

**Supplementary Table S1.** Measure of fitting for the latent classes (with covariates) for the model with and without ANCA; the lowest values (in bold) indicate optimal number of classes.

No. of classes	LL	AIC	BIC	$\chi^2$	G <sup>2</sup>
Including ANCA					
1	-3987.3	8004.6	8068.5	34444.8	2205.4
2	-3733.2	7536.5	7685.6	26703.1	1770.8
3	-3537.0	7184.1	<b>7418.4</b>	<b>26375.5</b>	1627.9
4	<b>-3485.0</b>	<b>7120.1</b>	7439.5	26538.4	<b>1547.5</b>
5	-3978.4	8146.8	8551.4	34583.8	2196.4
Excluding ANCA					
1	-3375.862	6777.724	6833.099	9045.173	1313.126
2	-3167.204	6396.409	6528.456	9628.075	1187.176
3	-3084.866	6267.732	<b>6476.451</b>	<b>6776.338</b>	1051.529
4	<b>-3054.508</b>	<b>6243.016</b>	6528.408	6809.827	1029.133
5	-3046.166	6262.331	6624.396	5845.122	<b>989.4713</b>

LL: log-likelihood; AIC: Akaike information criterion; BIC: Bayesian Information Criterion;  $\chi^2$ : chi-square; G<sup>2</sup>: (Likelihood ratio/deviance statistic); **in bold**: the lowest value of parameters indicating optimal number of classes.

**Supplementary Table S2.** Three-class model including cANCA/anti-PR3 and pANCA/anti-MPO as a variable.

	Class 1	Class 2	Class 3	<i>p</i>
No of patients	178	243	102	
GPA/MPA	176/2	230/13	11/91	
pANCA/anti-MPO	15	11	101	
cANCA /anti-PR3	132	231	8	
Age (yrs.); median	50.6	53.3	63.6	<0.00001# 1v2 NS 1v3 <0.00001 2v3 <0.00001
Male/female	64/114	151/92	49/53	<0.00001# 1v2 <0.05 1v3 <0.02 2v3 <0.00001
Organ involvement General; n (%)	141 (79.2)	216(88.9)	81 (79.4)	<0.02# 1v2 <0.01 1v3 NS 2v3 <0.02
Skin; n (%)	42 (23.6)	96(39.5)	26 (25.5)	<0.001# 1v2 <0.001 1v3 NS 2v3 <0.02
Eye; n (%)	63 (35.4)	50(20.6)	5 (4.9)	<0.000001# 1v2 <0.001 1v3 <0.00001 2v3 <0.001
ENT; n (%)	157(88.2)	155(63.8)	21 (20.6)	<0.00001 1v2 <0.00001 1v3 <0.0001 2v3 <0.00001
Respiratory; n (%)	117 (65.7)	194(79.8)	64 (62.7)	<0.001# 1v2 <0.002 1v3 =0.6 2v3 <0.001

	Class 1	Class 2	Class 3	<i>p</i>
Heart; n (%)	25 (14.0)	28(11.5)	13 (12.7)	NS <sup>#</sup>
GI; n (%)	8 (4.5)	37(15.2)	13(12.7)	<0.002 <sup>#</sup> 1v2 <0.001 1v3 <0.02 2v3 NS
Renal; n (%)	15 (8.4)	238(97.9)	100 (98.0)	<0.000001 <sup>#</sup> 1v2 <0.0001 1v3 <0.00001 2v3 NS
Urinary; n (%)	3 (1.7)	5(2.1)	3 (2.9)	NS <sup>#</sup>
CNS; n (%)	19 (10.7)	24(9.9)	4 (3.9)	NS <sup>#</sup>
Peripheral nerves; n (%)	38(21.3)	36(14.8)	21 (20.6)	NS <sup>#</sup>
Creatinine max <sup>1</sup> ; (mg/dl); median. [IQR]	1.0 [0.8-1.0]	2,5 [1.3-5.2]	3.8 [2.0-6.1]	<0.0001 <sup>#</sup> 1v2 <0.00001 1v3 <0.00001 2v3 NS
CRP at baseline (mg/l); median. [IQR]	28 [7.0-75.7]	48,5 [13.5-117.9]	33 [13-87]	<0.05 <sup>#</sup> 1v2 <0.03 1v3 NS 2v3 NS
Number of organs involved; mean (median) [IQR]	2,7 (3) [2-3]	3.55 (3) [3-4]	2.64 (2) [2-4]	<0.00001 <sup>#</sup> 1v2 <0.00001 1v3 NS 2v3 <0.00001
Patients with ≥ 1 relapse; n (%)	107 (60.1)	136(56.0)	22(21.6)	<0.001 <sup>#</sup> 1 vs. 2 NS 1 vs. 3 <0.00001 2 vs. 3 <0.00001
CTX (cumulative dose of cyclophosphamide) median (g); [IQR]	9 [6-20]	8 [3.5-10]	4.85 [2-7]	<0.0001 <sup>#</sup> 1 vs. 2 NS 1 vs. 3 <0.00001 2 vs. 3 <0.00001

