Editorial

New Tools for Optimizing HF Management: The Role of POCUS in the Office

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A Reflection on Clinical and Subclinical Circulatory Congestion

The management of heart failure (HF) has improved over the past 20 years, mainly due to advances in diagnostic methods and circulatory decongestion strategies. Several management strategies have demonstrated efficacy in reducing symptoms, lowering rates of HF decompensation events, decreasing mortality indices, and improving surrogate markers of clinical events, such as left ventricular ejection fraction (LVEF).[1] In HF management, the need for detecting and monitoring circulatory congestion is justified by its strong association with neurohormonal activation and systemic inflammation, which contribute to the progressive worsening of HF and, consequently, a higher incidence of clinical events.[2]

But what is the evidence supporting decongestion strategies with diuretics in reducing hard outcomes? In the outpatient setting, the STRONG-HF clinical trial[3] is a good example. Comparing intensive optimization strategy versus usual HF treatment after hospital discharge, the study demonstrated that the group with more frequent visits and more intensive management achieved an absolute risk reduction of 8.1% (15.2% vs. 23.3%, P=0.0021) in the combined outcome of all-cause mortality and/or HF hospitalization within 180 days of follow-up.[3] The statistically significant reduction in clinical signs of congestion, along with a 27% decrease in natriuretic peptide (NP) levels after three months, provided proof of concept for the relationship between decongestion and clinical benefit. This evidence reinforces the need to detect subclinical congestion, especially during the vulnerable phase of HF, which occurs between one and three months after an HF hospitalization, a period in which most potentially preventable events take place.[4]

The State of the Art in Congestion Detection and Monitoring in 2025

The identification of orthopnea, jugular vein distension, and third heart sound offers high specificity for diagnosing congestion, whereas ankle edema and crackling rales demonstrate lower diagnostic accuracy.[5] Among the complementary methods already tested to increase accuracy in detecting fluid overload, serum NP levels and various ultrasound techniques are already recommended by current guidelines and have established applicability in emergency and inpatient settings.[1,6] However, the incorporation of these complementary diagnostic tests in the outpatient setting has been slower in Brazil compared to the rest of the world, especially regarding the point-of-care ultrasound (POCUS) technique.

Is POCUS in the office useful? What is the evidence?

Similar to its proven utility in emergency rooms, the goal of POCUS in the office setting is to identify and monitor pulmonary and systemic venous congestion, with the option to include imaging of cardiac structure and function.[7,8] From a practical standpoint, a quick assessment of the lungs and inferior vena cava – including the identification of vertical echogenic pulmonary lines originating from the pleura (B-lines) with three or more lines in more than one bilateral lung field – the absence of echoes in the pleural space, indicating effusion, and changes in the inferior vena cava diameter (with a diameter greater than 21mm and inspiratory collapse of less than 50%) provides strong diagnostic accuracy for detecting subclinical congestion.[8,9]

The association of imaging with clinical events in outpatients has been extensively investigated. In the outpatient setting, a 2013 study allocated a cohort of 97 outpatients with HF who underwent pulmonary ultrasound (PU) using a 28-lung-field model, echocardiography, and NP measurement. In assessing diagnostic accuracy for HF decompensation, PU outperformed other methods, with a sensitivity of 85% and specificity of 83% for a ≥15 B-lines cutoff, demonstrating its ability to reliably and early detect clinical congestion.[10] In another study, Platz et al.[11] used a more contemporary PU model, recording four bilateral lung fields in a population of 195 HF patients with NYHA functional class II-IV. During outpatient consultation, patients in the third tertile of congestion line distribution (≥3 B-lines) had a fourfold increased risk of the primary outcome (adjusted HR: 4.08, 95% CI: 1.95-8.54; p < 0.001) and fewer days alive and out of the hospital (125 days vs. 165 days; adjusted p < 0.001).[11] Additionally, in an outpatient setting of HF patients with preserved ejection fraction, in whom clinical congestion signs are often not apparent, POCUS also demonstrated a significant correlation between B-line count and NT-proBNP levels (p < 0.001). Notably, among individuals in the upper tertile of B-lines, 76% had no crackles

on auscultation, and 50% did not show elevated NT-proBNP levels, highlighting ultrasound's ability to detect subclinical congestion early.[12]

Therefore, the use of POCUS in the office setting is associated with practicality and scientific evidence of better diagnostic and prognostic accuracy compared to standard management, especially when considering the detection of subclinical congestion.

