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EDITORIAL



## Precision and pragmatism in contemporary cardiology

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### ABSTRACT

This editorial highlights key advances featured in the current issue of *Acta Cardiologica*, reflecting the shift toward more precise, personalized, and evidencebased cardiovascular care. Contributions span artificial intelligence, bedside clinical assessment, biomarker-driven risk stratification, lifestyle determinants, advanced imaging, and interventional cardiology. Together, they illustrate how emerging technologies can be effectively integrated with rigorous clinical judgment, while maintaining a pragmatic focus on real-world applicability. The collected studies emphasize the importance of human oversight, simple yet powerful diagnostic tools, and individualized risk assessment to optimize patient outcomes in contemporary cardiology practice.

### KEYWORDS

Precision cardiology; artificial intelligence; risk stratification; interventional cardiology; biomarkers

This issue of *Acta Cardiologica* presents a comprehensive panorama of contemporary cardiovascular research and builds upon key themes and evidence discussed in recent issues of the journal [1–4]. It reflects the ongoing transition towards more precise, personalised, and evidence-based patient care. The contributions span digital innovation, bedside clinical examination, biomarker-driven risk prediction, lifestyle determinants, advanced imaging, and interventional cardiology. Together, they illustrate how modern cardiovascular practice increasingly integrates emerging technologies with rigorous clinical assessment, while reinforcing the importance of pragmatic, real-world applicability.

The issue opens with two complementary articles addressing artificial intelligence in cardiology. The Belgian position paper provides a structured and pragmatic roadmap for the responsible implementation of predictive, generative, and agentic artificial intelligence (AI) technologies, outlining requirements for clinical validation, reimbursement strategies, and ethical governance [5]. This conceptual framework is reinforced by Ungureanu et al. who reported an institutional survey involving 51 physicians across multiple specialties following the deployment of an AI-based electrocardiogram (ECG) interpretation tool [6]. While the majority acknowledged its clinical utility, substantial concerns were raised regarding diagnostic accuracy in complex cases. Discrepancies between AI outputs and clinical

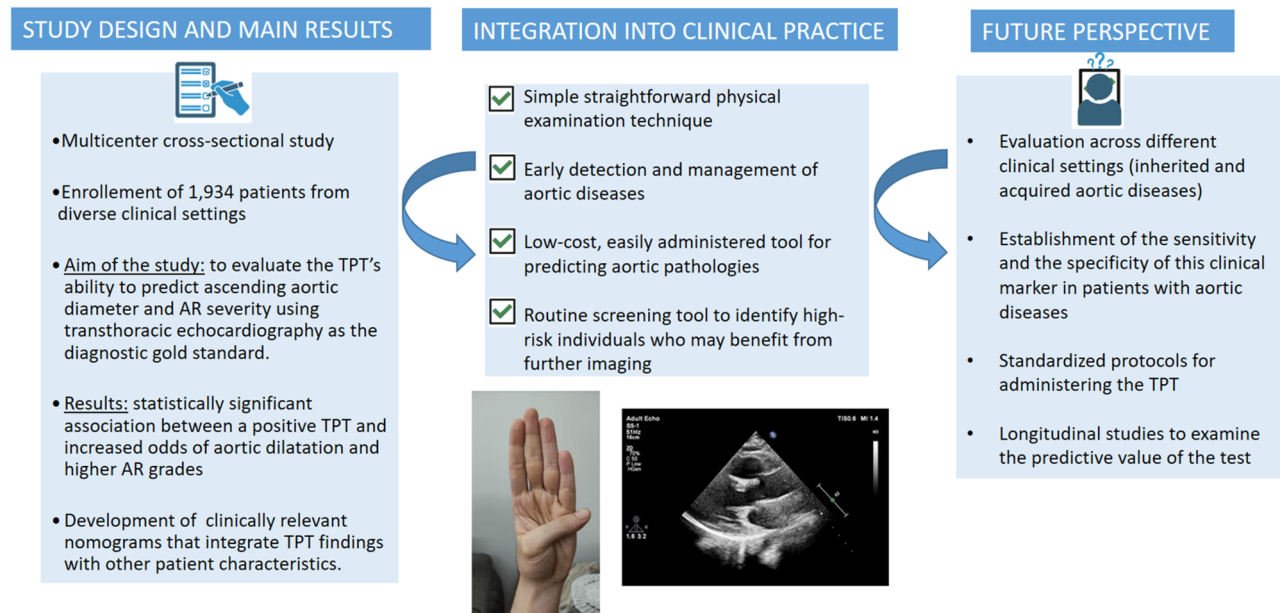
judgement were frequently reported, particularly by cardiologists, many of whom perceived a potential erosion of their professional role. These findings highlight the necessity of maintaining human oversight and establishing clear operational protocols when integrating AI into routine practice.

