

Cronigal: a simple prognostic index for chronic patients after hospital admission

Chronic and Polypathological patients (PP) account for a significant percentage both in primary care and in hospital setting. This has led to an increased interest in finding a prognostic survival index in patients with chronic diseases affecting one or different systems and producing functional impairment, dependency, high impact for the patient and their relatives and high mortality at hospital admission and in the subsequent follow-up at primary.

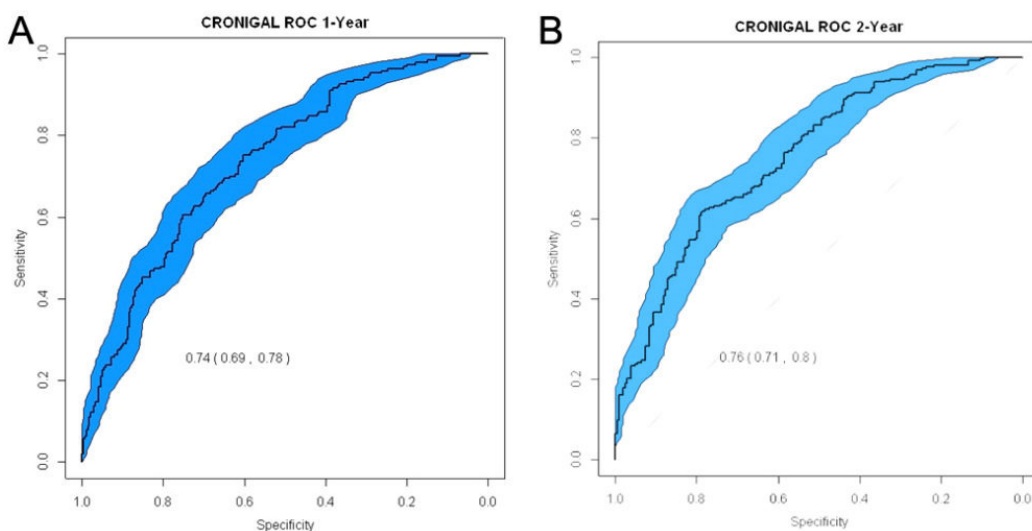


Fig. 1.

In the last few years, different prognostic indexes have emerged that include different variables and establish a survival prognosis at one or two years. The majority of these indexes are applicable to patients over 65 with one chronic disease, some of them are applicable to polypathological patients, but while some of them include functionality, and despite their good prognostic capability, they include multiple variables and their use is not widespread, over all for polypathological patients.

In Spain, we have had a prognostic index available since 2011 that applies only to polypathological patients under the definition of polypathology stated above, i.e., the PROFUND index. Nevertheless, this index cannot assess chronic, non-polypathological patients according to current criteria who present with other comorbidities or functional dependency.

We have followed up 567 patients admitted to a specific Polypathology and Advanced Age Unit for two years in order to establish the variables that best define medium-term mortality prognosis. A simple, practical index was sought that could be applicable to the complex chronic patient: a chronic and polypathological patient after hospital admission.

A total of 567 patients were included: 333 met polypathological (PPP) criteria and 234 chronic criteria (CC). Mean age was 84.8 + 7.3 years. During admission 98 patients (17%) died. A total of 469 were followed up for two years, most patients belonged to category E (282), 174 to category A and 118 to category C. After one-year follow-up a total of 193 patients died, which accounts for 41% of patients discharged, 123 were PPP (63.7%) and 70 (36.3%) were chronic (p:0.010). Among patients deceased within the first year the most frequent variables were dementia, neoplasia, delirium at admission, Barthel Index under 60 or with deceased spouse (p<0.05).

A multivariate analysis found that the mortality prognosis at one year of our patients can be estimated with 7 variables (age, neoplasia, delirium, Barthel, Pfeiffer, presence of atrial fibrillation, creatinine) (Tab. 1).

The area under the curve is 0.74. The reliability of the index at two years was confirmed with a similar ROC curve and an AUC of 0.76 (0.71-0.8), (Fig. 1A,B). This index is also applicable to the subgroup of PPP and chronic patients, with the same degree of reliability.

VARIABLE	OR (CI 95%)	p
Age	1.03 (1.01, 1.07)	0.017
Active neoplasia	4.32 (1.72, 10.8)	0.002
Delirium	2.06 (1.11, 3.81)	0.022
Pfeiffer group	1.25 (1.07, 1.46)	0.004
Barthel Index	0.988 (0.979, 0.996)	0.006
Atrial fibrillation	1.93 (1.25, 2.98)	0.003
Serum creatinine	1.34 (1.05, 1.71)	0.018

OR, Odds Ratio; CI 95%, Confidence Interval at 95%

Tab. 1. Association of CRONIGAL index items with mortality at one year (logistic regression).

Finally yet importantly, in order to confirm the validity of our index in other similar populations, ROC curves of the PROFUND index in a sample of polypathological patients of Aragon (north east of Spain), were compared: PLUPAR study, and the curve obtained with the CRONIGAL in the same population. An AUC for the PROFUND index in such population of 0.71 was obtained, the same as for the CRONIGAL 0.71.

Conclusion

The variables dementia, neoplasia, delirium at admission, Barthel Index under 60, or deceased spouse have mortality prognosis value in our sample at one or two years. An index with 7 variables applicable to chronic patients and polypathological patients after admission was described. This index may serve as a tool to better manage complex chronic patients and follow them up as outpatients.

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