

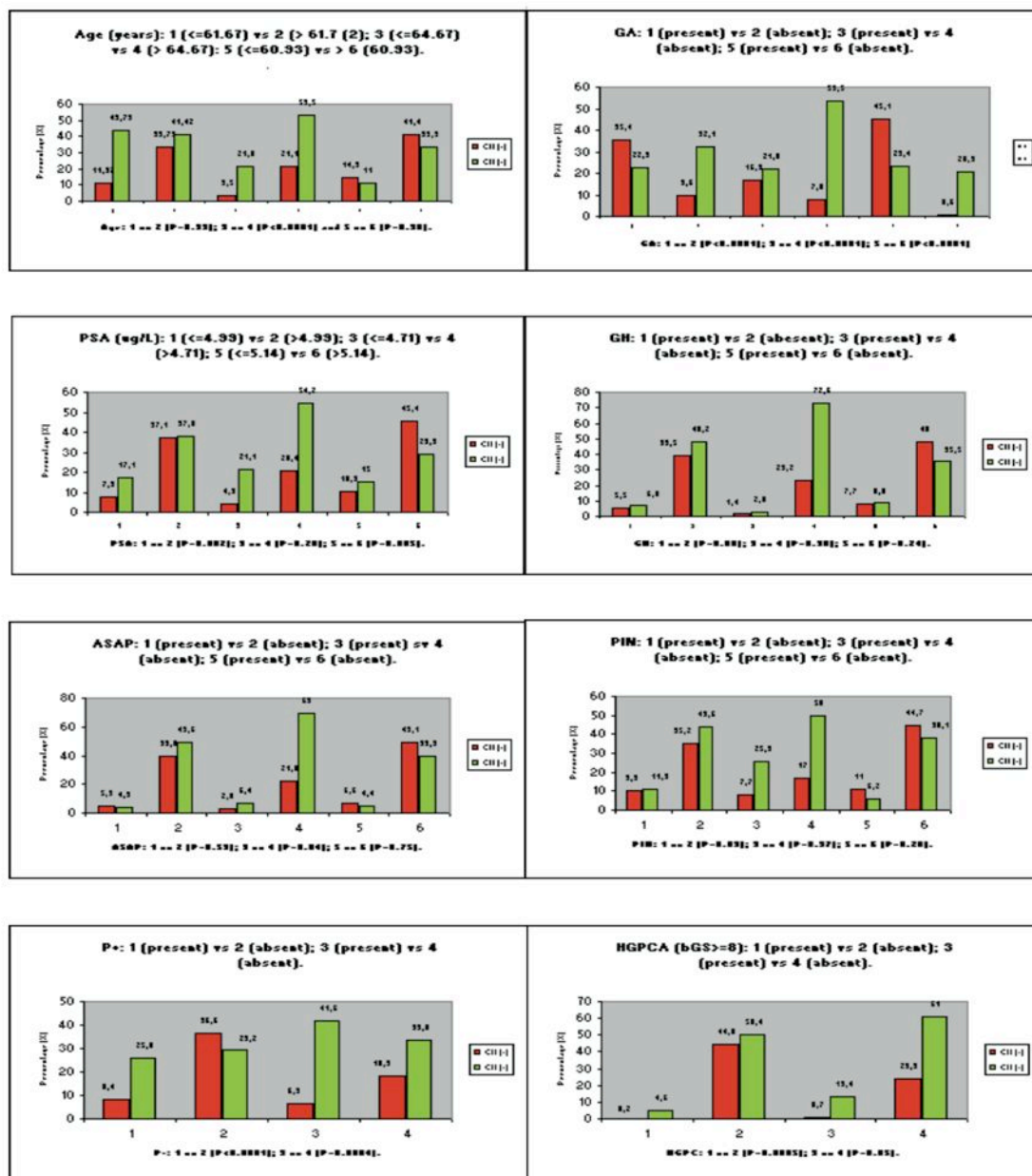
# Chronic inflammation of the prostate type IV with respect to risk of prostate cancer

Antonio B. Porcaro<sup>1</sup>, Emanuele Rubilotta<sup>1</sup>, Aldo Petrozziello<sup>2</sup>, Claudio Ghimenton<sup>3</sup>, Filippo Migliorini<sup>1</sup>, Stefano Zecchini Antonioli<sup>1</sup>, Vincenzo Lacola<sup>1</sup>, Carmelo Monaco<sup>1</sup>, Pierpaolo Curti<sup>1</sup>, Stefano Cavalleri<sup>1</sup>, Romeo Pianon<sup>1</sup>, Walter Artibani<sup>1</sup>

<sup>1</sup> Urologic Clinic, <sup>2</sup> Geriatric Medicine/Endocrinology, <sup>3</sup> Pathology, University Hospitals, Ospedale Policlinico and Ospedale Civile Maggiore, Azienda Ospedaliera Universitaria Integrata, Verona, Italy.

