with C 2; Oxford scores associated with outcome 7 = M 2, E 0, S 1, T 2, C 0, none 2. **Rate eGFR decline (including rapid decline)** number of analyses 12, analyses with C 9; Oxford scores associated

with outcome 19 = M 2, E 1, S 4, T 10, C 1, none 1. **Various others** number of analyses 20, analyses with C 14; Oxford scores associated with outcome 23 = M 5, E 1, S 3, T 3, C 1, none 10.

Abbreviations: C, (fibro)cellular crescents; cr, serum creatinine concentration; E, endothelial hypercellularity; eGFR, estimated glomerular filtration rate, in ml/min per 1.73m^2 if a number is given; i'supp, immunosuppression; M, mesangial cellularity; MAP, mean arterial pressure; mGFR, measured glomerular filtration rate; p'u, proteinuria; RF, renal function; S, segmental sclerosis/capsular adhesion; T, tubular atrophy/interstitial fibrosis; tonsilleX, tonsillectomy: * number followed

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Supplemental Table 5

References relevant to immunosuppression (n = 89), other than controlled trials (n = 3 [42, 56, 88])

Reference numbers are those in Supplemental Table 1

Immunosuppression before biopsy

Specified treatment 9/89 [1, 3, 7, 9, 15, 19, 40, 58, 75]

Specified no treatment 14/89 [10, 12, 30, 33, 36, 45, 48, 51, 55, 60, 65, 72, 73, 92]

Not said 66/89

Immunosuppression after biopsy

No patients 6/89 (five studies) [3, 7, 8, 30, 41, 60]

All patients 4/89 [17, 27, 31, 90]

Between 0% and 100% of patients 79/89, although 13 only said that some were treated [16, 18, 22, 36, 44, 47, 49, 73, 80, 81, 85, 87, 89], and 10 gave ambiguous figures [20, 23, 48, 52, 55, 59, 69, 79, 83, 91]

Significant relation between at least one Oxford feature and use of immunosuppression after biopsy n=28

E, C [1], M, S, T [2], M, C [5], C [9], C [11], E, T [12], E, C [15], M, E, S, T [19], C [23], E [25], M [29], E, T, C [39], M, E, C [50], C [53], C2 [57], C [58], E, C [59], C2 [61], C [62], T [65], M, E, S, C [67], C [68], E [72], C [76], C2 [77], "renal vasculitic lesions" including C [79], E, S, C [86], C [89]

Totals C 21, E 11, M 6, T 5, S 4

No significant relation between at least one Oxford feature and use of immunosuppression after biopsy n=4 [13, 35, 38, 49]

Immunosuppression as variate in multivariate analyses of outcome

Immunosuppression included as a variate in outcome analysis in 25/79 papers that treated between none and all patients after biopsy. Reference numbers given with Oxford elements associated with outcome, and outcome:

Did not say whether immunosuppression had a relation to outcome 7/25 [5 ST, ESRD; 9 none, ESRD+; 46, two outcomes, M, other; 49 T, ESRD+; 50 none, other; 57 not C, ESRD; 70 MST, other]

Significantly improved outcomes with immunosuppression 10/25 [4, four analyses, STC, ESRD; 13 T, ESRD; 45 T, ESRD; 54 none, ESRD+; 62 ETC, ESRD+; 72 none, other; 76 none, other; 78 ST, ESRD; 83 C, other; 86 T, rate decline]

No improvement with immunosuppression 7/25 [35 SC, ESRD+; 51 none, other; 53, two outcomes, T or none, ESRD or other; 58 MT, ESRD+; 65 T, ESRD; 74 T, ESRD+; 92 T, ESRD+]

Worse outcome with immunosuppression 1/25 [66 T, ESRD]

The six papers that used no immunosuppression after biopsy showed relations between various outcomes and M, E, S, and T in four [3 M or T, ESRD+ or rate decline; 7 S or none, ESRD+ or rate decline; 8 M or S, remission or rate decline; 30 E or ET, ESRD or rate decline], or none of MEST or MESTC in two [41, ESRD+ or remission; 60, ESRD]. The four papers that treated all patients after biopsy showed a relation between various outcomes and M, S, and T in three [17 T, remission; 27 MT, ESRD+; 90 MT or MS, ESRD+ or remission], or none of MEST in one [31, ESRD].