HealthManagement
Promoting Management and Leadership

remedē® System Shows Favorable Outcomes for Heart Failure Patients with Central Sleep Apnea

ZOLL
an Asahi Kasei company

Analysis conducted on a hierarchical endpoint comprised of mortality, HF hospitalization, and health status shows that patients treated with phrenic nerve stimulation may be nearly five times as likely to experience a clinical benefit compared to those in the control group.

Asahi Kasei company that manufactures medical devices and related software solutions, announced today that a new analysis of data from the **rem**edē® System Pivotal Trial suggests favorable outcomes for heart failure (HF) patients with central sleep apnea (CSA). The analysis was performed post-hoc using a hierarchical endpoint comprised of mortality, HF hospitalization, and health status. The new analysis was presented as a late-breaking clinical trial at the ESC Heart Failure 2024 conference in Lisbon, Portugal by Dr. William T. Abraham, College of Medicine Distinguished Professor, Division of Cardiovascular Medicine at The Ohio State University Wexner Medical Center, Columbus, Ohio.

The presented analysis re-evaluates the pivotal trial data using a win ratio to compare heart failure patients with central sleep apnea when treated with phrenic nerve stimulation (treatment group) versus patients with untreated CSA (control group). The win ratio of 4.92 (95% confidence interval 2.27-10.63, P<0.0001) suggests that patients in the treatment group were nearly five times more likely to experience a clinical benefit compared to those in the control group.

“Win-ratio analysis is a valuable tool that is gaining traction in the medical community for more thoroughly assessing the clinical benefit of therapies. Win-ratio analysis goes a step beyond conventional analyses of composite endpoints by taking into consideration both the timing of events and the fact that some endpoints, like mortality, are more severe than others,” says Dr. Abraham. “The magnitude of effect reflected by the 4.92 win ratio is astonishing when you look across other studies in the heart failure population; though notably this analysis is post-hoc. Importantly, the concordance of clinical benefit favoring phrenic nerve stimulation across the three components of survival, hospitalization rate, and quality of life supports the main finding.”

The analysis used three clinical benefit components in the following hierarchical order to compare all treated to all control patients: longest survival, lowest HF hospitalization rate, and ≥2-category difference in Patient Global Assessment at six months. The treatment group won in 4.1%, 11.6%, and 38.1% of comparisons, respectively, while the control group won in 2.2%, 4.2%, and 4.6% of comparisons. Ties accounted for the remaining pairs.

“The win-ratio analysis provides new insights into the symptom-burden experienced by our patients with heart failure and central sleep apnea and the positive impact phrenic nerve stimulation has on these symptoms,” said Rami Khayat, Director of Sleep Medicine at the University of California-Irvine Health System. “The new analysis also highlights the importance of screening for central sleep apnea in patients with heart failure so effective therapies like phrenic nerve stimulation can be offered.”

About Win-Ratio Analysis

A win-ratio analysis considers both the clinical importance of the components of composite outcomes as well as the relative timing of the component events. This allows for more patients to contribute to the endpoint evaluation to assess clinical benefit. The win-ratio method overcomes some of the shortcomings in conventional trial endpoints, such as a composite endpoint of time to death or HF hospitalization, that equally weight the clinical components. It also allows for the inclusion of other components that are meaningful to patients, such as quality of life.

The remedē System and Central Sleep Apnea

The first-generation **rem**edē System was approved by the FDA in 2017. The **rem**edē System is an implantable device that activates automatically each night to stimulate a nerve in the chest (phrenic nerve) that sends signals to the breathing muscles (diaphragm) to help restore a normal breathing pattern.

Central sleep apnea (CSA) is a serious breathing disorder that disrupts the normal breathing pattern during sleep and negatively affects sleep quality, quality of life, and is associated with poor outcomes. CSA results from the brain's inability to send appropriate signals to the respiratory muscles to stimulate breathing. Many patients with CSA also have heart disease, especially heart failure. Patients with CSA and heart failure are at increased risk for hospitalizations and even death.

Financial Interest Disclosures

The analysis presented at the ESC Heart Failure 2024 conference was sponsored by ZOLL. Dr. William T. Abraham is a paid consultant to ZOLL.

