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SLEEP APNEA 20 YEARS AGO

In 1974, I saw my first sleep apnea patient and during that year there was only one patient – that was it! That was the sensation of its day and physicians and doctors from every department in the hospital came to witness the unusual phenomenon. We did not see any more sleep apnea patients that year. Nobody could guess that years later 1 in 4 men would be suspected of having sleep-breathing disorders. Worldwide today, 80% to 85% of the patients seen in every sleep clinic have a sleep-breathing disorder ranging from sleep apnea to upper resistance syndrome. Many patients sought out sleep therapy because of their suffering from insomnia. However, most patients with insomnia are not studied in sleep clinics anymore, and if they are, there are only studied with actigraphy with no polysomnography. Therefore, I would say that these events have become a major difference in retrospect to the last 20 years.

SLEEP APNEA AWARENESS

I think that physicians must realize that sleep apnea is one of the most important risk factors for atherosclerosis, which is equivalent to high cholesterol, to lipids, to obesity, and to high blood pressure. Untreated sleep apnea is a risk factor and should be treated properly like any other risk factors. If physicians see a young man at the age of 25 or 30 who snores loudly and suffers from excessive daytime sleepiness, they should consider this man to be at a very high risk for cardiovascular morbidity that initially begins as a slow process. If general practitioners could discover an immediate way to identify this linkage, I think the scope of sleep apnea patients would instantly change.

HOW TO INCORPORATE SLEEP EDUCATION IN MEDICAL SCHOOLS

The statistics that we have now on education and sleep medicine in American medical schools show about 2 hours during the 4 years of medical studies. Think about it: the entire medical education on sleep disorders is 2 hours in 4 years of medical studies. This is of course, ridiculous. There are still many schools without any sleep programs. In my opinion, the only way that sleep medicine will become a legitimate part of the curriculum, is to push at the faculty level people who are interested in sleep medicine to a professor level because these are the people who are going to make it happen. I do not expect any otolaryngologist or cardiologist who was not exposed to sleep medicine to start teaching sleep medicine. This is not something that will come by itself. Medical schools need to recruit people who have active programs in sleep medicine or research. These people will make sure that there will be students in which projects and lessons plans will be provided to enhance their education. Medical schools should be provided with excellent research clinicians who will make certain that sleep education will be part of the curriculum. This is the way that I would do it. I would provide guidance to good programs and encour-

age students to find an academic position within the medical system. The key is to find the right people.

SLEEP MEDICINE IN ISRAEL

Sleep medicine in Israel is very advanced and the awareness of sleep medicine is very well developed. Israel is a small country and the media helped during the late 70's and early 80's to spread the awareness of sleep medicine. The Technion Sleep Medicine Center has more than 30 beds and our database has more than 100,000 patients. In all our labs, we conduct both PSG and ambulatory sleep studies with the Watch-Pat100. In Israel, the country of close to 7 million people, there are 16 sleep clinics that cover the entire country. Israel has 4 major HMO's that cover polysomnographic recording and they set the protocols. There are 4 medical schools in Israel that offer 6-8 year programs. We enroll freshman students as sleep technicians and they are arranged to work one or two nights per week while they stay with us for 6 years during their medical studies. When they graduate from medical school, most of them do service in the sleep clinic. Since we opened our clinics during the late 70's, there are at least 200 clinicians who graduated from this program. They then become physicians in various disciplines who have excellent abilities and knowledge in sleep medicine and technical know-how. The clinical model in Israel is different from the model in many of the U.S. clinics. The model in Israel has both diagnosis and treatment under the same roof. We provide titration as well as exposure to CPAP devices. We perform follow-up interviews as a service to the patient. Putting everything under the same roof provides a very important advantage over just being a diagnostic laboratory. We have accompanied some of the patients for more than 25 years and this provides a continuity of care, which is essential for sleep medicine if it is striving to be a legitimate branch of medicine. Israel is a very good example of sleep medicine development. Sleep HealthCenters in New England, founded in 1997, was modeled after the Technion Sleep Medicine Center in Israel, and is operating now 13 sleep clinics. It is one of the best sleep programs in the U.S. with an incredibly talented staff of clinicians and technicians.

DIAGNOSIS VERSUS TREATMENT IN MODERN SLEEP MEDICINE

The factors that will dictate the future of modern sleep medicine are the unprecedented prevalence of sleep-breathing disorders. I believe that we will see a change in the future of modern sleep medicine in regards to finding a way to make the diagnosis of sleep-breathing disorders or the bulk of sleep apnea patients become more efficient, cost-effective and treatment being applied sooner. I believe that there is too much emphasis on the diagnosis and considerably not enough emphasis on treatment. Therefore modern sleep medicine will have to find a way to balance out the differences between the diagnosis and treatment. Treatment of severe sleep apnea is very simple;

however the treatment requires much more attention and much more stringent protocols. We know that many sleep apnea patients are not treated, while others just ignore it. In many sleep clinics, some patients do not comply with CPAP treatment and even if they do, they are not followed up on. Patients visit for only for one night, are seen, the diagnosis is made, then the patient is referred to a DME company, where he/she receives a machine and that is it. No "real" treatment was administered. On the other hand, I think that we are under the spell of sleep apnea, while many patients who need treatment are not treated, there are still many patients who are treated, but should not be treated. Hopefully we will find the balance soon.