<sup>1</sup>maximal serum creatinine concentration ever. Values after initiation of renal replacement therapy are excluded;

ENT: ear, nose, throat; CNS: central nervous system; GI: gastrointestinal tract; IQR: interquartile range; CTX: cyclophosphamide.

<sup>#</sup>Statistical comparison for all groups simultaneously.

**Supplementary Table S3.** Four-class model including cANCA/anti-PR3 and pANCA/anti-MPO as a variable.

	Class 1	Class 2	Class 3	Class 4	<i>p</i>
No of patients	130	194	102	97	
GPA/MPA	128/2	181/13	11/91	97/0	
pANCA/anti-MPO	15	10	101	1	
cANCA /anti-PR3	87	184	8	91	
Age (yrs.); median	51.8	55.5	63.5	43.1	<0.00001 <sup>#</sup> 1v2 NS 1v3 <0.00001 1v4 <0.02 2v3 <0.0002 2v4 <0.00001 3v4 <0.00001
Male/female	37/93	129/65	49/53	49/48	<0.00001 <sup>#</sup> 1v2 <0.0001 1v3 <0.001 1v4 <0.0001 2v3 <0.01 2v4 <0.01 3v4 NS
Organ involvement General; n (%)	93(71.5)	167(86.1)	81(79.4)	97(100)	<0.00001 <sup>#</sup> 1v2 <0.002 1v3 NS 1v4 <0.0001 2v3 NS 2v4 <0.001 3v4 <0.0001
Skin; n (%)	21(16.1)	69(35.5)	27(26.5)	47(48.5)	<0.00001 <sup>#</sup> 1v2 <0.001 1v3 NS ( <i>p</i> =0.054) 1v4 <0.00001 2v3 NS 2v4 <0.05 3v4 <0.002
Eye; n (%)	46(35.4)	25(12.9)	4(3.9)	43(44.3)	<0.00001 <sup>#</sup> 1v2 <0.00001 1v3 <0.00001 1v4 NS 2v3 <0.001 2v4 <0.00001 3v4 <0.0001
ENT; n (%)	111(85.4)	106(54.6)	20(19.6)	96(98.9)	<0.00001 <sup>#</sup> 1v2 <0.00001 1v3 <0.00001 1v4 <0.001 2v3 <0.00001 2v4 <0.00001 3v4 <0.00001
Respiratory; n (%)	72(55.4)	145(74.7)	64(62.7)	94(96.9)	<0.00001 <sup>#</sup> 1v2 <0.001 1v3 NS 1v4 <0.00001 2v3 <0.05 2v4 <0.00001 3v4 <0.00001
Heart; n (%)	13(10.0)	17(8.8)	13(12.7)	23(23.7)	<0.003 <sup>#</sup> 1v2 NS 1v3 NS 1v4 <0.01 2v3 NS 2v4 <0.001 3v4 <0.05

