

## Diagnostic and management challenges in chronic obstructive pulmonary disease and heart failure: the need for an interdisciplinary approach

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Patients with *chronic obstructive pulmonary disease* (COPD) and heart failure can be challenging in terms of diagnosis and management, requiring an interdisciplinary approach. Vitale and colleagues indicated the value of collaboration between cardiologist, pulmonologists and general practitioners. Comprehensive Geriatric Assessment (CGA) may identify other needs requiring allied health professional input, while for those with complex needs, geriatrics and palliative care input may also be appropriate.

**Key words:** COPD, Heart failure, Interdisciplinary, Geriatrics, Palliative

In their recent paper, Vitale and colleagues highlighted the frequent co-existence of chronic obstructive pulmonary disease (COPD) and heart failure, posing diagnostic challenges to clinicians <sup>1</sup>. The authors emphasised the importance of confirming the diagnosis of each condition. This requires assessment of left ventricular function using echocardiography or cardiac MRI, and pulmonary function tests to confirm airflow obstruction. In older people, there are limitations to investigating concurrent heart failure and COPD. The BED study showed that in dyspnoeic patients age 80 years or older, BNP was unable to discriminate between cardiac or respiratory causes <sup>2</sup>. Echocardiography has limited sensitivity in confirming heart failure, as up to 50% patients aged 65 years or older with heart failure have preserved ejection fraction (HFPEF) <sup>3</sup>. The main utility of echocardiography in the acute setting is to rule out other differential diagnoses or precipitants for heart failure, such as myocardial infarction, pericardial effusions or cardiac tamponade. While cardiac MRI is useful in COPD patients with limited echocardiogram views, it may not be tolerated due to orthopnoea in heart failure. In older people, performance in pulmonary function tests

may be affected by physical and cognitive abilities. For patients with dyspnea, these tests may be too physically demanding. Interpretation of results should take into account patient factors such as spinal changes from osteoporosis, body habitus, or cardio-respiratory comorbidities in older people. Guidelines also recommend against testing patients within a month of myocardial infarction, which is relevant in patients with COPD and heart failure <sup>4</sup>. These limitations usually require clinicians to initiate expectant management based on the acute presentation and offer a presumed diagnosis based on treatment response.

For patients with multiple comorbidities, polypharmacy and potential drug interactions are common. Beta-agonists for COPD treatment may induce tachycardia, fast ventricular rate in atrial fibrillation and hypokalaemia, which are common in heart failure. Beta-agonists are also associated with adverse outcomes for patients with pulmonary disease, including risk of heart failure hospitalisation, major adverse cardiovascular events, cardiovascular death and mortality <sup>5</sup>. It remains unclear whether these adverse outcomes are related to bronchodilator toxicity or underlying pulmonary disease. As

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studies have consistently showed no benefit of nebulisers over standard pressurised metered-dose inhaler (MDI) with spacer <sup>6</sup>, it may be preferable to use MDI to reduce the exposure of beta-agonists to patients in heart failure.

For patients with possible conflicting treatment goals due to polypharmacy, applying concepts of comprehensive geriatric assessment (CGA) is beneficial. CGA requires a multidimensional, interdisciplinary approach to take into account the patient's medical, psychosocial and functional abilities. A meta-analysis showed that comprehensive discharge planning with post-discharge support for older people with heart failure significantly reduced readmission rates and improves health outcomes, such as survival and quality of life, without increasing costs <sup>7</sup>.

In my experience, common issues identified through CGA include nutritional deficiencies and deconditioning requiring rehabilitation. If these are identified, involvement of dietitian or physiotherapist respectively early on in the admission would be useful. In addition, both heart failure and COPD are associated with poor cognition. Heart failure is associated with significant impairment in executive function and psychomotor speed, poor immediate memory and global cognition when compared to patients with cardiovascular disease only <sup>8</sup>. COPD is associated with global cognitive impairment, especially perception, memory and motor function, and is worse in those with hypoxaemia, smoking and cardiac comorbidities <sup>9</sup>.

Cognitive assessment is crucial as it impacts self-management. It is important to assess the patient's knowledge and technique of using MDI with spacers. If treatment compliance is an issue due to cognitive impairment, sufficient support is necessary to monitor medication use to avoid exacerbations or relapse.

Finally, patients with multiple co-morbidities tend to have high symptom burden and mortality, contributing to palliative care needs such as managing refractory multi-faceted symptoms, communication, decision making issues and requirement for family support <sup>9</sup>. Symptom fluctuation may require repeated evaluation of care goals during disease progression. The anticipated course of illness, treatment options, patient preferences and advance directives may need further exploration with patients and family. Palliative care involvement should be considered, preferably during the early stage of the disease. The roles of geriatric medicine, palliative care, cardiology or pulmonology are not mutually exclusive but each specialty offers a unique perspective on management of these patients, particularly in older people with peculiarities in disease presentation and treatment response.

In summary, patients with COPD and heart failure can be challenging in terms of diagnosis and management, requiring an interdisciplinary approach. Vitale and colleagues indicated the value of collaboration between cardiologist, pulmonologists and general practitioners <sup>1</sup>. CGA may identify other needs requiring allied health professional input, while for those with complex needs, geriatrics and palliative care input may also be appropriate.

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#### CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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