THE REVIVAL OF POLYSOMNOGRAPHY

What I would hope to see in modern sleep medicine is the revival of polysomnography. What I mean by reviving the polysomnography is using EEG monitoring or complex polysomnography monitoring to provide us with more detailed information that may prove useful in the diagnosis of insomnia. For instance, one of the areas that appear to be promising is the use of the most sophisticated programs of analysis. It will be a very huge step forward if we find markers in polysomnography for patients who may respond to pharmacological treatments and for patients who go for behavioral treatments. Right now, we have given up polysomnography in insomnia because sleep stages do not tell us much about responses to treatment. We should develop more personalized medicine by using sophisticated analysis programs. This may prove that polysomnography is not obsolete and even may be of paramount for the future of sleep medicine.

THE FUTURE OF AMBULATORY MONITORING

The economy is such that insurers at one point will not be able to support the full night of polysomnography that provides the diagnosis for patients. In most cases that are obese, snoring and tend to fall during the day there is no need for polysomnographic recordings. The number of patients is such that if even if you doubled the number of sleep clinics, you still would not be able to account for everybody. I am encouraging sleep medicine to provide cost-effective ways to diagnose patients with high-likelihood of diseases. This enables both sleep diagnosis to become more efficient and it brings patients closer to treatment. Instead of having patients spend 2 nights in the laboratory, there are clinics in which patients are given instructions on how to apply ambulatory devices on themselves. Then they are sent home. With simple explanation on how to use at-home ambulatory devices, practitioners can achieve the diagnosis of 20–30 patients within one evening. The Watch-Pat100, which was developed partly at the Technion in Israel, is leading the way in the ambulatory market as the most accurate and cost efficient device. I believe that within the next 5 years we are going to see a major move to ambulatory monitoring that will reduce the costs, make the diagnosis more efficient, and ultimately we will provide many more patients with the proper treatment that they deserve.

GENETIC LINKAGE OF SLEEP DISORDERS

Spreading awareness in regards to preventive medicine is important in modern sleep medicine. The reasons why we should screen young people as early as possible particularly for sleep-breathing disorders are that it is a familial disease, the build-up of damage to the cardiovascular system is cumulative and progressive, and the highest risk of dying is at an early age. There is mounting evidence that comes from solid experimental data to suspect that children of sleep apnea patients would develop sleep apnea. There is an excellent large-scale genetic study in Iceland on sleep apnea. The preliminary results clearly show that indeed it may be a genetic disease. The results point at chromosome number 20 that carries some of the genetic links associated with sleep apnea syndrome. If a father has severe sleep apnea, his offspring may have a high risk of developing sleep apnea as well.

CARDIOVASCULAR DAMAGE FROM SLEEP DISORDERS

There is risk of cardiovascular damage in sleep-breathing disorders. Studies from our laboratory headed by Prof Lena Lavie demonstrate that sleep-breathing disorders are a major risk factor for atherosclerosis. The atherogenic processes begin during the first night when the patient suffers from sleep-breathing disorders regardless of symptoms. Sleep apnea may start between the ages of 20 and 30, and then 25 years later when a patient is examined, damage to their cardiovascular system is already established. Patients may have high blood pressure and some of them may even already have coronary artery diseases, stroke and other cardiovascular diseases. To help prevent this from happening, we must make the diagnosis as early as possible. I do not preach that everyone should be put on sleep apnea treatment at the ages of 20 or 25, but at this age patients with sleep apnea can be convinced to change their lifestyle, to reduce their lipids by changing their diet or using proper medications, etc. These may not abort the sleep apnea at night, but they can slow down the atherosclerotic processes that plug their arteries.

DYING AT 50

We investigated mortality in sleep apnea patients. The most dramatic finding is that the risk of dying due to sleep apnea is highest in patients younger than 50. Patients younger than 50 are 4 times more likely to die than their counterparts in the general population. Once patients grow past the age of 50, the risk of dying, even in very severe sleep apnea patients who have more than 50 apneas per hour, is no different than in general population. Something happens between the ages of 50 and 60 that is probably adaptive to most patients. The brain and body "learn" how to cope with the disease. Right now we are investigating this "adaptive" mechanism. We believe that there is an active mechanism that protects the brain and body from the hypoxia and the sleep fragmentation. This also emphasizes the importance of early treatment. If treatment begins earlier then lives would be saved.