Moving from digital tools to bedside assessment, Zygouri and Donal evaluated the diagnostic relevance of the Thumb-Palm Test in a cohort of 1,934 patients [7]. A positive test was significantly associated with larger ascending aortic diameters and more severe aortic regurgitation, supporting its potential role as a low-cost screening tool, particularly in resource-limited settings. The proposed nomograms integrating clinical variables further enhance its practical applicability, while the authors appropriately acknowledge limitations related to inherited aortopathies and operator variability (Figure 1).

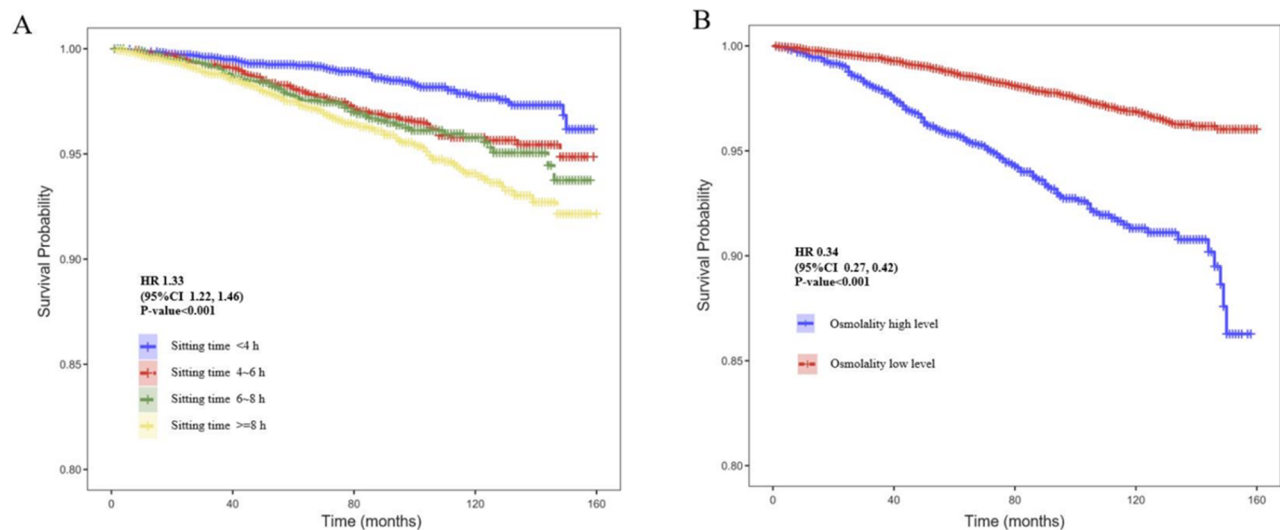
The Thumb-Palm Test (TPT) represents the patient's ability to cross the thumb across and beyond a flat palm. The test is considered positive when the patient's thumb exceeds the width of their palm. This figure illustrates the test technique, its integration into routine clinical assessment, and future perspectives for its use in aortic disease screening. (From reference 7).

