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Advancing heart failure management: innovations and future directions

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EDITORIAL

Advancing heart failure management: innovations and future directions

Heart failure (HF) continues to represent a pivotal focus in cardiology research and innovation due to its multifaceted pathophysiology and its association with substantial morbidity and mortality [1–4]. Recent progress in HF management encompasses advancements in pharmacotherapy, the integration of state-of-the-art technologies, and the identification of novel biomarkers, all of which are transforming clinical practice. Additionally, ongoing research efforts are delving into strategies for early diagnosis, the application of personalised medicine, and the development of more effective therapeutic interventions aimed at improving clinical outcomes and enhancing the quality of life for patients with HF [5–7].

HF patients often face challenges in managing hypertension, a crucial risk factor for their condition. Effective hypertension control can prevent the worsening of HF by reducing cardiac strain [8]. This study by Le Bas et al. explores hypertension control in a rural general medicine setting in France, focusing on middle-aged individuals [9]. The study included 1925 patients aged 40 to 65, with an average blood pressure of 127/76 mmHg. Among the participants, 33.6% were hypertensive, and 63.5% of these hypertensive individuals were receiving treatment. However, only 39% of the treated hypertensive patients achieved controlled blood pressure levels, suggesting room for improvement in treatment efficacy. Compared to the general population, general medicine demonstrated better hypertension control, likely due to more regular patient interactions with primary care providers. Uncontrolled hypertension may stem from limited engagement with general practitioners, indicating that annual consultations might benefit untreated hypertensive patients. The findings highlight general medicine's critical role in early intervention and hypertension management, which may help prevent adverse outcomes.

An analysis of 2528 HF patients (1072 women and 1456 men) from the Colombian Heart Failure Registry (RECOLFACA) highlighted notable sex-based differences [10]. Men had a higher prevalence of reduced left ventricular ejection fraction (LVEF), whereas women more often exhibited preserved LVEF. Women also presented with higher systolic blood pressure and heart rates, while men showed elevated haemoglobin, creatinine, and sodium levels, along with lower glomerular filtration rates, indicating more advanced chronic renal failure. NT-proBNP levels increased similarly with age in both sexes (Figure 1). These findings underscore geographical variations in HF characteristics, warranting further research into these distinctions.

Among 722 HF patients with mildly reduced EF (HFmrEF), 23.4% were identified as sarcopenic based on age, grip strength, and calf circumference [11]. Sarcopenic patients faced higher hospitalisation and two-year mortality rates, alongside increased incidences of atrial fibrillation (AF), chronic obstructive pulmonary disease (COPD), chronic renal failure (CRF), and smoking. AF was particularly prevalent in overweight/obese sarcopenic patients (Figure 2). Elevated sarcopenia scores predicted mortality and hospitalisation with moderate accuracy, underscoring its prognostic significance in HFmrEF.

Biomarkers play a crucial role in risk assessment and management of HF [12–14]. Serial measurements of sST2 and NT-proBNP were evaluated in 122 acute decompensated HF (ADHF) patients [15]. Elevated initial sST2 levels (>56.79 ng/mL) were strongly associated with mortality, with sensitivity and specificity of 91.2 and 79.5%, respectively. A second measurement (>38.91 ng/mL) further improved prognostic accuracy (97.1% sensitivity, 81.8% specificity). These results underscore the value of incorporating serial sST2 assessments into monitoring protocols to enhance risk stratification and guide treatment in ADHF.

In HF with preserved EF (HFpEF), identifying reliable predictors of mortality is essential for improving outcomes [16, 17]. The pulmonary artery pulsatile index (PAPi) emerged as an independent predictor of mortality in a retrospective analysis of HFpEF patients undergoing right heart catheterisation [18]. A PAPi value below 2.84 predicted mortality with 76.2% sensitivity and 77% specificity. These findings highlight the prognostic significance of PAPi, with lower values indicating worse outcomes, and support its integration into routine monitoring to enhance risk stratification and treatment in HFpEF.

Chemotherapy increases the risk of cardiotoxicity, necessitating early detection of myocardial dysfunction. Speckle-tracking echocardiography, a non-invasive technique, is highly sensitive in detecting early systolic dysfunction by assessing myocardial strain and contractility. This method surpasses conventional echocardiography, enabling timely intervention to mitigate cardiotoxicity and improve outcomes in patients undergoing cancer treatment [19–21]. In the context of COVID-19 recovery, subtle cardiac dysfunction may persist even in patients without overt symptoms. Using speckle-tracking echocardiography, recovered patients with prior pulmonary involvement were found to have reduced left and right ventricular function, including lower LVEF, TAPSE, strain, and FAC, compared to healthy controls [22]. This highlights 2D STE's value in identifying subclinical impairments in LV global longitudinal strain and RV free-wall strain, providing critical insights into post-COVID cardiac health.