	Class 1	Class 2	Class 3	Class 4	<i>p</i>
GI; n (%)	4(3.1)	24(12.4)	13(12.7)	17(17.5)	<0.01# 1v2 <0.01 1v3 <0.01 1v4 <0.001 2v3 NS 2v4 NS 3v4 <NS
Renal; n (%)	11(8.5)	190(97.9)	99(97.1)	53(54.6)	<0.00001# 1v2 <0.00001 1v3 <0.00001 1v4 <0.00001 2v3 NS 2v4 <0.00001 3v4 <0.0001
Urinary; n (%)	2(1.5)	3(1.5)	3(2.9)	3(3.1)	NS#
CNS; n (%)	9(6.9)	9(4.6)	4(3.9)	25(25.8)	<0.00001# 1v2 NS 1v3 NS 1v4 <0.0001 2v3 NS 2v4 <0.0001 3v4 <0.0001
Peripheral nerves; n (%)	16(12.3)	27(13.9)	21(20.6)	31(32.0)	<0.001# 1v2 NS 1v3 NS 1v4 <0.001 2v3 NS 2v4 <0.001 3v4 NS
Creatinine max <sup>1</sup> ; (mg/dl); median. [IQR]	1.0[0.8-1.0]	3.3 [2.0-6.0]	3.8 [2.0-6.1]	1.16 [1-1.5]	<0.0001# 1v2 <0.00001 1v3 <0.0001 1v4 NS 2v3 NS 2v4 <0.00001 v4 <0.00001
CRP at baseline (mg/l); median. [IQR]	20 [6.0-46.5]	37 [12.1-117.7]	33.8 [13-100.5]	79 [22-159]	<0.00001# 1v2 <0.0002 1v3 <0.01 1v4 <0.00001 2v3 NS 2v4 NS 3v4 <0.00001
Number of organs involved; mean(median)[IQR]	2,3 (2) [2-3]	3.2 (3) [2-4]	2.62 (2) [2-3.75]	4.45 (4) [3-5]	<0.0001# 1v2 <0.00001 1v3 NS 1v4 <0.00001 2v3 <0.0001 2v4 <0.002 3v4 <0.00001
Patients with ≥ 1 relapse; n (%)	74 (56.9)	92 (47.4)	22 (21.6)	74 (76.3)	<0.0001# 1 vs. 2 NS 1 vs. 3 <0.00001 1 vs. 4 <0.01 2 vs. 3 <0.0001 2 vs. 4 <0.01 3 vs. 4 <0.00001
CTX (cumulative dose of cyclophosphamide) median (g); [IQR]	9.0 [6.0-16.25]	7.0 [4.0-13.0]	4.7 [1.85-7.0]	12.0 [6.8-23]	<0.0001# 1 vs 2 NS 1 vs 3 <0.00001 1 vs 4 NS 2 vs 3 <0.0001 2 vs 4 <0.001 3 vs 4 <0.00001

LL: log-likelihood; AIC: Akaike information criterion; BIC: Bayesian information criterion;  $\chi^2$ : chi-square; G2: (likelihood ratio/deviance statistic); **in bold:** the lowest value of parameters indicating optimal number of classes.

**Supplementary Table S4.** Three-class model without cANCA/anti-PR3 and pANCA/anti-MPO as a variable.

	Class 1	Class 2	Class 3	<i>p</i>
No. of patients	175	169	179	
GPA/MPA	94/81	148/21	175/4	
Age (yrs.); median	59.7	51.0	51.0	<0.00001# 1v2 <0.00001 1v3 <0.00001 2v3 NS
Male/female	101/74	100/69	63/116	<0.00001# 1v2 NS 1v3 <0.00001 2v3 <0.00001
Number of organs involved; mean (median) [IQR]	2.26 (2) [2-3]	4.3 (4) [3-5]	2.8 (3) [2-3.5]	<0.00001# 1v2 <0.00001 1v3 <0.00001 2v3 <0.001
Organ involvement General; n (%)	131 (74.8)	163 (96.4)	144(80.4)	<0.00001# 1v2 <0.00001 1v3 NS 2v3 <0.00001
Skin; n (%)	34 (19.4)	88 (52.1)	42(23.5)	<0.00001# 1v2 <0.00001 1v3 NS 2v3 <0.00001
Eye; n (%)	0 (0)	52 (30.1)	66(36.9)	<0.00001# 1v2 <0.00001 1v3 <0.00001 2v3 NS
ENT; n (%)	39 (22.3)	136(80.5)	158(88.3)	<0.00001# 1v2 <0.00001 1v3 <0.00001 2v3 <0.05
Respiratory; n (%)	115 (65.7)	141 (83.4)	119(66.5)	<0.001# 1v2 <0.001 1v3 NS 2v3 <0.001
Heart; n (%)	12 (6.9)	29 (17.2)	25(14.0)	<0.02# 1v2 <0.01 1v3 <0.05 2v3 NS
GI; n (%)	11(6.3)	38 (22.5)	9(5.0)	<0.00001# 1v2 <0.001 1v3 NS 2v3 <0.001
Renal; n (%)	168 (96.0)	169(100)	16(8.9)	<0.001# 1v2 <0.05 1v3 <0.00001 2v3 <0.00001
Urinary; n (%)	1(0.6)	6 (3.5)	4(2.2)	NS#
CNS; n (%)	0 (0)	28 (16.6)	19(10.6)	<0.00001# 1v2 <0.00001 1v3 <0.00001 2v3 NS

