

# CLINICAL DETERMINANTS OF PROSTATE CANCER SURVIVAL IN A REFERRAL HOSPITAL IN BARCELONA

Claudia Robles<sup>1</sup>, Cristiane Murta-Nascimento<sup>1</sup>, José Antonio Lorente<sup>2</sup>, Joaquim Bellmunt<sup>3</sup>, Josep Lloreta<sup>4</sup>, Angels Hospital<sup>1</sup>, Andrea Burón<sup>1</sup>, Francesc Macià<sup>1,5</sup>

<sup>1</sup>Servei d'Epidemiologia i Avaluació, Hospital del Mar-Parc de Salut Mar, Barcelona, Spain. <sup>2</sup>Servei d'Urologia, Hospital del Mar-Parc de Salut Mar, Barcelona, Spain. <sup>3</sup>Servei d'Oncologia, Hospital del Mar-Parc de Salut Mar, Barcelona, Spain. <sup>4</sup>Servei d'Anatomia Patològica, Hospital del Mar-Parc de Salut Mar, Barcelona, Spain. <sup>5</sup>CIBER Epidemiología y Salud Pública (CIBERESP), Spain

\*Contact: fmacia@parcdesalutmar.cat

## INTRODUCTION

- There are four factors widely recognised that affect the prognosis of newly diagnosed prostate cancer patients: the prostate-specific antigen serum levels before the treatment (pre-PSA), pathologic stage, Gleason score and surgical margins status in the patients undergoing radical prostatectomy. However, these factors do not fully explain the evolution of patients with this neoplasia. The identification of new factors easily obtained and that do not increase cost is clearly necessary.
- Chronic inflammation affects the survival of some neoplasias but its effect on prostate cancer prognosis is unknown.
- The aim of this study was to assess the prognostic value of laboratory parameters related to systemic inflammation in prostate cancer diagnosed and/or treated in a teaching hospital in Barcelona, Spain.

## MATERIALS AND METHODS

- This study was based on the information recorded by the Cancer Registry of the Hospital del Mar. This centre is a public teaching hospital primarily serving a population of 300,000 inhabitants from Barcelona (Catalonia, Spain).
- The follow up information is updated automatically every time subjects come to the hospital. Information on date and cause of death are obtained periodically through a record linkage procedure with the Catalan Mortality Registry.
- The outcome of interest was prostate cancer-related death. Patients who were alive at the end of the study, those lost to follow-up, and those who died from other causes were censored either at last contact or at death.
- Men with primary prostate cancer diagnosed between 1992 and 2006 were identified through the Hospital del Mar Cancer Registry. Patients were followed until 31 December 2007. We analyzed the effect of known prognostic factors (pre-PSA, disease stage, Gleason score, age and diagnosis period) and the parameters associated with systemic inflammation (haemoglobin, leukocytes, neutrophils, platelets, albumin, cholesterol and triglycerides). Kaplan-Meier curves and Cox models were used to analyze disease-specific survival.