The 2021 ESC guidelines introduced a four-pillar treatment approach for heart failure with reduced ejection fraction (HFrEF), recommending near-simultaneous initiation of therapies rather than a traditional stepwise approach [23]. To aid Belgian cardiologists in applying these guidelines, a Delphi Panel of 12 heart failure experts conducted a consensus process [24]. The panel agreed on initiating the four therapies within 7–14 days of diagnosis, with a focus on starting treatment rather than strictly up-titrating individual drugs. However, no fixed sequence for therapy initiation was agreed upon, due to patient differences and Belgian reimbursement limitations. The consensus also emphasised tailoring treatment based on each patient's condition and comorbidities, along with the need for regular follow-up to adjust therapy as needed (Figure 3). This guidance offers a framework for Belgian clinicians, stressing swift initiation, individualised sequencing, and consistent follow-up for HFrEF patients.

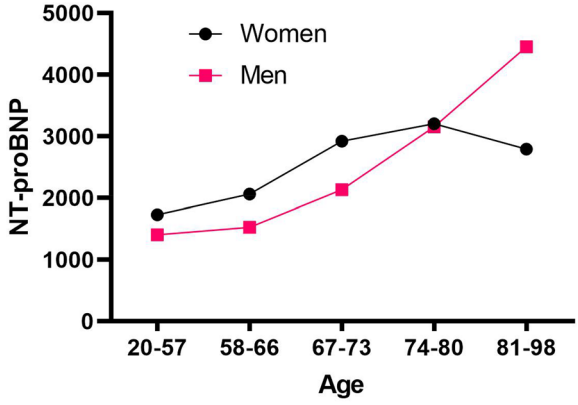

Figure 1. Age-related trend of NT-proBNP levels categorised by sex (from [10]).

Ventricular assist devices (VADs) provide mechanical circulatory support for children with severe heart failure, functioning as a bridge to transplantation by maintaining hemodynamic stability until a suitable donor heart is available [23]. Despite their life-sustaining benefits, VADs are associated with significant risks, including thrombosis and bleeding, necessitating meticulous anticoagulation management and monitoring to optimise outcomes. This study by Elibol et al. examined bleeding and thrombosis risks in paediatric patients with end-stage heart failure implanted with VADs, crucial life-support devices that help failing hearts pump blood [25]. Twenty-six children, averaging 11 years old, received either the Berlin Heart EXCOR or the HeartWare VAD, with follow-up for complications and transplant outcomes. Bleeding events occurred in 33.3% of patients, while thrombosis events were more frequent, affecting 66.7% of the group. Despite these risks, about half of the patients successfully bridged to heart transplantation, highlighting VADs as a valuable option for children awaiting transplant. The findings underscore the need for advancements in VAD technology and complication management to improve survival and transplant success rates in paediatric heart failure patients.

In this issue of Acta Cardiologica, several focus images highlighting interesting cases have also been reported [26–34].

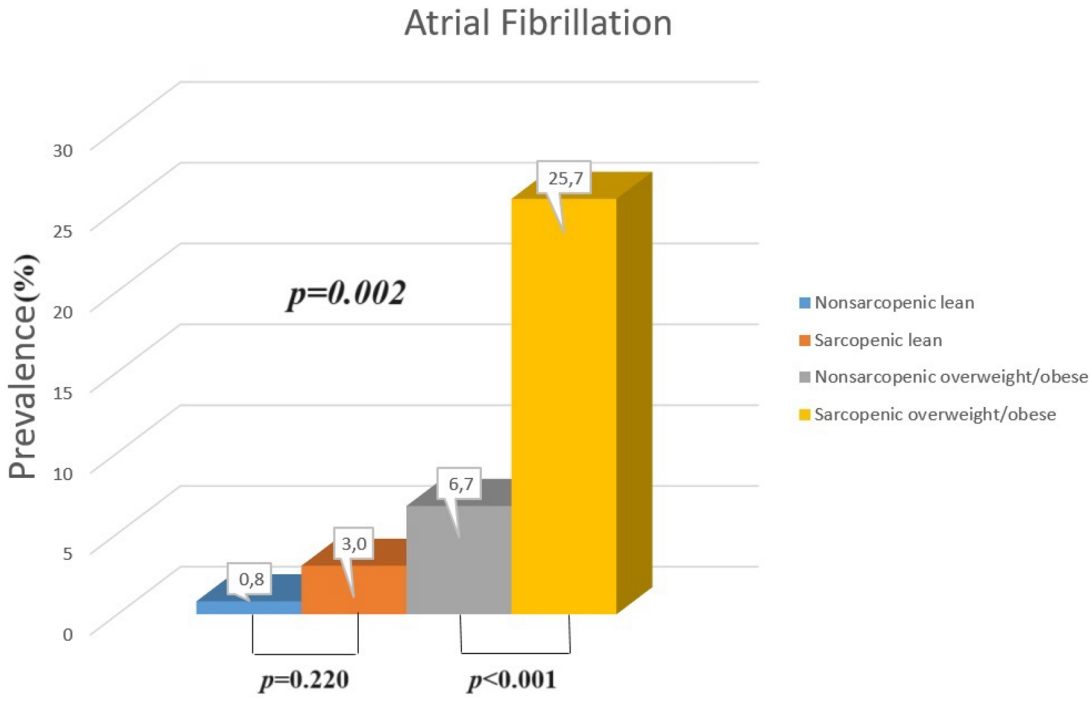

Figure 2. Comparison of AF rates in lean and overweight/obese patients with and without sarcopenia (from [11]).

