Several new treatment strategies have become available for patients with sleep disordered breathing

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Published online: 10 March 2020
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Sleep and Biological Rhythms has started a review series designated as The Frontiers in Sleep Medicine. The first manuscript in the series is “Nerve Stimulation for the Treatment of Obstructive Sleep Apnea” by Strohl et al. [1]. Continuous positive airway pressure (CPAP) treatment usually is the first or standard treatment for moderate to severe obstructive sleep apnea (OSA). OSA is a global health problem, as it is highly prevalent, causes sleepiness and traffic accidents, and is associated with cardiovascular events. Although CPAP treatment is effective for OSA management, a significant proportion of patients underuse or even discontinue CPAP. An oral appliance (OA) is usually used as a second-choice treatment. But an OA in addition to anatomic surgery is not a perfect alternative for patients who refuse CPAP treatment. An uncontrolled cohort study of patients with OSA who had difficulty either accepting or adhering to CPAP therapy showed that an upper-airway stimulation device led to significant improvements in objective and subjective measurements of the severity of OSA [2]. Following the publication of this report, the embedded hypoglossal nerve stimulation (HNS) device began to be used in Europe and the United States. In June 2018, an HNS device was approved by the Pharmaceuticals and Medical Devices Agency (PMDA) in Japan. The Japanese Society of Sleep Research, the Japanese Respiratory Society, the Japanese Circulation Society, and the Oto-Rhino-Laryngological Society of Japan have had discussions on eligibility criteria for this new therapy and have submitted such information to the government. In the near future, the HNS device will be available under the health insurance system in Japan, the first country in Asia. Since the HNS device will be available in Japan, the review in this issue by Strohl et al. will be useful to sleep clinicians and researchers in Japan and other Asian

countries [1]. Recently, a randomized, placebo-controlled, double-blind crossover trial reported that the combination of atomoxetine and oxybutynin reduced OSA severity [3]. Atomoxetine is a selective norepinephrine reuptake inhibitor and oxybutynin is an antimuscarinic drug; both drugs are said to be stimulators of the hypoglossal nerve. Thus, several new methods for hypoglossal nerve stimulation have become attractive alternatives to CPAP treatment. On the other hand, CPAP treatment is suitable for telemedicine. Using a CPAP telemedicine system, we would be able to find useful methods for controlling several metabolic comorbidities [4], which are present in most patients undergoing CPAP treatment. Since the number of OSA patients who very often have several metabolic comorbidities, has rapidly increased not only in Japan but also worldwide, several new drugs and/or techniques will be released for use in this field one after the other in the future.

Reference

1. Yamauchi M, Satoh M, Kitahara T, Ota I, Strohl K. Nerve stimulation for the treatment of obstructive sleep apnea. *Sleep Biol Rhythms*. 2019. <https://doi.org/10.1007/s41105-020-00252-2>.
2. Strollo PJ Jr, Soose RJ, Maurer JT, de Vries N, Cornelius J, Froyovich O, Hanson RD, Padhya TA, Steward DL, Gillespie MB, Woodson BT, Van de Heyning PH, Goetting MG, Vanderveken OM, Feldman N, Knaack L, Strohl KP, STAR Trial Group. Upper-airway stimulation for obstructive sleep apnea. *N Engl J Med*. 2014;370(2):139–49.
3. Taranto-Montemurro L, Messineo L, Sands SA, Azarbarzin A, Marques M, Edwards BA, Eckert DJ, White DP, Wellman A. The combination of atomoxetine and oxybutynin greatly reduces obstructive sleep apnea severity. A randomized, placebo-controlled, double-blind crossover trial. *Am J Respir Crit Care Med*. 2019;199(10):1267–76.
4. Pépin JL, Tamié R, Hwang D, Mereddy S, Parthasarathy S. Does remote monitoring change OSA management and CPAP adherence? *Respirology*. 2017;22:1508–17.

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