	Class 1	Class 2	Class 3	<i>p</i>
Peripheral nerves; n (%)	17 (9.7)	39(23.1)	39(21.8)	<0.002# 1v2 <0.001 1v3 <0.002 2v3 NS
Creatinine max <sup>1</sup> ; (mg/dl); median. [IQR]	3.85 [2.0-6.1]	2.0 [1.0-5.0]	1.0 [0.8-1.0]	<0.00001# 1v2 <0.0002 1v3 <0.00001 2v3 <0.00001
CRP at baseline (mg/l); median. [IQR]	32 [12.5-78.9]	62.3 [15.8-147.5]	30 [7.7-73.7]	<0.001# 1v2 <0.01 1v3 NS 2v3 <0.001
Death; n (%)	18(10.3)	23(13.6)	14(7.8)	NS#
Chronic renal replacement therapy n (%)	57(32.6)	32(18.9)	2(1.1)	<0.00001# 1v2 <0.01 1v3 <0.0001 2v3 <0.00001
Temporary renal replacement therapy n (%)	23(13.1)	20(11.8)	0(0)	<0.00001# 1v2 NS 1v3 <0.00001 2v3 <0.00001
Patients with at least one relapse; n (%)	53(30.3)	107(63.3)	109 (60.9)	<0.00001# 1v2 <0.0001 1v3 <0.0001 2v3 NS

LL: log-likelihood; AIC: Akaike information criterion; BIC: Bayesian information criterion;  $\chi^2$ : chi-square; G2: (likelihood ratio/deviance statistic); **in bold**: the lowest value of parameters indicating optimal number of classes.

**Supplementary Table S5.** Four-class model without cANCA/anti-PR3 and pANCA/anti-MPO as a variable.

	Class 1	Class 2	Class 3	Class 4	<i>p</i>
No. of patients	181	122	83	137	
GPA/MPA	101/80	103/19	82/1	131/6	
Age (yrs.); median	59.7	53.3	52.6	46.2	<0.00001 <sup>#</sup> 1v2 <0.002 1v3 <0.001 1v4 <0.00001 2v3 NS 2v4 <0.002 3v4 NS
Male/female	102/79	81/41	15/68	66/71	<0.00001 <sup>#</sup> 1v2 NS 1v3 <0.00001 1v4 NS 2v3 <0.00001 2v4 <0.01 3v4 <0.00001
Number of organs involved; mean(median)[IQR]	2.3 (2) [2-3]	4.22 (4) [3-5]	2.1 (2) [1.5-3]	3.67 (3) [3-4]	<0.00001 <sup>#</sup> 1v2 <0.00001 1v3 NS 1v4 <0.00001 2v3 <0.00001 2v4 <0.05 3v4 <0.00001
Death; n (%)	19(10.5)	20(16.4)	3 (3.6)	13(9.5)	<0.05 <sup>#</sup> 1v2 NS 1v3 NS <0.06 1v4 NS 2v3 <0.01 2v4 NS 3v4 NS
Chronic renal replacement therapy n (%)	60(33.2)	29(23.8)	1(1.2)	1(0.7)	<0.00001 <sup>#</sup> 1v2 NS 1v3 <0.00001 1v4 <0.00001 2v3 <0.00001 2v4 <0.00001 3v4 NS
Temporary renal replacement therapy n (%)	25(13.8)	17(13.9)	0(0)	1(0.7)	<0.00001 <sup>#</sup> 1v2 NS 1v3 <0.00001 1v4 <0.00001 2v3 <0.00001 2v4 <0.00001 3v4 NS
Patients with at least one relapse; n (%)	62(34.3)	74(60.7)	45(54.2)	89 (65.0)	<0.00001 <sup>#</sup> 1v2 <0.00001 1v3 <0.01 1v4 <0.00001 2v3 NS 2v4 NS 3v4 NS
Organ involvement General; n (%)	134(74.0)	121(99.2)	55 (66.3)	128 (93.4)	<0.00001 <sup>#</sup> 1v2 <0.00001 1v3 NS 1v4 <0.00001 2v3 <0.00001 2v4 <0.02 3v4 <0.00001
Skin; n (%)	38(21.0)	71(58.2)	16 (19.3)	39(28.5)	<0.00001 <sup>#</sup> 1v2 <0.00001 1v3 NS 1v4 NS 2v3 <0.00001 2v4 <0.00001 3v4 NS

