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Letters to the Editor

Adaptive Servo Ventilation for Central Sleep Apnea: More Data, Please

To the Editor:

The SERVE-HF trial (Treatment of Predominant Central Sleep Apnoea by Adaptive Servo Ventilation in Patients With Heart Failure) commentary by Yogasundaram and Oudit contains a factual error and several misconceptions that could discourage others from initiating or completing other trials such as the ADVENT-HF trial (A Multi-Centre Randomized Study to Assess the Effects of Adaptive Servo Ventilation on Survival and Frequency of Cardiovascular Hospital Admissions in Patients with Heart Failure and Sleep Apnea) of adaptive servo-ventilation (ASV) for the treatment of central sleep apnea (CSA) and obstructive sleep apnea (OSA) in heart failure (HF) that involve different devices.[1]

First, the title is incorrect. The SERVE-HF trial was not "halted." It concluded, per protocol, when the goal of 651 observed events was achieved.[2] Second, the SERVE-HF publication reports only the results of a treatment strategy.[2] Yet to be disclosed is whether the actual use of ASV was associated with an excess of cardiovascular deaths.

Importantly, 16% of patients allocated to the control group crossed over to positive airway pressure devices during the trial, whereas approximately 29% of patients allocated to ASV abandoned it.[2] Compliance was poor, averaging only 3.4 hours/night 1 year after randomization, perhaps because a full face mask, which is less well tolerated than a nasal mask,[3] was used by 76% of the treated participants.[2] A second possibility is that the SERVE-HF device's relatively high default pressures (minimum end-expiratory pressure of 5 cm H_2O and minimum inspiratory pressure support of 3 cm H_2O) are more likely to induce hyperventilation and to lower cardiac output in participants with normal or low left ventricular filling pressures than ASV using lower default pressures.

The commentators' recommendation that "HF patients with CSA who are optimally treated medically and with device therapy but remain symptomatic should be given a trial of continuous positive airway therapy without ASV" is unsubstantiated by current evidence.[1] The SERVE-HF investigators note that algorithms used by different ASV devices vary and acknowledge that the ADVENT-HF trial "may help determine whether the safety signal identified in SERVE-HF is limited to a particular device or algorithm."[2] In their editorial, Magalang and Pack also refer to the difference between the SERVE-HF and the ADVENT-HF ASV algorithms and recommend that until "other studies clarify whether the results seen in the SERVE-HF trial are a consequence of the specific device that was used, that adaptive servo-ventilation not be used outside clinical trials in patients with heart failure who have predominantly central sleep apnea."[4] We endorse these recommendations and encourage those contemplating treatment of patients with HF and CSA (and also patients with asymptomatic OSA) to consider referring them to an ADVENT-HF trial centre.

As advocated,[1] the use of ASV is carefully monitored in the ADVENT-HF trial. From its inception, ADVENT-HF incorporated more stringent safety features than, and differs from, SERVE-HF in several key respects: all ASV titrations are reviewed centrally, device pressure settings are prescribed by the core sleep laboratory to maintain the lowest pressures possible, follow-up is at 6-month intervals vs yearly in SERVE-HF, and the Data Safety and Monitoring Committee (DSMC) reviews data every 6 months compared with only twice over the 7-year course of SERVE-HF. Compared with SERVE-HF, in ADVENT-HF the ASV administered has lower default end-expiratory and pressure support settings (4 and 0 cm H_2O, respectively), a much higher proportion (78%) of participants randomized to ASV are wearing a nasal mask, and present nightly average ASV use is more than an hour greater.

After the release of the SERVE-HF results, the ADVENT-HF DSMC reviewed all adjudicated events separately for patients randomized on the basis of CSA and OSA and recommended that the trial be conducted without modification.

John S. Floras, MD, DPhil
john.floras@utoronto.ca

Alexander G. Logan, MD
T. Douglas Bradley, MD

Disclosures

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