**Figure 1.**

Associations of CII: present (CII+) vs absent (CII-) with the other variables in the patient population (1 vs 2), PCA subpopulation (3 vs 4) and subpopulation without PCA (5 vs 6).



**Table 1.**  
*Statistics of population, subpopulations and subgroups of patients (n = 415).*

Population (n=415)					Subpopulations				
Variable	Mean	SD	min	max	Without PCA (n=273)		PCA (n=142)		
Variable	mean	SD	mean	SD	mean	SD	mean	SD	P-value
Age (years)	67.47	7.73	45.28	90.15	66.56	7.3	69.23	8.1	<0.0007
PSA (µg/l)	19.26	69.06	0.34	852.00	13.69	34.9	29.96	107.1	0.02
CI+	0.29	0.40	0.00	1.00	0.38	0.4	0.06	0.2	<0.0001
GA+	0.39	0.42	0.00	1.00	0.50	0.4	0.16	0.3	<0.0001
GH+	00:07	00:24	00:00	1.00	0.10	0.3	0.01	0.1	0.0002
PIN+	00:04	00:11	00:00	0.92	0.03	0.08	0.07	0.1	0.001
ASAP+	00:01	00:03	00:00	0.35	0.009	0.03	0.01	0.03	0.72

Subgroups without PCA, n=273					PCA subgroups, n=142				
Variable	mean	SD	mean	SD	mean	SD	mean	SD	P-value
Age (years)	61.2	7.24	67.0	7.49	72.6	8.5	68.1	8.2	0.003
PSA (µg/l)	15.8	36.5	11.1	32.7	11.2	11.6	36.1	122.7	0.04
GA+	0.58	0.42	0.41	0.44	0.33	0.31	0.11	0.24	0.0003
GH+	0.07	0.23	0.14	0.33	0.02	0.12	0.01	0.09	0.70
PIN+	0.01	0.009	0.00	0.00	0.06	0.15	0.07	0.15	0.87
ASAP+	0.03	0.10	0.03	0.02	0.01	0.04	0.01	0.03	0.87
P+					0.25	0.15	0.42	0.29	<0.0001
CI+									

A, bGS≤6 (n=78, 54.9%)		B, bGS=7 (n=44, 31%)		C, bGS≥8 (n=20, 14.1%)		A vs B		A vs C		B vs C	
mean	SD	mean	SD	mean	SD	P-value	P-value	P-value	P-value	P-value	
69.0	7.6	69.1	8.9	70.4	8.6	0.97	0.51	0.17	0.07	0.26	
9.6	29.1	37.5	132.6	92.4	197.6	0.11	<0.0001	0.09	0.11	0.01	
0.22	0.31	0.14	0.24	0.03	0.09	0.18	0.08	0.00	0.18	0.19	
0.02	0.13	0.005	0.02	0.00	0.00	0.11	0.49	0.10	0.13	0.66	
0.08	0.17	0.04	0.10	0.06	0.13	0.54	0.01	0.03	0.00	0.03	
0.01	0.04	0.01	0.03	0.00	0.00	<0.0001	<0.0001	0.27	0.65	0.04	
0.25	0.19	0.48	0.27	0.65	0.28	0.02	<0.0001	0.02	0.02	0.008	
0.17	0.30	0.07	0.17	0.005	0.02						

Legend: SD, standard deviation; PSA, total prostate specific antigen; +, proportion of cores involved; CI+, chronic inflammatory infiltrate; GA+, glandular atrophy; GH, glandular hyperplasia; PIN, prostatic intraepithelial neoplasia; ASAP+, atypical small acinar cell proliferation; P+, biopsy cores positive for cancer; bGS, biopsy Gleason score.