	Class 1	Class 2	Class 3	Class 4	<i>p</i>
Eye; n (%)	6(3.3)	32(26.2)	29 (34.9)	51 (37.2)	<0.00001 <sup>#</sup> 1v2 <0.00001 1v3 <0.00001 1v4 <0.00001 2v3 NS 2v4 NS 3v4 NS
ENT; n (%)	43(23.8)	90(73.8)	71 (85.5)	129 (94.2)	<0.00001 <sup>#</sup> 1v2 <0.00001 1v3 <0.00001 1v4 <0.00001 2v3 <0.05 2v4 <0.0001 3v4 <0.05
Respiratory; n (%)	122(67.4)	94(77.0)	33 (39.8)	126 (92.0)	<0.00001 <sup>#</sup> 1v2 NS 1v3 <0.00001 1v4 <0.00001 2v3 <0.05 2v4 <0.001 3v4 <0.0001
Heart; n (%)	11(6.1)	22(18.0)	6 (7.2)	27 (19.7)	<0.001 <sup>#</sup> 1v2 <0.002 1v3 NS 1v4 <0.001 2v3 <0.05 2v4 NS 3v4 <0.01
GI; n (%)	10(5.5)	29(23.8)	0 (0)	19 (13.9)	<0.00001 <sup>#</sup> 1v2 <0.00001 1v3 NS 1v4 <0.02 2v3 <0.00001 2v4 <0.05 3v4 <0.002
Renal; n (%)	173(95.6)	121(99.2)	3 (3.6)	56 (40.9)	<0.00001 <sup>#</sup> 1v2 NS 1v3 <0.00001 1v4 <0.00001 2v3 <0.00001 2v4 <0.00001 3v4 <0.00001
Urinary; n (%)	1(0.6)	6(4.9)	0 (0)	4 (2.9)	NS <sup>#</sup>
CNS; n (%)	0(0)	22(18.0)	7 (8.4)	18 (13.1)	<0.00001 <sup>#</sup> 1v2 <0.00001 1v3 <0.001 1v4 <0.00001 2v3 NS 2v4 NS 3v4 NS
Peripheral nerves; n (%)	20(11.1)	28(22.9)	13 (15.7)	34 (24.8)	<0.01 <sup>#</sup> 1v2 <0.01 1v3 NS 1v4 <0.002 2v3 NS 2v4 NS 3v4 NS
Creatinine max <sup>1</sup> ; (mg/dl); median. [IQR]	4.0 [2.2-6.2]	3.0 [2.0-5.4]	0.9 [0.8-1.0]	1.0 [0.98-1.0]	<0.00001 <sup>#</sup> 1v2 NS 1v3 <0.00001 1v4 <0.00001 2v3 <0.00001 2v4 <0.00001 3v4 NS
CRP at baseline (mg/l); median. [IQR]	35.6 [12.8-95.5]	50.5 [19-137.6]	18 [5-42]	49 [13.0-127.9]	<0.00001 <sup>#</sup> 1v2 NS 1v3 <0.001 1v4 NS 2v3 <0.00001 2v4 NS 3v4 <0.0001

LL: log-likelihood; AIC: Akaike information criterion; BIC: Bayesian information criterion;  $\chi^2$ : chi-square; G2: (likelihood ratio/deviance statistic); **in bold**: the lowest value of parameters indicating optimal number of classes.



**Supplementary Table S6.** Clinical characteristics of classes obtained in analysis excluding ANCA.

	Class 1	Class 2	Class 3	Class 4
No of patients	181	122	83	137
AAV type	MPA:GPA 1:1	Mainly GPA	GPA (only 1 MPA)	Mainly GPA
Age at diagnosis	Middle age	Middle age	Middle age	Young
Male/female ratio	1,5:1	2:1	1:4	1:1
Main organ involvement	Renal, respiratory, ENT	Renal, respiratory, ENT, skin - multiorgan involvement	ENT, Respiratory, eye	ENT, respiratory, renal, eye – multiorgan involvement
Description according to [3]	low-extent extra-renal disease	wide-extent extra-renal disease	non renal AAV	<b>renal non-severe AAV</b>

**Supplementary Table S7.** Characteristics of the LCA class 1 in the 3 – and the 4 – class model with the inclusion of ANCA specificity as a variable.

