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EDITORIAL

Reliable prognostic markers for the progression of heart failure in older adults: Is ambulatory blood pressure monitoring one of them?☆

Marcadores pronósticos fiables de la evolución de la insuficiencia cardíaca del anciano: ¿es la monitorización ambulatoria de la presión arterial uno de ellos?

Cardiovascular disease (CVD) is the leading cause of death in our country. During the first six months of 2020, at the height of the COVID-19 pandemic, circulatory system diseases still remained the number one cause of mortality, causing 23% of all deaths (Table 1), ahead of infectious diseases (including COVID-19) with 20.9%, and cancer, with 20.4%[1].

Among the different clinical forms of circulatory system diseases, heart failure (HF) sits in second place behind coronary artery disease and is the most common condition in the population over 65 years of age[2–4].

From the moment when initial HF symptoms appear, the disease progresses constantly until it reaches its irreversible end-state, leading to death. Nevertheless, throughout the chronic clinical course, multiple episodes of acute deterioration occur which are induced by various differing factors. Among these, seasonal infectious processes are particularly prominent and typically require admission or care in day hospitals or home hospitalization. At any rate, thanks to protocolised care and modern treatments, most patients recover from the decompensation episodes of their disease yet fall into a cycle of deterioration and recovery until eventual death occurs.

The high prevalence of HF, coupled with the gradual aging of the population in our country[5] means the need for hospital and outpatient care medical services is growing greater and greater with subsequent saturation of the available resources and a constant rise in healthcare expenditure.

It is important that clinicians treating these patients know early on which factors will determine subsequent prognosis. That is, which elements of the pathophysiology of the process are associated with worse evolution and can be detected in the initial phases. The approach and measures adopted for each patient will depend on this in order to prevent decompensations or, at least, to minimise the impact of these periods of deterioration.

Hypertension (HTN) is likely the most important risk factor for developing HF. On the one hand, together with dyslipidaemia and other cardiovascular risk factors, it promotes and speeds up coronary arteriosclerosis, which can lead to left ventricular systolic dysfunction, defined as HF with reduced ejection fraction (HFrEF < 40%). On the other hand, high blood pressure (BP) induces hypertrophy of the left ventricle, which is responsible for diastolic dysfunction as it increases left ventricle stiffness and impairs relaxation during diastole, leading to HF with preserved ejection fraction (HFpEF ≥ 50%); this latter condition is the most common type of HF among older patients with high blood pressure[2,3,5]. Data from the Spanish Heart Failure Registry show that HFpEF affects 58% of patients admitted for HF in Internal Medicine wards.

This type of HF in older stages of life is accompanied by multiple comorbidities, of which HTN is the most common, and lacks any specific treatment capable of reducing its mortality. Therefore, adequate BP control is one of the keys to prolonging survival in these patients. It has been observed that the relationship between mortality and office BP adopts a J-shaped curve, with higher mortality both in patients with very high and very low BP levels.

In this sense, it is well-known that out-of-office BP measurements, both those obtained via self-monitoring of blood pressure (SMBP) and 24 h ambulatory blood pressure moni-

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Table 1 Main causes of mortality in Spain between the months of January and May 2020.

Disease groups	Deaths	%
Total deaths	231,014	100.0
Circulatory system diseases	53,201	23.0
Infectious and parasitic diseases[a]	48,393	20.9
Tumours	47,222	20.4
Respiratory system diseases	23,171	10.0
Diseases of the nervous system and sensory organs	12,392	5.4
Mental and behavioural disorders	9703	4.2
Digestive system diseases	8977	3.9
Endocrine, nutritional, and metabolic diseases	6875	3.0
Genitourinary system diseases	6732	2.9
External causes of death	5850	2.5
Signs, symptoms, and abnormal clinical laboratory tests	3983	1.7
Musculoskeletal system and connective tissue diseases	2254	1.0
Haematological diseases and immune disorders	937	0.4
Skin and subcutaneous tissue diseases	801	0.3
Congenital malformations, deformities, and chromosomal abnormalities	357	0.2
Conditions originating in the perinatal period	162	0.1
Pregnancy, birth, and post-partum	4	0.0

[a] Identified and suspected COVID-19 virus is included in the group of infectious and parasitic diseases.

toring (ABPM), are more easily reproduced and improve the accuracy of BP readings when compared to office readings. It is for that reason that more recent studies use this much more precise methodology to analyse the role of BP in the progression and prognosis of HF.

In this issue of REVISTA CLÍNICA ESPAÑOLA[6], researchers from the Spanish study DICUMAP (Datos de Insuficiencia Cardíaca Utilidad de la MAPA) present the results of a prospective multi-centre study in 154 older patients (mean 76.8 ± 8.3 years, 55.2% women) with stable HF and of which 94% had HTN, 53% dyslipidaemia, and 42% type 2 diabetes mellitus. The majority (76.3%) had HFpEF due to diastolic dysfunction, this being the most common type in these patients. The researchers evaluated several parameters obtained by the 24 h ABPM in relation to patient morbidity and mortality over the course of one year of follow-up.

The main outcome was that the patients with stable HF and a non-physiological circadian rhythm, either without night-time BP dipping (''non-dipper''), or with extreme dipping or reverse dipping (''riser''), were those with the highest risk of readmission or death due to HF. Despite the study limitations due to the short follow-up period and number of patients involved, the results are in line with those described by two groups of Japanese researchers studying patients with HFpEF.

Out of 508 older patients (mean age 68 ± 13 years, 62% men) hospitalised for HF, of the 232 with HFpEF and 276 with HFrEF, Komori et al.[7] observed that the riser circadian rhythm (higher night-time BP than daytime BP) was significantly more common among patients with HFpEF (29%) than in those with HFrEF (20%). In the logistic regression analysis, the riser pattern was independently associated with the HFpEF clinical form (HR 1.73; 95% CI 1.02–2.91; $p = 0.041$).

Ueda et al.[8], for an average term of 2.5 years, followed a group of 325 patients with chronic HF who were hospitalised for an episode of acute decompensation and who were subjected to 24-hr ABPM at discharge. During follow-up, 112 deaths occurred, of which 52 were cardiovascular-related. The non-physiological circadian BP rhythms (non-dipper, extreme dipper or riser) were not associated with total mortality nor CV mortality in patients with HFrEF. Nevertheless, the riser pattern, with elevated night-time systolic BP, was an independent predictor for total mortality (HR 2.01; 95% CI 1.12–3.62; $p = 0.02$) and CV mortality (HR 2.48; 95% CI 1.08–5.90; $p = 0.0332$).

While the connection between the non-physiological circadian profile and increased morbidity and mortality seems clear-cut in patients with HFpEF, it is unknown whether treatment with antihypertensive drugs is capable of returning this pattern to normal and if this in turn would entail better evolution. To find answers to these questions, long-term studies are needed with a larger number of patients of both sexes and diverse ethnicities with HFpEF.

This is the main reason for creating a global ABPM registry of patients with HFpEF with the goal of analysing the relationships between the parameters obtained via ABPM as well as the progression of patients of different ethnicities over a long follow-up period[9]. The near future is certain to shed light over the current shadows.

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A. Coca
Unidad de Hipertensión y Riesgo Vascular, Servicio de Medicina Interna, Hospital Clínic, Universidad de Barcelona, Barcelona, Spain
E-mail address: acoca1492@gmail.com

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