IMPORTANT SAFETY INFORMATION

US Physician Full Statement – to be used on physician facing materials in the United States

Indications for Use

The **rem**edē® System is an implantable phrenic nerve stimulator indicated for the treatment of moderate to severe central sleep apnea (CSA) in adult patients.

Contraindications

- The **rem**edē System is contraindicated for the following:
  - Patients with an active infection

Warnings

- The device is MR Conditional. The conditions and precautions can be found in the **rem**edē system manual.
- Diathermy -Do not use shortwave diathermy, microwave diathermy or therapeutic ultrasound diathermy (collectively referred to as diathermy) on patients implanted with the **rem**edē System.
- Electric Shock -When operating under AC power, the **rem**edē System Programmer must be connected to a grounded power source to avoid risk of electric shock.
- Concomitant Active Implantable Devices -Use **rem**edē System with caution in patients with an active implantable device that may be susceptible to unintended interaction with the **rem**edē system.
- Patients with Evidence of Phrenic Nerve Palsy -Therapy with the **rem**edē System may be ineffective in patients who have evidence of phrenic nerve palsy.
- Pediatric Use - The safety and effectiveness of the **rem**edē System has not been established for pediatric use.

Precautions

It is recommended that testing for oversensing of **rem**edē stimulation therapy by the concomitant cardiac device occur at the time of implant and prior to initiating **rem**edē System therapy in patients with a concomitantly implanted cardiac device. Use **rem**edē System therapy with caution in pacemaker-dependent patients without a physiologic escape rhythm. Device interaction may lead to over or undersensing resulting in a loss of pacing. The safety and effectiveness of the **rem**edē System during pregnancy has not been established.

See the Device Manual for detailed information regarding the implant procedure, indications, contraindications, warnings, precautions, and potential complications/adverse events.

Adverse Effects

Possible adverse events which may be associated with the implantation and use of the **rem**edē® system include, but are not limited to, the following: adverse contrast dye reaction such as allergic reaction, pulmonary edema, or worsening renal function, adverse reaction to radiation exposure, thromboembolism, air embolism, bleeding, cardiac perforation including tamponade, hematoma, seroma, local bruising or swelling, hypotension, local wound healing issues at device implant site including wound dehiscence, pocket erosion, extrusion, movement of implanted device, keloid formation, pneumothorax, hemothorax, vascular damage, e.g., venous dissection, perforation, adverse biocompatibility reaction to the implanted system, infection, lead breakage, lead dislodgement, lead not connected or secured appropriately in device header, implantable device malfunction, requirement for more energy to stimulate the nerve or ineffective stimulation, venous occlusion, crosstalk with another implanted device, disrupted sleep, muscle fatigue or discomfort in diaphragm, chest or abdomen from appropriate stimulation, nerve dysfunction, perturbation of blood gases causing hypoxia, hypercapnea and/or hypocapnea, inappropriate sensations, worsening heart failure, respiratory status or overall health, anxiety, arrhythmia, including ventricular fibrillation, death, depression, hypotension, pain, skin irritation or local allergic reaction, thrombus or embolism, potentially leading to pulmonary embolism or stroke.

CAUTION: Rx only. Prior to use, please see the complete "System Implant and Clinician Use Manual" for more information on Indications, Contraindications, Warnings, Precautions, Adverse Events, and Operator's Instructions.

The **rem**edē® System, **rem**edē® EL System, and **rem**edē® EL-X System have received FDA approval. The **rem**edē® System model 1001 has received CE Mark approval.

Source & Image Credit: ZOLL

Refrences

1. “Transvenous phrenic nerve stimulation to treat central sleep apnea in heart failure.” Late-breaking presentation from ESC Heart Failure 2024.
2. Costanzo M.R., et al. *The Lancet*. 2016;388:974–82.
3. Bekfani T, Abraham WT. Europace. 2016;18(8):1123–34. *Epub* 2016 May 26.
4. Khayat R, et al. *J Card Fail.* 2012;18:534–40.
5. Khayat, R et al. *European Heart J.* 2015;36 1463–69.

Published on : Mon, 13 May 2024