	Class 1 (3 class model)	Class 1 (4 class model)	<i>p</i>
No of patients	178	130	
GPA/MPA	176/2	128/2	
pANCA/anti-MPO	15	15	
cANCA /anti-PR3	132	87	
Age (yrs.); median	50.6	51.8	NS
Male/female	64/114	37/93	NS
<b>Organ involvement</b>			
General; n (%)	141 (79.2)	93 (71.5)	NS
Skin; n (%)	42 (23.6)	21 (16.1)	NS
Eye; n (%)	63 (35.4)	46 (35.4)	NS
ENT; n (%)	157 (88.2)	111 (85.4)	NS
Respiratory; n (%)	117 (65.7)	72 (55.4)	NS
Heart; n (%)	25 (14.0)	13 (10.0)	NS
GI; n (%)	8 (4.5)	4 (3.1)	NS
Renal; n (%)	15 (8.4)	11 (8.5)	NS
Urinary; n (%)	3 (1.7)	2 (1.5)	NS
CNS; n (%)	19 (10.7)	9 (6.9)	NS
Peripheral nerves; n (%)	38 (21.3)	16 (12.3)	P<0.05
Creatinine max <sup>1</sup> ; (mg/dl); median. [IQR]	1.0 [0.8-1.0]	1.0 [0.8-1.0]	NS
CRP at baseline (mg/l); median. [IQR]	28 [7.0-75.7]	20 [6.0-46.5]	P<0.05
Number of organs involved; mean (median) [IQR]	2,7 (3) [2-3]	2,3 (2) [2-3]	P<0.05

LL: log-likelihood; AIC: Akaike information criterion; BIC: Bayesian information criterion;  $\chi^2$ : chi-square; G2: (likelihood ratio/deviance statistic); **in bold**: the lowest value of parameters indicating optimal number of classes.

**Supplementary Table S8.** Characteristics of LCA class 2 in the 3- and the 4-class model with the inclusion of ANCA as a variable.

	Class 2 (3 class model)	Class 2 (4 class model)	<i>p</i>
No. of patients	243	194	
GPA/MPA	230/13	181/13	
pANCA/anti-MPO	11	10	
cANCA /anti-PR3	231	184	
Age (yrs.); median	53.3	55.5	NS
Male/female	151/92	129/65	NS
Organ involvement			
General; n (%)	216 (88.9)	167 (86.1)	NS
Skin; n (%)	96 (39.5)	69 (35.5)	NS
Eye; n (%)	50 (20.6)	25 (12.9)	<i>p</i> <0.05
ENT; n (%)	155 (63.8)	106 (54.6)	<i>p</i> =0.06
Respiratory; n (%)	194 (79.8)	145 (74.7)	NS
Heart; n (%)	28 (11.5)	17 (8.8)	NS
GI; n (%)	37 (15.2)	24 (12.4)	NS
Renal; n (%)	238 (97.9)	190 (97.9)	NS
Urinary; n (%)	5 (2.1)	3 (1.5)	NS
CNS; n (%)	24 (9.9)	9 (4.6)	<i>p</i> <0.05
Peripheral nerves; n (%)	36 (14.8)	27 (13.9)	NS
Creatinine max <sup>1</sup> ; (mg/dl); median. [IQR]	2,5 [1.3-5.2]	3.3 [2.0-6.0]	<i>p</i> <0.01
CRP at baseline (mg/l); median. [IQR]	48,5 [13.5-117.9]	37 [12.1-117.7]	NS
Number of organs involved; mean (median) [IQR]	3.55 (3) [3-4]	3.2 (3) [2-4]	<i>p</i> <0.01

LL: log-likelihood; AIC: Akaike information criterion; BIC: Bayesian Information Criterion;  $\chi^2$ : chi-square; G2: (Likelihood ratio/deviance statistic); **in bold**: the lowest value of parameters indicating optimal number of classes.