**Table 2.**  
Associations of chronic inflammation (CII) in population and subpopulations of patients.

	Patient population, n=415				Subpopulation with PCA, n=142 (34.2%)				Subpopulation without PCA, n=273 (65.8%)											
	CII present n (%)	CII absent n (%)	total	$\chi^2$	P-value	OR (95%CI)	CII present n (%)	CII absent n (%)	total	$\chi^2$	P-value	OR (95%CI)	CII present n (%)	CII absent n (%)	total	$\chi^2$	P-value	OR (95%CI)		
Age (years)	≤ 61.67 > 61.37	47 (11.32) 140 (33.73)	57 (43.73) 171 (41.2)	104 (25.1) 311 (74.9)	0.0068	0.93	1.0 (Ref) 1.0 (0.64-1.56)	≤ 64.37 > 64.37	5 (3.5) 30 (21.1)	31 (21.8) 76 (53.5)	36 (24.2) 106 (74.7)	24.16	<0.0001	1.0 (Ref) 0.40 (0.14-1.12)	≤ 60.93 > 60.93	39 (14.3) 113 (41.4)	69 (25.3) 204 (74.7)	0.0005	0.98	1.0 (Ref) 1.04 (0.59-1.80)
PSA (ug/L)	≤ 4.99 > 4.99	33 (7.9) 154 (37.1)	71 (17.1) 157 (37.8)	104 (25.1) 311 (75.9)	9.25	0.002	1.0 (Ref) 0.47 (0.29-0.75)	≤ 4.71 > 4.71	6 (4.3) 29 (20.4)	30 (21.1) 77 (54.2)	36 (25.4) 106 (74.6)	1.12	0.28	1.0 (Ref) 0.53 (0.19-1.40)	≤ 5.14 > 5.14	28 (10.3) 124 (45.4)	41 (15.0) 80 (29.3)	7.73	0.005	1.0 (Ref) 0.44 (0.25-0.76)
GA	present absent	147 (35.4) 40 (9.6)	95 (22.9) 133 (32.1)	242 (58.3) 173 (41.7)	56.17	<0.0001	1.0 (Ref) 5.14 (3.31-7.96)	present absent	24 (16.9) 11 (7.8)	31 (21.8) 76 (53.5)	55 (38.7) 87 (61.3)	15.79	<0.0001	1.0 (Ref) 5.34 (2.33-12.20)	present absent	123 (45.1) 29 (10.6)	64 (23.4) 57 (20.9)	23.24	<0.0001	1.0 (Ref) 3.77 (2.19-6.46)
GH	present absent	23 (5.5) 164 (39.5)	28 (6.8) 200 (48.2)	51.0 364.0	0.02	0.88	1.0 (Ref) 1.0 (0.55-1.80)	present absent	2 (1.4) 33 (23.2)	4 (2.8) 103 (72.6)	6 (4.2) 136 (95.8)	0.0004	0.98	1.0 (Ref) 1.5 (0.26-8.56)	present absent	21 (7.7) 131 (48.0)	24 (8.8) 97 (35.5)	1.36	0.24	1.0 (Ref) 0.64 (0.33-1.21)
ASAP	present absent	22 (5.3) 165 (39.8)	22 (5.3) 206 (49.6)	44 (10.6) 371 (89.4)	0.28	0.59	1.0 (Ref) 1.24 (0.66-2.31)	present absent	4 (2.8) 31 (21.8)	9 (6.4) 98 (69.0)	13 (9.2) 129 (90.8)	0.03	0.84	1.0 (Ref) 1.4 (0.40-4.86)	present absent	18 (6.6) 134 (49.1)	12 (4.4) 109 (39.9)	0.09	0.75	1.0 (Ref) 1.22 (0.56-2.64)
PIN	present absent	41 (9.9) 146 (35.2)	47 (11.3) 181 (43.6)	88 (21.2) 327 (78.8)	0.041	0.83	1.0 (Ref) 1.00 (0.62-1.60)	present absent	11 (7.7) 24 (17.0)	36 (25.3) 71 (50.0)	47 (33.1) 95 (66.9)	0.001	0.97	1.0 (Ref) 0.90 (0.39-2.04)	present absent	30 (11.0) 122 (44.7)	17 (6.2) 104 (38.1)	1.15	0.28	1.0 (Ref) 1.50 (0.78-2.97)
P+	present absent	35 (8.4) 152 (36.6)	107 (25.8) 121 (29.2)	142 (34.2) 273 (65.8)	36.57	<0.0001	1.0 (Ref) 0.26 (0.16-0.40)	> 0.33 ≤ 0.33	9 (6.3) 26 (18.3)	59 (41.6) 48 (33.8)	68 (47.8) 74 (52.1)	8.0	0.0004	1.0 (Ref) 0.28 (0.11-0.65)	> 0.33 ≤ 0.33	9 (6.3) 26 (18.3)	68 (47.8) 48 (33.8)	0.0004	0.05	1.0 (Ref) 0.13 (0.01-1.00)
bGS ≥ 8	present absent	1 (0.2) 166 (44.8)	19 (4.6) 209 (50.4)	20 (4.8) 395 (95.2)	11.97	0.0005	1.0 (Ref) 0.05 (0.006-0.37)	present absent	1 (0.7) 34 (23.9)	19 (13.4) 88 (61.0)	20 (14.1) 122 (85.9)	3.68	0.05	1.0 (Ref) 0.13 (0.01-1.00)	present absent	30 (11.0) 122 (44.7)	17 (6.2) 104 (38.1)	1.15	0.28	1.0 (Ref) 1.50 (0.78-2.97)
DRE	abnormal normal	46 (11.1) 141 (33.9)	82 (19.8) 146 (35.9)	128 (30.8) 287 (69.2)	5.70	0.01	1.0 (Ref) 0.58 (0.37-0.89)	abnormal normal	16 (11.3) 19 (13.4)	51 (35.9) 56 (39.4)	67 (47.2) 75 (52.8)	0.03	0.84	1.0 (Ref) 0.92 (0.42-1.97)	abnormal normal	30 (11.0) 122 (44.7)	31 (11.3) 90 (33.0)	1.02	0.31	1.0 (Ref) 0.71 (0.40-1.25)