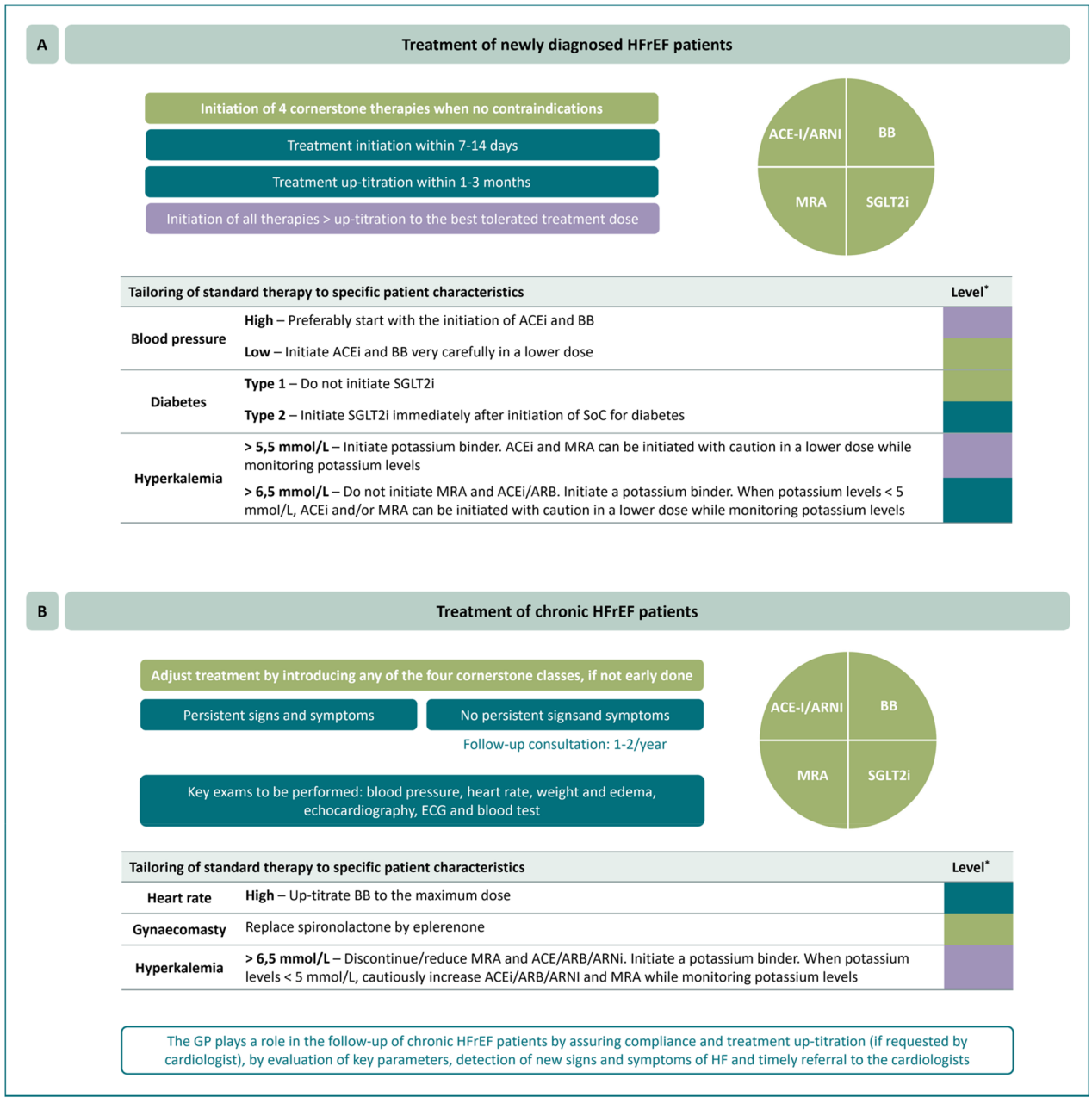

Figure 3. Overview of expert's consensus on GDMT treatment implementation for newly diagnosed (A) and chronic (B) HFrEF patients. *level of consensus. Colour scheme throughout the figure represents the level of consensus among the participants. Green: perfect consensus; blue: very good consensus; purple: good consensus. ACEi, angiotensin-converting enzyme inhibitor; ARNI, angiotensin receptor–neprilysin inhibitor; BB, beta-blockers; ECG, electrocardiogram; GP, general practitioner; HF, heart failure; HFrEF, heart failure with reduced ejection fraction; MRA, mineralocorticoid-receptor antagonist; SGLT2i, sodium–glucose cotransporter 2 inhibitors (from [24]).

Disclosure statement

Nothing to disclose.

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