Limitations of POCUS in the office

In PU and inferior vena cava assessment, several limitations must be considered in clinical practice. In pulmonary fibrosis, the usual reverberation pattern is altered due to the destruction of alveolar structures and the formation of consolidation areas and interstitial thickening, which reduces the visualization of A-lines and hinders the proper interpretation of B-lines, potentially leading to false positives for pulmonary congestion. In atelectasis, pulmonary collapse also alters echogenicity, potentially resembling both infectious consolidations and congestion signs, making it difficult to differentiate between infectious and hemodynamic causes. In the case of pulmonary infections, such as pneumonia, the formation of consolidation areas and mixed artifacts distorts the expected ultrasound pattern, masking or mimicking edema conditions. In obese individuals, the increased thickness of the thoracic wall compromises ultrasound beam penetration, reducing image quality and making it difficult to identify A and B lines as well as to accurately assess the inferior vena cava. In these situations, the scarcity of lines may be misinterpreted as clinical improvement, when in reality it is merely a technical limitation. Additionally, the cost of technology in Brazil remains a significant barrier to the widespread adoption of these diagnostic tools in the outpatient setting.[13]

POCUS in the office: seeing fluids at the bedside

POCUS has been called the stethoscope of the 21st century—but is it? The term 'integration' with traditional examination seems more accurate, as imaging offers greater reproducibility, the possibility of storage for evolutionary follow-up, and a growing body of evidence correlating its findings with adverse clinical outcomes. POCUS does not replace the traditional approach but complements it. In 2025, POCUS expands our senses. Beyond touching and listening to the excess of organic fluids at the bedside, we can now see them (Figure 1).
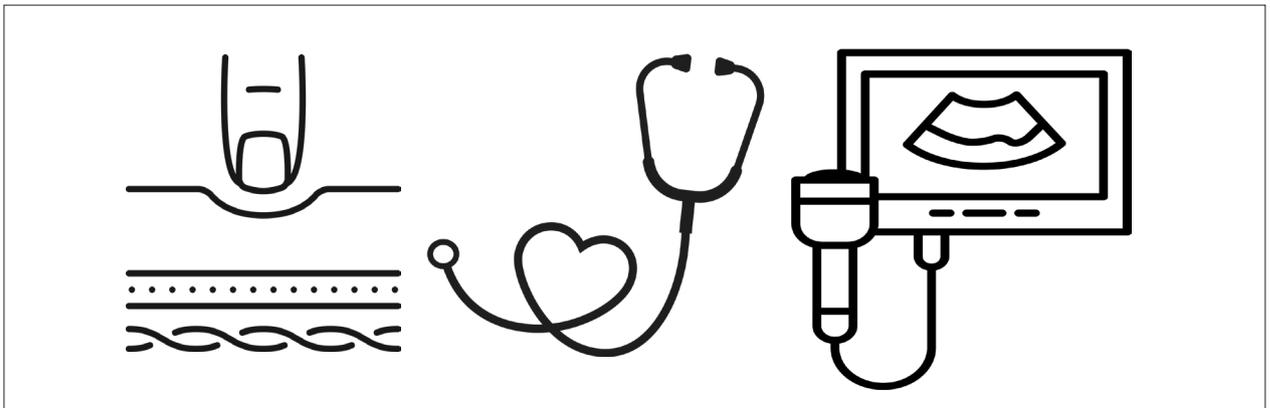

Figure 1 – *Touch, hear and see congestion: POCUS in the office.*

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