**Table 3**  
Multivariate regression analysis of population and subpopulations of patients.

A) Patient population (n=415)						B) Patient subpopulation with PCA (n=142)						C) Patient subpopulation without PCA (n=273)					
1) CII multivariate associations						1) CII multivariate associations						1) CII multivariate associations					
Variable	b	se	t-Stat	P-value	95% CI	Variable	b	se	t-Stat	P-value	95% CI	Variable	b	se	t-Stat	P-value	95% CI
Intercept	0.23	0.15	1.56	0.11	-0.06; 0.53	Intercept	0.02	0.19	0.15	0.87	-0.35; 0.41	Intercept	0.45	0.22	2.03	0.04	0.01; 0.89
Age (years)	-0.0003	0.002	-0.13	0.89	-0.004; 0.004	Age (years)	0.004	0.002	1.81	0.07	-0.0003; 0.009	Age (years)	-0.003	0.003	-1.14	0.25	-0.01; 0.002
PSA (µg/l)	0.0001	0.0002	0.72	0.46	-0.0003; 0.0006	PSA (µg/l)	<0.0001	0.0001	0.34	0.73	(-0.0003; 0.0004)	PSA (µg/l)	0.001	0.0006	1.60	0.11	-0.0002; 0.002
GA+	0.38	0.04	8.66	<0.0001	0.29; 0.47	GA+	0.30	0.07	3.98	0.0001	0.15; 0.45	GA+	0.39	0.05	7.22	<0.0001	0.28; 0.50
GH+	-0.16	0.07	-2.22	0.02	-0.30; -0.01	GH+	0.15	0.19	0.79	0.42	-0.22; 0.53	GH+	-0.18	0.085	-2.20	0.02	-0.35; -0.02
ASAP+	-0.35	0.49	-0.71	0.47	-1.33; 0.62	ASAP+	-0.47	0.48	-0.99	0.32	-1.43; 0.47	ASAP+	-0.22	0.77	-0.29	0.77	-1.75; 1.30
PIN+	-0.11	0.15	-0.76	0.44	-0.41; 0.18	PIN+	-0.04	0.13	-0.03	0.96	-0.26; 0.25	PIN+	-0.31	0.26	-1.18	0.23	-0.84; 0.20
P+	-0.08	0.12	-0.69	0.49	-0.33; 0.15	P+	-0.04	0.09	-0.52	0.59	-0.22; 0.13	P+	-0.02	0.05	-0.04	0.96	-0.11; 0.11
bGS	-0.01	0.009	-1.91	0.05	-0.03; 0.0004	bGS	-0.03	0.01	-1.94	0.05	-0.07; 0.0005	bGS	-0.02	0.05	-0.04	0.96	-0.11; 0.11
DRE	-0.01	0.03	-0.34	0.73	-0.09; 0.06	DRE	-0.03	0.04	-0.76	0.44	-0.12; 0.05	DRE	-0.02	0.05	-0.04	0.96	-0.11; 0.11

