Review Article

Imbalance between the Reality of Sleep Specialists and the Demands of Society in Japan

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Abstract: In contrast to the fruitful achievements of sleep research, sleep medicine has never been properly defined and recognized in Japan. Therefore, it is difficult for any clinician to have a united view as to what constitutes a sleep specialist. The United States (US) has set up sleep medicine as a comprehensive clinical specialty connected with various medical, psychological, scientific and social fields, having sleep physiology that is methodologically represented by polysomnography as a common language. The US system around a core of sleep disorders centers and sleep specialists armed with a comprehensive knowledge of sleep and sleep disorders can not only diagnose and treat patients with sleep disorders, but are also sensitive to the various sleep-related problems at the work place such as circadian related safety issues and productivity. Daytime sleepiness is dangerous in some situations for the individual as well as society. Although this safety issue is an urgent demand in every workplace, sleep medicine has not matured nor established enough to respond to it in Japan. Together with advancement of sleep research, the sleep medicine community should do everything in its power to establish sleep medicine as a practical patient-based clinical field.

Key words: Sleep, Sleep medicine, Sleep specialist, Sleep disorders center, Sleep apnea syndrome

Introduction

Japan launched into sleep research in the 1960s as early as the USA, but lagged behind in the development of clinical sleep medicine. As a consequence, people with sleep problems and disorders have been largely ignored, mainly because, without clinical specialty, nobody knows who would deal with their medical problems (Fig. 1). Patients with sleep disorders in Japan have been seen by a few of the pulmonologists, psychiatrists, otolaryngologists with an emphasis on what they could see, doing occasional polysomnography (PSG)(median: 3/month) in clinics/hospitals without beds exclusively used for PSG, while the number of beds in sleep centers/laboratories in the US ranged from 2 to 12, and PSGs were performed on a daily basis

(median number of PSGs per week: 20)¹⁾. We may well say that sleep specialists with a comprehensive perspective and equipment are virtually non-existent in Japan. There is, rather, no consensus as to what sleep medicine is, and an analogy would be trying to blindly guess the shape of an elephant by the feel of only some of its parts.

In this review I will analyze how and why this condition has evolved, and what is lacking for promoting sleep health for workers and workplaces under the present circumstances.

History of Sleep Disorders Clinical Practice in Japan

The concept of sleep apnea syndrome (SAS) was recognized in the early years of clinical sleep medicine before the 1970s, and actually Hishikawa et al reported two non-obese hypersomniac patients with periodic breathing who

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How people with sleep problems are dealt with in Japan

Fig. 1. Without the identity of sleep specialists, patients have difficulty being properly diagnosed and treated.

were subsequently treated with tracheotomy in 1970²⁾. It should be also noted that the Japanese Society of Sleep Research had a special symposium about SAS at the 9th Annual Meeting held as early as 1984³⁾. However, earlier pioneers in sleep were more or less research-oriented, and the knowledge obtained through research had not been well integrated into clinical practice. In addition, there was always a triage in any medical care system, and in those days sleep disorders tended to be regarded as an issue of luxury except for severe insomnia in depression or schizophrenia. As a result, there has not been any systematic educational or training system of sleep and its disorders in medical schools and in post-graduate training years.

Separated from this development by sleep researchers, some respiratory physicians, especially who specialized in respiratory physiology, started to care for patients with SAS in their everyday practice. Nasal continuous positive airway pressure (nCPAP), once invented⁴⁾, was accessed by them as an extension of non-invasive artificial ventilation, but this treatment option for SAS had not been widely available until 1998 when national health insurance began to cover this item.

Concerning diagnostic measures, in the earlier years, psychiatrists who had an interest in sleep research put much emphasis on PSG as it was essential to perform neurophysiological research on patients with sleep disorders. However, PSG was never undergone routinely for the purpose of clinical diagnosis and treatment, as it was not covered by

the national health insurance until 1990. Even after the coverage started, because nearly all prices are strictly controlled by a fee schedule, and direct co-pay to providers is forbidden, the more we performed PSG (PSG reimbursement: 33,000 JPY = 300 USD, Oct. 2004), the more we suffered to make ends meet¹⁾.

On the other hand, at present, American physicians have, as a role model, full-time specialists working for sleep disorders centers, while Japanese physicians deal with some aspects of sleep disorders as a small part of a larger medical practice such as pulmonology, psychiatry, otolaryngology, neurology, etc. Otherwise dependent on temporal procurement for SAS in industrial fields, we survive by largely limiting sleep medicine to more limited sleep practice such as cardiorespiratory sleep centers where the strategy is to minimize PSG and to maximize nCPAP introduction, as nCPAP guarantees a regular income to the clinic.

Development and Establishment of Sleep Medicine in the US

In the US, the use of clinical sleep laboratories to diagnose and treat a variety of sleep disorders has increased dramatically over the last 20 to 25 yr, and the American Academy of Sleep Medicine (AASM) has a standard for accrediting sleep disorders centers⁵⁾.

The process by which the first generation engaged in sleep

research in the US was more or less similar to that in Japan, but after the definition of SAS by Guilleminault and his colleagues⁶⁾, U.S.-based sleep researchers decided to introduce PSG as a routine procedure for making the diagnosis of a variety of sleep disorders and to evaluate the severity of SAS in the 1970s⁷⁾. The prototype of a sleep disorders center where patients with all kinds of sleep disorders were interviewed in the clinic by sleep specialists with the aid of standardized PSG and the multiple sleep latency test (MSLT) was firstly established at Stanford University, and other universities, although not all in the US followed this example. Sleep specialists in the US were backed up by PSG technologists who recorded and scored PSG and MSLT, working in shifts day and night, and this has developed PSG into a common language for all sleep specialists and technologists regardless of the field of their original medical training.