Systematic aetiological work-up is essential to refine diagnosis and management in dilated cardiomyopathy [8–11]. The diagnostic complexity of dilated

## The role of Thumb-Palm-Test (TPT) in the evaluation of patients with ascending aortic dilatation and aortic regurgitation



**Figure 1.** Thumb-Palm Test (TPT) procedure and clinical context.

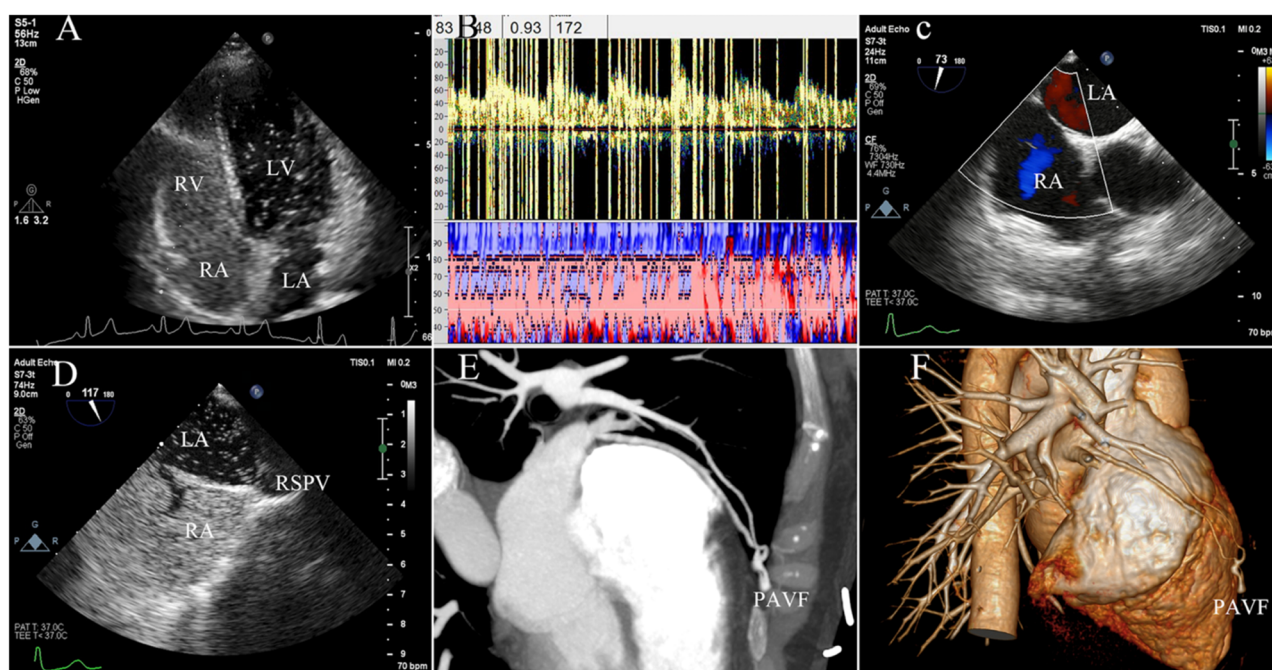


**Figure 2.** Kaplan–Meier survival curves according to daily sitting time and serum osmolality. Panel A shows survival probability stratified by daily sitting duration (<4 h, 4–6 h, 6–8 h, and ≥8 h). Panel B depicts survival according to high versus low serum osmolality levels. Longer sitting time and higher osmolality are associated with reduced survival probability over follow-up. HR, hazard ratio; CI, confidence interval (From reference 17).

cardiomyopathy is addressed by Weir et al. Among patients with heart failure and reduced ejection fraction, over half of those with non-ischemic DCM remained classified as idiopathic after extensive clinical evaluation [12]. Although an expanded blood panel allowed reclassification in a small number of cases, its incremental diagnostic yield was modest. These findings underscore the persistent challenges

in identifying underlying aetiologies despite thorough investigation.