2) bGS multivariate associations excluding GA						2) bGS multivariate associations excluding GA						2) CII multivariate associations excluding GA					
Variable	b	se	t-Stat	P-value	95% CI	Variable	b	se	t-Stat	P-value	95% CI	Variable	b	se	t-Stat	P-value	95% CI
Intercept	-0.71	0.78	-0.91	0.36	-2.25; 0.82	Intercept	4.80	0.78	6.13	<0.0001	3.35; 6.35	Intercept	0.64	0.24	2.67	0.007	0.17; 1.11
Age (years)	0.02	0.01	2.17	0.02	0.002; 0.04	Age (years)	0.01	0.01	1.00	0.31	-0.01; 0.03	Age (years)	-0.003	0.003	-0.90	0.36	-0.01; 0.003
PSA (µg/l)	0.0008	0.001	0.66	0.50	-0.001; 0.003	PSA (µg/l)	0.001	0.0008	1.98	0.04	<0.0001; 0.003	PSA (µg/l)	0.001	0.0007	1.66	0.09	-0.0002; 0.002
CII+	-0.68	0.23	-2.96	0.003	-1.14; 0.23	CII+	-0.82	0.37	-2.18	0.03	-1.56; -0.07	GH+	-0.23	0.09	-2.49	0.01	-0.41; -0.04
GH+	-0.72	0.37	-1.95	0.05	-1.45; 0.004	GH+	-0.87	0.87	-0.99	0.32	-2.60; 0.86	ASAP+	-0.66	0.84	-0.78	0.43	-2.33; 1.00
ASAP+	3.07	2.54	1.20	0.22	-1.92; 8.06	ASAP+	0.36	2.24	0.16	0.87	-4.07; 4.80	PIN+	-0.56	0.28	-1.96	0.05	-1.13; 0.0006
PIN+	2.67	0.75	3.51	0.0004	1.17; 4.16	PIN+	0.04	0.59	0.07	0.94	-1.14; 1.22	DRE	-0.03	0.06	-0.53	0.59	-0.15; 0.09
P+	9.85	0.41	24.03	<0.0001	9.05; 10.66	P+	2.00	0.36	5.48	<0.0001	1.28; 2.73	DRE	-0.03	0.06	-0.53	0.59	-0.15; 0.09
DRE	0.06	0.20	0.31	0.75	-0.33; 0.46	DRE	0.27	0.19	1.35	0.17	-0.12; 0.66	DRE	-0.03	0.06	-0.53	0.59	-0.15; 0.09

3) bGS associations excluding CII						3) bGS multivariate associations excluding CII						3) GA multivariate associations excluding CII					
Variable	b	se	t-Stat	P-value	95% CI	Variable	b	se	t-Stat	P-value	95% CI	Variable	b	se	t-Stat	P-value	95% CI
Intercept	-0.71	0.78	-0.91	0.35	-2.25; 0.82	Intercept	4.94	0.79	6.21	<0.0001	3.37; 6.51	Intercept	0.48	0.24	1.96	0.05	-0.003; 0.96
Age (years)	0.02	0.01	2.28	0.02	0.003; 0.04	Age (years)	0.008	0.01	0.72	0.46	-0.01; 0.03	Age (years)	0.001	0.003	0.35	0.72	-0.005; 0.008
PSA (µg/l)	0.0007	0.001	0.58	0.56	-0.001; 0.003	PSA (µg/l)	0.001	0.0008	1.93	0.05	<0.0001; 0.003	PSA (µg/l)	0.0003	0.0007	0.48	0.62	-0.001; 0.001
GA+	-0.68	0.22	-3.02	0.002	-1.12; -0.23	GA+	-0.36	0.35	-1.01	0.31	-1.06; 0.34	GH+	-0.11	0.009	-1.16	0.24	-0.29; 0.07
GH+	-0.66	0.36	-1.79	0.07	-1.38; 0.06	GH+	-1.06	0.89	-1.18	0.23	-2.83; 0.71	ASAP+	-1.09	0.86	-1.26	0.20	-2.80; 0.60
ASAP+	2.84	2.54	1.11	0.26	-2.15; 7.85	ASAP+	0.70	2.27	0.30	0.75	-3.79; 5.20	PIN+	-0.63	0.29	-2.14	0.03	-1.21; -0.05
PIN+	2.54	0.76	3.38	0.0007	1.08; 4.08	PIN+	0.02	0.61	0.04	0.96	-1.18; 1.23	DRE	-0.07	0.06	-1.19	0.23	-0.20; 0.04
P+	9.77	0.41	23.35	<0.0001	8.9; 10.59	P+	2.06	0.39	5.29	<0.0001	1.29; 2.83	DRE	-0.07	0.06	-1.19	0.23	-0.20; 0.04
DRE	0.07	0.20	0.36	0.71	-0.32; 0.47	DRE	0.31	0.20	1.55	0.12	-0.08; 0.72	DRE	-0.07	0.06	-1.19	0.23	-0.20; 0.04