The Association of Sleep Disorders Centers with five member centers was organized in 1975, and later it evolved into the American Sleep Disorders Association (ASDA) which has recently been renamed AASM. AASM has set the consensus criteria for diagnosing and treating various sleep disorders, playing the fostering role of setting up comprehensive sleep disorders centers with certified sleep specialists. In particular, this situation has evolved through epidemiological studies around the recognition of obstructive sleep apnea-hypopnea syndrome (OSAHS) as a common disorder with adverse neurocognitive and cardiovascular outcomes⁸⁻¹¹⁾.

How People Began to Recognize Sleep-related Problems in Japan and its Consequence

On 26th of February 2003, a 33-year-old bullet train driver was found to have been sleeping for eight minutes while operating a train carrying about 800 passengers traveling at 270 kilometers per hour. The train was halted by an emergency device, coming to stop at Okayama Station. Several days after this incidence, suddenly the Japanese people began to be bombarded with information about OSAHS, because this driver allegedly had suffered unrecognized OSAHS. The mass media always has a great impact on people's ideas, and the typical OSAHS stigmata of obese middle-aged men with heavy snoring was imprinted on our minds.

In response to this accident, the Ministry of Land, Infrastructure and Transport circulated a notification that every commercial driver should be checked for the presence of OSAHS under the responsibility of their business firms, although there was not a proper number of physicians who could see OSAHS nor clinics/hospitals where suspected people

could consult¹⁾. At first there was some hope that this situation could be a trigger for developing sleep medicine in Japan, but later the bitter situation became obvious as little has been done for setting up a feasible system for meeting the demand. Since Japan is a very centralistic nation, it always takes longer to adopt new medical technologies, until the government or the Ministry of Health, Welfare, and Labor take initiatives. In addition, since there were no clinically oriented sleep-related academic organizations in Japan such as AASM, nor an organization of the patients with OSAHS, we could not count on activity by pressure groups.

Another aftermath of this mass coverage of the near train mishap was the impression that OSAHS was the only reason for excessive daytime sleepiness (EDS) and dozing off. Not much was discussed from the viewpoint of the working environment, schedule, and sleep hygiene of this poor driver. The Road Transport Bureau called for an effort to create an environment in which commercial drivers can report on the possibility of OSAHS. However, most of healthcare providers were lacking in the basic knowledge of sleep or sleep disorders and therefore this effort has failed. Some drivers with OSAHS that had been controlled well by nCPAP and living a completely normal life actually lost their job or had difficulty coming to sleep clinics to have a monthly follow-up required for insurance coverage of nCPAP, because they were afraid of having a stigma. Under this condition, self-reporting of OSAHS must be very unlikely.

One of the reasons why this confusion was prevailing was that without sleep specialists, there were no people who could explain why and how people were sleepy for different reasons under various conditions and there was no one to transmit the idea of sleep hygiene to improve sleep to the general public at the same time. The incident of the bullet-train driver might have been a good occasion to think about the EDS that had been widely neglected in the Japanese society, and EDS is a great issue in the domain of industrial health.

On top of it, the business incentive for OSAHS became stronger after this incident. Although the reimbursement for full PSG was lower in Japan (full PSG: 33,000JPY [\$300]) than in the USA (Medicare reimbursement for full attended PSG: \$677–1,035, 2004), and this Japanese reimbursement was not profitable for hospitals, there was a trick. Japanese reimbursement is fixed regardless of whether it is attended or unattended, so the quality of PSG is not the issue. Maximizing cardiorespiratory recordings leads to better cost-performance. Interestingly enough, a cardiorespiratory study is called a 'simplified PSG' in Japan, although it has a limited ability to identify respiratory effort-related arousal events due to lack of electroencephalography (EEG) and it is incapable

of fully assessing other sleep pathology. Some CPAP dealers work as an agent offering ambulatory machines, some full-PSG equipment and some cardiorespiratory monitoring equipment, for rental with a temporary technician dispatched. It has discouraged physicians from learning sleep medicine, since the introduction of the gold standards of sleep medicine collapsed in Japan from the very beginning.

Identity of Sleep Specialists and Sleep Medicine

Under the present conditions, it is now getting more and more difficult to establish an identity of sleep specialists in Japan. In the preface of the first edition of *Principals and Practice of Sleep Medicine*, it describes sleep medicine as a multidisciplinary field, drawn from a variety of disciplines such as psychology, psychiatry, neurology, pharmacology, internal medicine, pediatrics, and the basic sciences¹²⁾. In the US, this notion strongly unites sleep specialists whose first specialty varies, and functions as the basics of caring for patients with sleep disorders holistically. Sleep specialists in the US have focused their efforts on the diagnosis and management of sleep disorders, but as the number of them increased, sleep medicine has matured to be able to aim at improving public health. At the workplaces, sleep and circadian related safety issues, productivity, and general health status are getting more and more attention, and sleep specialists should shoulder this responsibility.

When we see the Japanese situation, there seems to be a dichotomy of somnology as a research field and SAS medicine mostly for respiratory physicians. At the moment these two factions are not well integrated, so the sleep community should make an every effort to introduce the notion of comprehensive sleep medicine, and the sleep medicine field has to put great pressure on the government to include sleep medicine in the medical education system.

Sleep medicine is not merely a biomedical field nor a simple medical practice of caring for patients with sleep disorders. It also has a lot of components such as the safety issue, children's development, professional education, and the enhancement of public awareness, overlapping with industrial health. In this sense, sleep specialists have to contribute to the transfer of the knowledge of sleep and sleep disorders to the general public including industrial workers.

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