## RESULTS

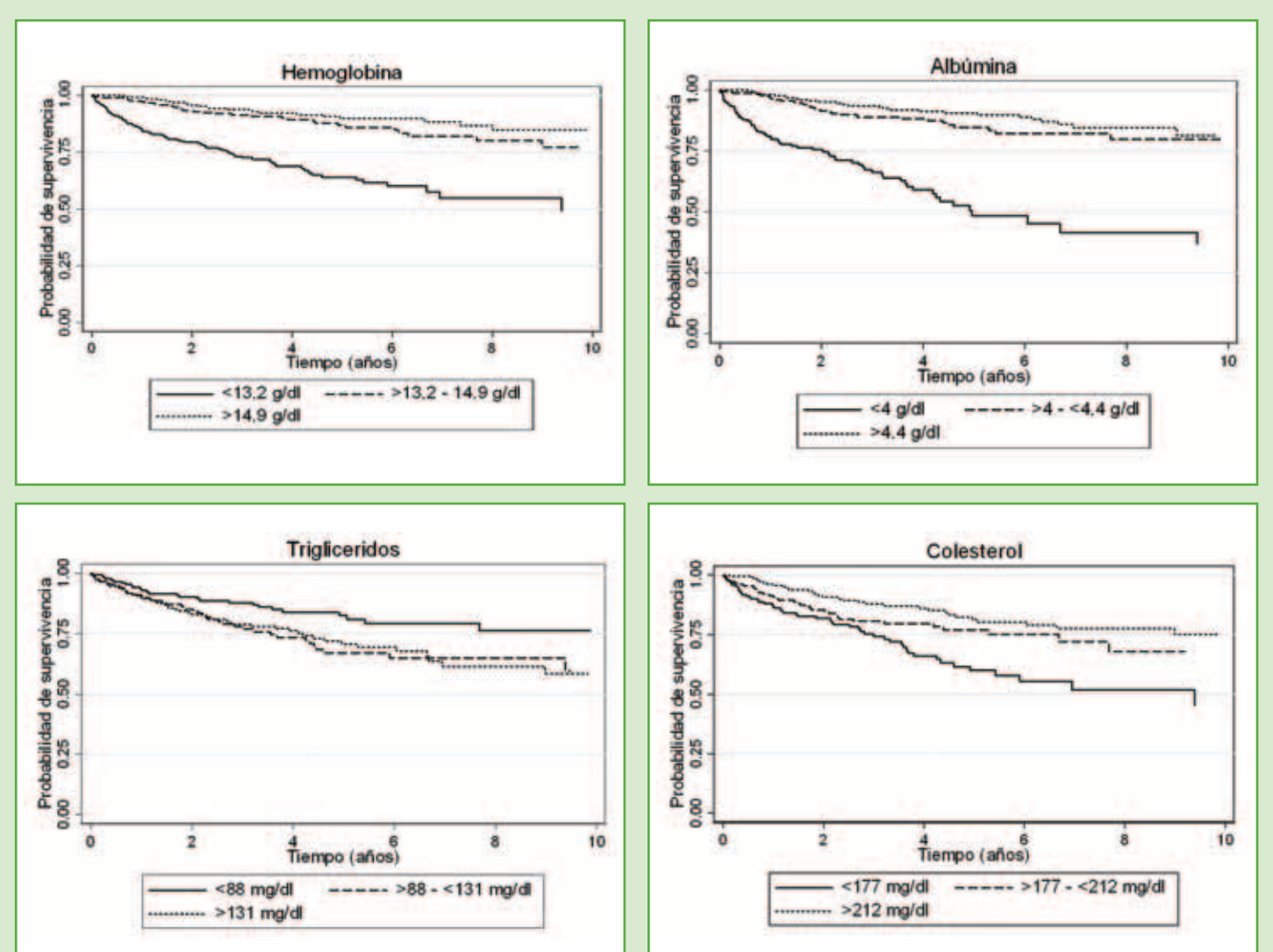
- The final study sample was 1,020 men. Almost 98% of them had the histological diagnosis of prostate adenocarcinoma. The median age at diagnosis was 71.1 years (SD 8.1 years).
- The survival rate was 83.4% at 5 years (95%CI: 80.5%-85.9%) and 75.2% (95%CI: 70.3%-79.3%) at 10 years of follow up.
- Table 1 shows the classical prostate cancer prognostic factors. Table 2 shows the Cox analysis for haematological parameters. In univariate analysis, albumin, total cholesterol, haemoglobin and triglycerides significantly influenced survival from prostate cancer (Figure). In multivariate analysis, adjusting for age, Gleason score, pre-PSA, tumour stage and metastasis, the results were significant only for albumin, haemoglobin and triglycerides.

**Table 1. Cox model - Classical prostate cancer prognostic factors**

Variable	N	Events	HR*	95%CI	p-value
<b>Age at diagnosis</b>	1020	154	1.04	1.02-1.06	<b>0.001</b>
<b>PSA (terciles)</b>					<b>&lt;0.001</b>
≤7,27 ng/ml	288	10	1.00	Ref.	
7,28 - 17,48	288	16	1.39	0.63-3.08	
>17,48 ng/ml	298	110	3.37	1.69-6.72	
Unknown	146	18	1.20	0.54-2.67	
<b>Tumour</b>	1020	154			<b>0.002</b>
T1-2	548	21	1.00	Ref.	
T3-4	158	23	2.17	1.15-4.13	
Tx	314	110	3.49	1.65-7.35	
<b>Node</b>					0.552
N0	657	32	1.00	Ref.	
N1	37	13	1.47	0.68-3.21	
Nx	326	109	1.04	0.49-2.24	
<b>Metastasis</b>					<b>&lt;0.001</b>
M0	758	47	1.00	Ref.	
M1	132	82	5.68	3.50-9.20	
Mx	130	25	1.38	0.77-2.46	
<b>Gleason score</b>	947	137			<b>0.001</b>
2-6	399	30	1.00	Ref.	
7	300	41	1.83	1.13-2.97	
8-10	248	66	2.11	1.30-3.41	
Unknown	73	17	0.82	0.43-1.57	
<b>Year</b>	1020	154			0.844
1992-1996	187	66	1.00	Ref.	
1997-2001	343	55	0.92	0.62-1.38	
2002-2006	490	33	0.87	0.52-1.43	

\*Adjusted for all variables included in the table

**Figure. Kaplan-Meier survival curves**



**Table 2. Cox model - Haematological parameters**

Variable	N	Events	HR*	95%CI	p-value
Haemoglobin	821	135	0.90	0.83-0.97	0.010
Neutrofiles	820	135	0.99	0.92-1.06	0.709
Leukocytes	819	135	0.96	0.90-1.02	0.126
Platelets	818	135	1.00	0.99-1.00	0.755
Albumin	694	126	0.51	0.35-0.75	0.001
Total Cholesterol	547	121	0.99	0.99-1.00	0.089
Triglycerides	548	121	1.00	1.00-1.01	0.007

\*Adjusted for age, pre-PSA, tumour stage, metastasis and Gleason score

## CONCLUSION

- These results suggest an effect of some haematological parameters related to systemic inflammation in the prostate cancer-specific survival.