Functional capacity and lifestyle determinants of cardiovascular risk are subsequently explored [13,14]. Gasser et al. conducted a systematic review of exercise interventions in HFpEF, revealing a striking paucity of data, with only one randomised trial meeting inclusion criteria and showing no significant impact on cardiac output [15].



**Figure 3.** Multimodality imaging in a 50-year-old woman with longstanding dizziness and headaches. (A) Contrast transthoracic echocardiography shows early microbubble appearance in the left atrium. (B) Transcranial Doppler reveals micro-embolic signals in the right middle cerebral artery. (C) Transesophageal echocardiography excludes an interatrial shunt. (D) Microbubbles are seen entering the left atrium *via* the right upper pulmonary vein. (E–F) CT angiography identifies a pulmonary arteriovenous fistula in the right middle lobe. (From reference 39).

Complementing this, Chen et al. demonstrated in a large population-based cohort that prolonged daily sitting time was associated with increased risks of myocardial infarction and cardiovascular mortality. Participants sitting  $\geq 8$  h daily experienced significantly higher event rates than those sitting  $< 4$  h, with serum osmolality emerging as a potential mediator (Figure 2) [16,17].

Inflammatory and metabolic biomarkers play an increasingly important role in cardiovascular risk stratification [18–21]. In this issue, analysis of the uric acid-to-HDL ratio in a nationally representative cohort demonstrated a strong, nonlinear association with hypertension prevalence, with a clear inflection point around 17 and superior discriminatory performance compared with HDL alone [22,23]. Complementing these findings, Prokopidis et al. reported marked sex-specific differences in the relationship between systemic inflammation and skeletal muscle mass in heart failure, showing a significant inverse association between C-reactive protein and lean mass in men but not in women [24].

Coronary artery calcium (CAC) scoring has emerged as a robust marker of subclinical atherosclerosis and an important tool for refining cardiovascular risk assessment [25,26]. In this issue, Ernaga Lorea et al. evaluated CAC in patients with heterozygous familial hypercholesterolaemia [27]. Advanced calcification was

observed in nearly one third of patients and was strongly associated with cumulative LDL-cholesterol burden, delayed diagnosis, and higher SAFEHEART risk scores, underscoring the clinical value of CAC for individualised risk stratification in this high-risk population.

Interventional cardiology remains a central theme [28–30]. Kahraman et al. demonstrated that a low hemoglobin–albumin–lymphocyte–platelet (HALP) score independently predicted adverse outcomes after bifurcation percutaneous coronary intervention (PCI), providing a simple prognostic tool reflecting nutritional and inflammatory status [31,32]. Fang et al. further confirmed, through a large-scale meta-analysis, the superiority of IVUS-guided PCI over angiographic guidance in acute myocardial infarction, with significant reductions in mortality, major adverse cardiac events, and repeat revascularization [33,34].

Post-PCI risk prediction is refined by Sun et al. who showed that combining the triglyceride–glucose index with inflammatory markers significantly improved prognostic accuracy in patients with acute coronary syndromes. The TyG–hsCRP interaction emerged as a strong independent predictor of adverse outcomes [35].

Structural heart disease concludes the original research section. Viva et al. demonstrated that pre-procedural right ventricular dysfunction was common in patients undergoing transcatheter edge-to-edge

repair for functional mitral regurgitation and independently predicted mortality. Importantly, only patients with mild-to-moderate dysfunction exhibited meaningful reverse remodelling at follow-up [36].

Finally, the Image Focus section presents a series of rare but clinically instructive cases, emphasising the diagnostic value of multimodality imaging and the importance of maintaining a high index of suspicion in complex cardiovascular presentations (Figure 3) [37–42].

## Disclosure statement

No potential conflict of interest was reported by the author(s).

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